

ZOO 4603C - Embryology & Development - Fall 2020

Instructor: Dr. Cynthia Bayer 5 credit hours
Communication: Webcourses *Inbox* or *Announcements* **Zoom Office Hour:** Fri 11 am & 1 pm
Undergraduate Teaching Assistant: Rena Shanock **Zoom Office Hour:** TBD

Lecture Section 0001: WF 9:00-10:20 am **Remote Instruction**

*Lectures are synchronous Zoom meetings that require participation in iClicker Reef polling.
All lectures and online Exams are held during the scheduled class time.*

Laboratory Sec 0011: WF 11:00-12:50 pm **Laboratory** Sec 0012: WF 1:00-2:50 pm

Laboratory instruction is asynchronous. Lab Introductions are provided as narrated .mp4 files to guide progression through the Lab Manual. Lab Zoom discussions, optional F2F labs, and online Practical Exams are held during the scheduled lab section time.

Course Description: To understand the mechanisms of morphological change during animal development considering examples of developmental processes in several animal model systems. The cellular, molecular, and genetic basis of animal development through different stages, from gametogenesis to organogenesis, will be examined. The laboratory will examine different stages of early embryonic development in frog and chick. Optional face-to-face labs will provide opportunities to observe developmental processes in living organisms.

Online learning: Due to the requirement for this course to be taught remotely, you will be expected to have daily access to the internet and email. **Lectures** will be delivered as live *Zoom* meetings. **Laboratory** objectives will be assigned on a weekly basis. All exams will be held online during scheduled class or lab time. Any updates, changes and reminders will be communicated to you via course email and *Announcements*. All students at UCF are required to obtain a [Knight's Email account](#) and check it regularly for official university communications. If you do not own a computer, computers connected to the internet are available in all UCF's computer labs. For further information on computer labs, please see guides.ucf.edu.

Laboratory objectives will be introduced as narrated .mp4 files posted weekly. I will hold Laboratory *Zoom* meetings Every Wed during each scheduled lab section time to discuss these objectives and answer questions. Attendance is not required but is recommended for better comprehension of the material. Two Laboratory Practical exams are scheduled for Fri lab sections.

Online learning requires planning and self-pacing so that you may be successful in my course. I recommend treating this course like you would a F2F course, keeping up with lectures and lab assignments. Students should plan to spend at least **12-16 hours per week** attending *Zoom* lectures, reading textbook assignments, and learning the structures and concepts covered in lab. Please do not be tempted to skip a week of lectures or lab sessions and expect to catch up easily.

Course Prerequisites: A grade of C or better in PCB 3063 (General Genetics) and PCB 3023 (Molecular Cell Bio) or PCB 3522 (Molecular Biology I).

Student Learning Outcomes: Successful students will demonstrate a broad understanding of the basic principles of animal development, an ability to apply information to new scenarios, and recognize connections between these concepts:

- The cellular and chemical interactions of fertilization
- How a single-celled zygote develops into a multicellular organism
- How specialized cells form from undifferentiated precursors
- The factors that direct the formation of ordered structures
- Compare and contrast developmental processes among different vertebrates and invertebrates

In the laboratory, students will learn to:

- Visualize how the anatomy of the embryo changes during early development
- Transform 2D microscopic sections of an embryo into a 3D organism

Students will be evaluated on meeting these objectives via participation in iClicker Reef polls during Zoom lectures, online Lecture exams and online Laboratory Practical exams.

Academic Activity - Course Expectations:

- To meet the registrar's requirement for documentation of your participation in this course, please complete the **Course Expectations/Syllabus Quiz**, found in our Webcourse Quiz section, by **5:00 pm Friday, Aug 28**. Failure to do so will result in a delay in the disbursement of your financial aid.
- All students are required to complete the Course Expectations/Syllabus Quiz for points.

