

COMPARATIVE EMBRYOLOGY OF THE VERTEBRATES**BISC 332****SPRING, 2013**

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LECTURE: 8:00 to 9:15 Tu Th. Biology 323

LABORATORY:

Section 1: 2:00 to 4:50 Thursday. Biology 205

Required books:

Wright. 2005. A Photographic Atlas of Developmental Biology.
Morton Publishing Company, . ISBN: 0-89582-629-1.

Schoenwolf. 2009. Laboratory Studies of Vertebrate and
Invertebrate Embryos. Benjamin Cummings Publishing, ISBN:
0-321-55694-1

GRADE SCALE

Grade	Total for Course	Pts./300 pt. test	%
A =	1192 - 1325	270 - 300	90 - 100%
B =	1060 - 1191	240 - 269	80 - 89%
C =	927 - 1059	210 - 239	70 - 79%
D =	795 - 926	180 - 209	60 - 69%
F =	0 - 794	0 - 179	0 - 59%

SCHEDULE OF TESTS AND IMPORTANT DATES

12 FEB 13 (Tu)	Lecture Exam I	300 pts.
14 FEB 13 (Th)	Laboratory Exam I (Sea urchin, frog)	100 pts.
07 MAR 13 (Th)	Laboratory Exam II (Chick thru 33 hrs.)	100 pts.
26 MAR 13 (Tu)	Lecture Exam II	300 pts.
25 APR 13 (Th)	Embryo drawings due	25 pts.
02 MAY 13 (Th)	Final Lab Exam	200 pts.
07 MAY 13 (Tu)	Final Lecture Exam (8-9:50 a.m.)	300 pts.

TOTAL: 1325 pts.

 * **BRING CURRENT HANDOUTS** *
 * **TO ALL LECTURES!** *

INITIAL LABORATORY: 24 JANUARY 2013

Bring your lab manuals to every laboratory session. They are indispensable. Read **for understanding** the following pages in the **Wright manual** before coming to the first lab: "Microscopy" pages 9-16 and "Echinoderm Fertilization," pages 59-63 (Stop at "Teleost Fertilization").

Read for understanding and study details of the starfish on pages 3 to 21 in the **Schoenwolf manual**. The laboratory instructor will clarify his expectations and assignments during the initial laboratory sessions.

 * **Students are strongly advised to attend all lectures and** *
 * **laboratories and to fully utilize each laboratory period.** *

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POLICY ON CUTTING CLASS

Students are allowed to miss one class without a penalty and no excuse is required. Subsequent absences will be penalized. Each subsequent excused absence will result in a loss of 5 points from the final total score. Each subsequent un-excused absence will result in a loss of 10 points from the final total score. Reasons for an excused absence must be presented in writing and be acceptable to the professor.

Class presence is determined by your signature on the daily attendance sheets. Be certain you sign these sheets during each lecture or laboratory period. **Sign, do not print your name on these sheets! Do not sign in for someone else. (To do so may result in course failure and disciplinary action by the university.). See the instructor immediately if you forget to sign the attendance sheet.**

LABORATORY REGULATIONS

Students are required to attend all laboratories and to be present from the beginning until the end of each laboratory session. Labs end at 4:50 p.m. Excessive cuts or early departures from laboratory sessions can result in grade-damaging penalties. Unexcused early departures may result in deductions from your laboratory test scores. Deductions will be determined by the laboratory instructor.

LAB CLEANUP.

Laboratory clean-up begins 5 minutes prior to the termination of each lab. Each student must leave the work area clean. Microscopes, slides, models, and other materials must be returned to proper storage areas. Stools must be under the tables and not in the aisles. We cannot be responsible for items left in the laboratories. Individual storage facilities are not available and other classes are also utilizing our laboratory.

EXTRA LABORATORY TIME

You are welcome to work in the lab at any time it is not in use, providing you realize that instructional help is not available beyond lab hours and that you are working entirely at your own option and risk. Labs are generally locked between classes and you will probably have to find someone to unlock the lab door. Dr. Keiser or Mr. Morgan will open the lab for you if they are available. Please leave your work area clean, put your scope away properly, and close the lab door when you leave.