Course website: Access our course website at Webcourses@UCF via the myUCF portal using your NID and password. You will find links to the **Syllabus, Lecture PowerPoints, Lab Exercises, Grades, Web Resources, Zoom, Online Exams**

Communication via *Inbox*:

- Please contact me via Webcourses *Inbox*. Emails sent to my UCF address will not be answered.
 - Compose a clear and succinct email message, including your name and course.
 - Before emailing me with a question about course policies, you must read the syllabus to find the answer yourself.
 - I will carve out time once per weekday to answer emails and attempt to answer your message within 24 hours.
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REQUIRED Textbooks:

Developmental Biology, 12th ed., Barresi & Gilbert & (2019) [Oxford University Press](#). Available as an eBook ISBN: 9781605358239, Hardcover print ISBN: 9781605358222, or Looseleaf print ISBN: 9781605358246. Although I strongly recommend the digital resources associated with the 12th edition eBook, such as bookmarks, highlighting, and Text to Speech features and tools for making notes, study guides, and flashcards, you may choose to use the earlier 10th or 11th edition instead.

A Photographic Atlas of Developmental Biology. Shirley J. Wright, 2005. [Morton Publishing](#). Available as a Looseleaf print text ISBN: 9780895826299

REQUIRED iClicker Reef:

I will use *iClicker Reef* polling daily in Zoom for course points. You are required to participate with the *iClicker Reef* app on a smartphone, tablet, or laptop. See the link on our Webcourses homepage to create an *iClicker Reef* account by Sept 4.

Course Grade:

90% = best 5 out of 6 lecture/lab exams

10% = *iClicker Reef* points

- Students are responsible for keeping track of their grades and identifying issues within 2 days of any grade posting in Webcourses.
- Flat letter grades for the semester will be awarded according to the scale below. Letter grades will adhere to this percentage range with no exceptions. There will be **no curving**.

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

Online Exams: There will be 3 lecture exams, 2 laboratory exams, and a COMPREHENSIVE lecture/lab Final exam, each worth 100 points. The lowest score of all 6 exams will be dropped automatically. The score of the Final exam will be dropped if it turns out to be the lowest of your scores, or you may choose to not take the final exam.

- Lecture Exams will be based on material covered in lecture, which includes topics not covered in the textbook. **Online lecture exams are held during scheduled class time, beginning at 9:00 am.**
- Lab Practical Exams will test your knowledge of the tissues discussed in laboratory exercises. **Online lab practical exams are held during the scheduled lab section, beginning at 11:00 am (Section 0011) and 1:00 pm (Section 0012).**
- Final Exam will be held according to the UCF Final Exam Schedule for Fall 2020, **TBD**.

iClicker points are earned from *Zoom* class participation and graded questions. Each day 3 points are earned for participation (= answering at least 75% of the questions) plus additional points for graded questions (1 point for each correct answer and 0.25 point for each incorrect answer). Only a subset of questions will be graded each day. The two lowest iClicker day scores will be dropped automatically.

Zoom Lectures and Laboratory Sessions: Please take the time to familiarize yourself with *Zoom* by visiting the [UCF Zoom Guides](#). You may choose to use *Zoom* on your mobile device (phone or tablet). Meeting dates and times will be scheduled through Webcourses and should appear on your calendar. *Zoom* Lectures will be recorded and posted in Webcourses.

- Find the scheduled meeting invitation at the *Zoom* tab in our Webcourse.
 - Join the meeting on time. Participants will be placed in a waiting room and permitted entry only during the first few minutes of the meeting to prevent unauthorized participants from joining.
 - By joining a *Zoom* meeting, you agree to be audio- and video-recorded.
 - Remember to keep your microphone muted unless asking or responding to a question.
 - Practice patience.
 - Anyone who violates UCF rules of conduct will be removed from the meeting.
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Taking Online Exams:

- Lecture Exams will consist of both *multiple choice* and *essay* questions
- Lab Practical Exams will consist of *fill-in-the-blank* questions
 - Each exam is timed.
 - Each exam is available ONLY during the scheduled time period.
 - Students are not allowed to use assistance from another person, GroupMe, WhatsApp, Chegg Study, Google, or any other website while taking an online exam. (Discussed in greater detail in the **Academic Integrity** section below)
 - Quiz Audit Log will be used during exams

Excused Missed Lecture Exams:

- If an exam is missed due to an official, documented, University-accepted absence, a makeup exam will be arranged. Excused absences include official UCF business at which your presence is required, U.S. Military-related business (e.g. Reserve Duty), legal obligation (e.g. jury duty).
 - You must provide to me documentation with your name and the date affected **1 week prior** to the scheduled exam date.
- A makeup exam **may** be permitted if any other legitimate* documented reason that circumstances beyond your control, an EMERGENCY, prevented you from taking the scheduled exam (including, but not limited to, your hospitalization or a death in your immediate family)
 - Official documentation from an appropriate authority (doctor, police, judge, etc.) must be **provided within 24 hours of the missed exam**. *A doctor's note must be written on letterhead paper with a contact phone number and must document that a medical condition was treated or that a medical procedure or hospitalization occurred.
 - *If I approve your excuse*, I will arrange a time for a make-up exam on the last day of class.

Unexcused Missed Lecture Exams: If a student misses an exam for an unexcused event (e.g. forgetting there was an exam, vacations, family gatherings) or *cannot provide acceptable documentation*, then they will receive a score of zero for that exam. This zero score will be dropped as the lowest scoring exam.

Missed Laboratory Exam Policy: Because of their format, there is NO opportunity for a make-up laboratory exam, so be sure not to miss Lab Exam 1 or Lab Exam 2. Your absence will result in your earning a grade of 0 for the missed exam.

Academic Integrity:

As reflected in the UCF creed, integrity and scholarship are core values that should guide our conduct and decisions as members of the UCF community. Plagiarism and cheating contradict these values and are serious academic offenses. Students enrolled at UCF are expected to familiarize themselves and follow the University's *Rules of Conduct* (Section UCF-5.008) in the Golden Rule handbook <http://goldenrule.sdes.ucf.edu>.

According to Section 1, "Academic Misconduct," students are prohibited from engaging in

1. Unauthorized assistance: Using or attempting to use unauthorized materials, information or study aids in any academic exercise unless specifically authorized by the instructor of record. The unauthorized possession of examination or course-related material also constitutes cheating.
2. Communication to another through written, visual, electronic, or oral means: The presentation of material which has not been studied or learned, but rather was obtained through someone else's efforts and used as part of an examination, course assignment, or project.
3. Commercial Use of Academic Material: Selling of course material to another person, student, and/or uploading course material to a third-party vendor without authorization or without the express written permission of the university and the instructor. Course materials include but are not limited to class notes, Instructor's PowerPoints, course syllabi, tests, quizzes, labs, instruction sheets, homework, study guides, handouts, etc.
4. Falsifying or misrepresenting the student's own academic work.
5. Plagiarism: Using or appropriating another's work without any indication of the source, thereby attempting to convey the impression that such work is the student's own.
6. Multiple Submissions: Submitting the same academic work for credit more than once without the express written permission of the instructor.
7. Helping another violate academic behavior standards.
8. Soliciting assistance with academic coursework and/or degree requirements.

Unauthorized Use of Technology for Graded Work: If you were in a classroom setting taking an exam, would you ask the student sitting next to you for the answer to an exam question? The answer should be no. This means that students are not allowed to use GroupMe, WhatsApp, or any other form of technology to exchange course material associated with a graded assignment, quiz, exam, etc. when opened on Webcourses.

The completion of graded work in an online course should be considered a formal process: Just because you are not in a formal classroom setting being proctored while taking an exam does not mean that the completion of graded work in an online course should not be treated with integrity. The following are examples that show how the use of technology can be considered academic misconduct and could result in the same penalties as cheating in a face-to-face class:

- Taking a screen shot of an online quiz or exam question, posting it to GroupMe or WhatsApp, and asking for assistance is considered academic misconduct.
- Answering an online quiz or exam question posted to GroupMe or WhatsApp is considered academic misconduct. Giving advice, assistance, or suggestions on how to complete a question associated with an online assignment, quiz, or exam is considered academic misconduct.

- The use of outside assistance from another student or by searching the internet, Googling for answers, use of websites such as Quizlet, Course Hero, Chegg Study, etc. is considered academic misconduct.
- Gathering to take an online quiz or exam with others and sharing answers in the process is considered academic misconduct.

If a student or group of students are found to be exchanging material associated with a graded assignment, quiz, or exam through any form of technology (GroupMe, WhatsApp, etc.), or use of outside assistance (Googling answers, use of websites such as Quizlet, Course Hero, Chegg Study, etc.), they could receive anywhere from a zero grade on the exercise to an “F” in the course depending on the act.