LECTURE EXAMINATION MAKEUPS: A student missing an examination must submit a dated and signed explanation of the reasons. To be given a makeup exam, an excuse must be considered a valid reason for missing an examination. Makeup examinations will be considerably more rigorous and grades will not be curved. Makeup exams must be completed before the next lecture period following the missed examination, or after the last day of classes. The makeup examination period will be scheduled by Dr. Keiser. You will be allowed to make up only one makeup exam. Even if excused and subsequently made up, missing an examination will count as one cut.

LABORATORY EXAMINATION MAKEUPS

Acceptable written absence excuses as outlined above must be submitted to Dr. Keiser and Mr. Morgan **prior to the initial scheduling of the lab exam. Approval by Dr. Keiser and Mr. Morgan is necessary for a makeup to be given.** Makeup exams will be rigorous and scores will not be curved. Makeup lab exams are scheduled at the convenience of Mr. Morgan. They require a lot of instructor time and a wise student will make every effort to take laboratory exams with the class.

LABORATORY STORAGE.

The University, Department of Biology, and the instructor **ARE NOT RESPONSIBLE FOR ITEMS** left in the room after class is over.

Dishonesty: Cheating on exams is not tolerated and will result in failure of the course.

OUTLINE FOR COMPARATIVE VERTEBRATE ANATOMY
BISC 332
LECTURE OUTLINE

LECTURE TOPICS FOR SPRING 2013:

- A. Introduction to Vertebrate Embryology**
- B. Vertebrate Reproduction**
- C. Sperm Formation**
- D. Oocyte Formation**
- E. Fertilization**
- F. Cleavage**
- G. Gastrulation**
- H. Neurulation I**
- I. Neurulation II**
- J. Extra-embryonic Sacs**
- K. Ectoderm I**
- L. Ectoderm II**
- M. Mesoderm I. Somites and Derivatives**
- N. Mesoderm II. The Kidneys**
- O. Gonad Development. Indifferent**
- P. Gonad Development. Male**
- Q. Gonad Development. Female**
- R. The Vertebrate Heart**
- S. The Aortic Arches**
- T. Endoderm Organs I**
- U. Endoderm Organs II**
- V. The Urinary Bladder and Gut**
- W. Mammalian Viviparity and Early Development**
- X. Human Early Development**
- Y. The Human Placenta**
- Z. The Vertebrate Limb**
- AA. Bone and Cartilage**
- BB. The Vertebrate Eyes I**
- CC. The Vertebrate Eyes II**
- DD. Wound Healing (If time permits)**

LABORATORY TOPICS FOR SPRING 2013:

Lab 1. Jan. 24, 2013. Introduction and Echinoderm Embryology

Lab 2. Jan. 31, 2013. Early Frog Embryogenesis through Neurulation

Lab 3. Feb. 07, 2013. Frog Organogenesis, through 4 mm

Lab 4. Feb. 14, 2013.

Lab exam 1st hour. 100 pts.

2nd-3rd hrs.: Chick Ovary, Testis, Early Cleavage

Lab 5. Feb. 21, 2013. Chick, Later Cleavage to 24 hours

Lab 6. Feb. 28, 2013. Chick, 24 hrs to 48 hrs.

Lab 7. Mar. 07, 2013.

Lab exam 1st hour. 100 pts.

2nd-3rd hrs.: Chick, 48 hrs., Whole Mount

SPRING BREAK

Lab 8. Mar. 21, 2013. Chick, 48 hrs., Transverse Sections

Lab 9. Mar. 28, 2013. Chick, 72 hrs., Whole Mounts

Lab. 10. Apr. 04, 2013. Chick, 72 hrs., Sagittal Sections

**Lab 11. Apr. 11, 2013. Chick, 72 hrs. Sagittal Sections, begin
Transverse Sections**

Lab 12. Apr. 18, 2013. Chick, 72 hrs. Transverse Sections

Lab 13. Apr. 25, 2013. Chick, 72 hrs. Transverse Sections

Lab 14, May 02, 2013. Chick, Final Examination. 200 pts.