Unauthorized Use of Websites and Internet Resources: There are many websites claiming to offer study aids to students, but in using such websites, students could find themselves in violation of academic conduct guidelines. These websites include (but are not limited to) Quizlet, Course Hero, Chegg Study, and Clutch Prep. UCF does not endorse the use of these products in an unethical manner, which could lead to a violation of our University’s Rules of Conduct. They encourage students to upload course materials, such as test questions, individual assignments, and examples of graded material. Such materials are the intellectual property of instructors, the university, or publishers and may not be distributed without prior authorization. Students who engage in such activity could be found in violation of academic conduct standards and could face course and/or University penalties. Please let me know if you are uncertain about the use of a website so I can determine its legitimacy.

Unauthorized Distribution of Class Notes: Third parties may attempt to connect with you to sell your notes and other course information from this class. Distributing course materials to a third party without my authorization is a violation of our University’s Rules of Conduct. Please be aware that such class materials that may have already been given to such third parties may contain errors, which could affect your performance or grade. If a third party should contact you regarding such an offer, I would appreciate your bringing this to my attention. We all play a part in creating a course climate of integrity.

Quiz Audit Log: For each online exam, you are expected to remain on the testing screen for the duration. You may not visit other sections of the course, other websites, or communication tools for assistance. I will be monitoring the Webcourses@UCF Quiz Audit Log for compliance. Failure to access only the exam during testing will result in an academic integrity violation.

Responses to Academic Dishonesty, Plagiarism, or Cheating: Students should also familiarize themselves with the procedures for academic misconduct in UCF’s student handbook, *The Golden Rule* handbook <http://goldenrule.sdes.ucf.edu>. UCF faculty members have a responsibility for students’ education and the value of a UCF degree, and so seek to prevent unethical behavior and respond to academic misconduct when necessary. Penalties for violating rules, policies, and instructions within this course can range from a zero on the exercise to an “F” letter grade in the course. In addition, an Academic Misconduct report could be filed with the Student Conduct and Academic Integrity <https://scai.sdes.ucf.edu> which could lead to disciplinary warning, disciplinary probation, or deferred suspension or separation from the University through suspension, dismissal, or expulsion with the addition of a “Z” designation on one’s transcript.

Being found in violation of academic conduct standards could result in a student having to disclose such behavior on a graduate school application, being removed from a leadership position within a student organization, the recipient of scholarships, participation in University activities such as study abroad, internships, etc.

Let's avoid all of this by demonstrating values of honesty, trust, and integrity. No grade is worth compromising your integrity and moving your moral compass. Stay true to doing the right thing: take the zero, not a shortcut.

Time commitment: For most students striving for B grades or higher, I recommend scheduling about 12-16 hours per week for engaging with this course. Your background knowledge, experience and other variables may require you to spend additional time. Please plan accordingly by scheduling time on your calendar now. Several factors influence student academic performance and long-term learning. Active engagement in all course activities (e.g., attending *Zoom* lectures, participation in *iClicker Reef* polling and *Zoom* Lab discussions, textbook readings, reviewing) will contribute to your learning and to success in this course.

Course Accessibility: It is my goal that this class be an accessible, inclusive and welcoming experience for all. If anyone believes the design of this course poses barriers to effectively participating and/or demonstrating learning in this course, please meet with me (with or without a Student Accessibility Services (SAS) accommodation letter) to discuss reasonable options or adjustments. You may also want to contact SAS <http://sas.sdes.ucf.edu> (Ferrell Commons 185; 407-823-2371) to talk about academic accommodations.

Help & SARC: Please ask for help if you need it! I am here to answer your questions. Additionally, help is available through SARC (Student Academic Resource Center, Howard Phillips Hall, Room 113; 407-823-5130; <http://sarc.sdes.ucf.edu>). Students can request a Learning Consultation with a Learning Skills Specialist or attend Academic Success Workshops to improve study skills & strategies.

Deployed Active Duty Military Students: Students who are deployed active duty military and/or National Guard personnel and require accommodation should contact their instructors as soon as possible after the semester begins and/or after they receive notification of deployment to make related arrangements.

UCF Cares: UCF and I care not only about your academic success, but also your overall well-being. Please visit [UCFCares.com http://cares.sdes.ucf.edu/](http://cares.sdes.ucf.edu) if you are seeking resources or support, or if you are worried about a friend or classmate. Free services and information are included for a variety of student concerns, including but not limited to alcohol use, bias incidents, mental health concerns, sexual harassment or assault, and financial challenges. You can also e-mail ucfcares@ucf.edu with questions or for additional assistance. You can reach a UCF Cares staff member Student Care Services, <http://scs.sdes.ucf.edu>, Ferrell Commons 142, between 8 a.m. and 5 p.m. by calling 407-823-5607.

If you are in immediate distress, please call Counseling and Psychological Services (CAPS), Counseling Center 101 <http://caps.sdes.ucf.edu> to speak directly with a counselor 24/7 at 407-823-2811, or call 911.

Academic Services and Resources: A list of available academic support and learning services is available at [UCF Student Services](#). Click on "Academic Support and Learning Services" on right-hand side to filter.

Non-Academic Services and Resources: A list of non-academic support and services is also available at [UCF Student Services](#). Click on "Support" on the right-hand side to filter.

Campus Safety Statement: Emergencies on campus are rare, but everyone should be aware of their surroundings and familiar with some basic safety and security concepts.

- In case of an emergency, dial 911 for assistance.
 - Every UCF classroom contains an emergency procedure guide posted on a wall near the door. Please make a note of the guide's physical location and consider reviewing the online version at http://emergency.ucf.edu/emergency_guide.html.
 - Familiarize yourself with evacuation routes from each of your classrooms and have a plan for finding safety in case of an emergency.
 - If there is a medical emergency during class, a first aid kit or AED (Automated External Defibrillator) may be required. To learn where those items are located in any building, see <http://www.ehs.ucf.edu/AEDlocations-UCF>
 - To stay informed about emergency situations, sign up to receive UCF text alerts by going to my.ucf.edu and logging in. Click on "Student Self Service" located on the left side of the screen in the tool bar, scroll down to the blue "Personal Information" heading on your Student Center screen, click on "UCF Alert", fill out the information, including your e-mail address, cell phone number, and cell phone provider, click "Apply" to save the changes, and then click "OK."
 - Consider viewing this video [You CAN survive an active shooter](#) about how to manage an active shooter situation on campus or elsewhere.
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COVID-19

To protect members of our community, everyone is required to wear a facial covering inside all common spaces (<https://policies.ucf.edu/documents/PolicyEmergencyCOVIDReturnPolicy.pdf>).

COVID-19 and Illness Notification: Students who believe they may have a COVID-19 diagnosis should contact UCF Student Health Services (407-823-2509) so proper contact tracing procedures can take place.

Students should not come to campus if they are ill, are experiencing any symptoms of COVID-19, have tested positive for COVID, or if anyone living in their residence has tested positive or is sick with COVID-19 symptoms. CDC guidance for COVID-19 symptoms is located here: (<https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>)

In Case of Faculty Illness – If the instructor falls ill during the semester, there may be changes to this course, including having a backup instructor take over the course. Please look for announcements or mail in Webcourses@UCF or Knights email for any alterations to this course.

Embryo Lecture Schedule - Synchronous Zoom

Aug 26: *Introduction, Chapter 1 - Questions*

Aug 28: Chapter 1

DROP deadline Thurs, Aug 27 11:59pm

ADD deadline Fri, Aug 28 11:59pm

Sep 02: Chapter 2 - *Patterns & Commitment*

Sep 04: Chapter 7 - *Fertilization*

Sep 09: Chapter 7

Sep 11: Chapter 10, 8 - *Invertebrates - Sea Urchins & Snails*

Sep 16: Chapter 10, 8

Sep 18: Chapter 8 - *Nematodes*

Sep 23: Chapter 8

Sep 25: **Exam 1 (Chapters 1, 2, 7, 8, 10)**

Sep 30: Chapter 11 - *Vertebrates - Amphibians*

Oct 02: Chapter 11

Oct 07: Chapter 12 - *Birds*

Oct 09: Chapter 12 - *Birds / Mammals*

Oct 14: Chapter 12 - *Mammals*

Oct 16: Chapter 13, 14 - *CNS*

Oct 21: Chapter 13, 14 - *CNS / PNS*

Oct 23: Chapter 15, 16 - *PNS*

Oct 28: **Exam 2 (Chapters 11, 12, 13, 14, 15, 16)**

Oct 30: Chapter 15 - *Neural Crest*

WITHDRAWAL deadline Fri, Oct 30 11:59pm

Nov 04: Chapter 17, 18 - *Mesoderm*

Nov 06: Chapter 17, 18, 20 - *Mesoderm / Endoderm*

Nov 11: VETERAN'S DAY - no class

Nov 13: Chapter 20, 6 - *Endoderm / Sex Determination*

Nov 18: Chapter 6, 9 - *Sex Determination / Drosophila*

Nov 20: Chapter 9 - *Drosophila*

Nov 25: THANKSGIVING BREAK - no class

Nov 27: THANKSGIVING BREAK - no class

Dec 02: Chapter 9 - *Drosophila*

Dec 04: **Exam 3 (Chapters 15, 17, 18, 20, 6, 9)**

Comprehensive Final Exam: Dec 9, Wed 7:00 - 9:50 am OR Dec 11, Fri 7:00 - 9:50 am

Embryology Laboratory Schedule

<u>Dates</u>	<u>Topics</u>	<u>Lab Manual (pages) Atlas of Developmental Biology</u>
Aug 26 & 28	<u>Lab 0.</u> Introduction	Handout
Sep 2 & 4	<u>Lab 1.</u> Frog cleavage, gastrulation, & neurulation	77-80, 95-96, 109-115
Sep 9 & 11	<u>Lab 2.</u> 4 mm frog	143-150
Sep 16 & 18	<u>Lab 3.</u> 7 mm frog	156-161
Sep 23 & 25	<u>Lab 4.</u> 10 mm frog	162-169
Sep 30 & Oct 2	<u>Lab 6.</u> <i>Experimental</i> : Live 11 mm frog embryos	Handout
Oct 7 (Wed)	Review for Lab Exam 1	
Oct 9 (Fri)	Lab Exam 1 (frog embryology)	
Oct 14 & 16	<u>Lab 7.</u> Chick cleavage, gastrulation, & neurulation	80-83, 96-101, 116-123
Oct 21 & 23	<u>Lab 8.</u> 33-hr chick	171-191
Oct 28 & 30	<u>Lab 9.</u> 48-hr chick	194-199
Nov 4 (Wed)	<u>Lab 12.</u> 72-hr chick	201-209
Nov 6 (Fri)	<u>Lab 11.</u> <i>Experimental</i> : Live 48-hr chick embryos	Handout
Nov 11 (Wed)	No class - Veteran's Day	
Nov 13 (Fri)	<u>Lab 11.</u> <i>Experimental</i> : Live 48-hr chick embryos	Handout
Nov 18 (Wed)	Review for Lab Exam 2	
Nov 20 (Fri)	Lab Exam 2 (chick embryology)	

I will hold **Laboratory Zoom meetings** Every Wed during the scheduled lab section times (11:00am and 1:00pm) to discuss lab objectives and answer questions. Each week I will post a narrated .mp4 file that introduces a specific stage of frog or chick embryonic development using the required lab manual to provide high-resolution images of sectioned and stained embryos. The goal of the lab sessions is to acquire the ability to assemble a series of two-dimensional sections into a three-dimensional organism, identifying the position and origin of tissues and structures, and tracking how each structure (and the entire embryo) changes over time.

During two weeks of the semester I will hold **Experimental** labs in the Biology Building BIO 211 instead of a Laboratory Zoom meeting. These face-to-face labs are designed to provide students the opportunity to observe developmental processes and manipulate living organisms under the microscope and are entirely OPTIONAL. I will need to know approximately 1 month before each experimental lab how many students plan to attend so that we can order the materials and schedule the times for socially distanced lab sessions of 10 students/session. Detailed information on F2F lab safety and COVID requirements will be provided.

Two **Laboratory Practical exams** to assess student understanding of embryo structure and developmental changes will be held on Fridays during the scheduled lab section times (11:00am and 1:00pm) on the dates listed above.

Note that the instructor reserves the right to make changes to the syllabus or other aspects of the course at any time. These changes will be announced in Webcourses.

