

Biol 4000/6000 – Molecular Ecology Syllabus

COURSE INFORMATION

Title: Molecular Ecology

Instructor: Dr. Emily K. Croteau (ekcroteau@valdosta.edu)

Office: Bailey Science Center 2211

Office Hours: M/W: 10:00 – 11:00 am or by appointment

Class Meeting: M/W: 2 – 3:15 pm

Required Text: Molecular Ecology (2nd Ed. 2011) by Joanna R. Freeland, Heather Kirk and Stephen D. Petersen

Textbook Website: www.wiley.com/go/freeland_molecular2e

CATALOG DESCRIPTION

An overview of how molecular methods are used to investigate ecological processes in natural populations. This course will discuss how molecular markers can be applied to research questions related to genetic variation, parentage and relatedness, population structure, natural selection, patterns of migration, population bottlenecks and founder events and species identity. Prerequisites: Biol 1107, 1108, 3200 and 3250.

LEARNING OUTCOMES

Students successful in completing this course will be able to:

1. Identify and differentiate among the different types of molecular markers and analyses employed to address ecological questions.
2. Describe the research questions that can be asked in molecular ecology and predict which molecular method(s) successfully examines such questions.
3. Analyze and interpret data from analyses used in molecular ecology studies.
4. Effectively communicate, and interpret the significance of research findings of molecular ecology studies.
5. Discuss and evaluate conclusions reached in the molecular ecology literature based on proposed hypotheses and presented results.

STANDARDS

Valdosta State University (VSU) General Educational Outcomes for this course include: # 3, 4, 5, and 7. VSU's Department of Biology Educational Outcomes for this course include: # 2, 4 (in part) and 5.

GRADE DETERMINATION

Grades will be assessed by in-class participation via quizzes and paper discussions, a three-part research project and two midterms and one final exam. The grade distribution is as follows:

Quizzes and Paper discussions	15%
Exams	55%
Three-part research review, proposal and presentation	30%

Letter Grades:

- A: 90-100%
- B: 80-89%
- C: 70-79%
- D: 60-69%
- F: < 60%

Class Attendance: Attendance to all scheduled classes is expected and active participation during class is required. To be successful in this course you should attend class regularly. Students are responsible for all missed material and must ask another student to help fill gaps if necessary. VSU's policy on attendance states: "A student who misses more than 20% of the scheduled classes of a course will be subject to receiving a failing grade in the course", we will adhere to this policy.

Class Preparation: In order to participate in this course you are required to read the assigned pages in the text (see schedule) and any supplementary readings **BEFORE** class. During class sessions, students will work through questions and problems that have been covered in the prior readings and will be called upon to provide answers to these questions during class.

Quizzes: Students will have a quiz every class a new reading is assigned (see schedule) and will be quizzed on the vocabulary covered in that reading. Lists of vocabulary will be posted to Blazeview. Quizzes will be given at the beginning of each class and will take 5-10 minutes to complete. Students late to class will not be able to take the quiz – **NO EXCEPTIONS!** A student's **two** lowest quiz scores will be dropped from the final calculation of the quiz grade.

Paper discussion: Throughout the course we will discuss original research and review papers in class. In preparation for this you should read the assigned paper critically and thoroughly. Paper discussions will take place in an assigned group. Each group will assign a discussion leader for each paper that is assigned. The discussion leader is responsible for providing a synopsis of the paper and answering questions. The day of discussion each group member (including the discussion leader) is responsible for submitting **3 thoughtful questions on paper** pertaining to the paper to the discussion leader. **Graduate** students are responsible for submitting **5 thoughtful** questions. These questions will form the basis of the discussion during class. At the end of class the group leader must turn in all questions to the instructor so credit can be given to those students that participated. To be awarded full points for the paper discussion(s) students need to both submit questions and discuss the paper in class. Failure to do one or the other will result in a credit of half of the total points, and failure to do either will result in no credit. Each group member will lead at least one discussion.

Exams

There are two exams and a final exam for this course. Exams will cover material from the end of the previous exam through to the current exam and are worth 15% each. The final exam is scheduled during the final exam period of the semester and is cumulative in nature; this exam is worth 25%. The final exam will be of a slightly different format than the other exams. Students will be tested on what is covered during lectures, readings from the text and any supplementary readings assigned. There are **NO EXAM MAKE-UPS**, with the exception of those students that have a university-approved excuse, which will require documentation. A student who misses an exam will receive no points for it toward their final grade. No books, electronic devices, or notebooks are permitted during exams; students using or attempting to use any of these materials will receive a zero for the exam and may receive an "F" for the course.

RESEARCH PROJECT

Three-part research review, proposal and presentation.

The written portions of this assignment are due at the **BEGINNING** of the class on which it is due. Late assignments (even those handed in at the end of class) will receive a late penalty of 50% for the first day late (24 hr period from when the assignment is due). An additional 25% will be penalized for the next day and by the third day late no assignments will be accepted. You will choose a partner from the class to complete this assignment. **Graduate** students will complete this project on their own.

Part 1 (10%): This assignment will review and evaluate six primary research articles that relate to a specific molecular ecology research topic/question/organism that you and your partner are interested in (essentially a lit review). **Graduate** students will review 10 primary research articles. For this assignment, you and your partner will read, critique, and report the questions, approaches, analyses, and findings of primary science articles concerning experimental research studies. The subject is your choice as long as it relates to molecular ecology research. Total length: 5 pages (title page and references are not included in this total), normal fonts, spacing, margins, etc. Reviews completed by **graduate** students should be 8 pages in length.

Part 2 (10%): This assignment will use the first assignment as a foundation for you and your partner to write a proposal for a research study that takes the “next step” in the system you discuss in the first assignment. Your proposal will include a research question and hypothesis, justification, potential methods to pursue and analyses to perform, and interpretation of potential results. In essence, you and your partner will propose how to extend the research of the papers you reviewed in the first assignment, much like how a researcher would write a grant proposal to fund their research. Total length: 10 pages (5pp of revision of first paper, 5pp of new proposal), normal fonts, margins, etc. **Graduate** student papers will be 13 pages in length (8pp of revision of first paper, 5pp of new proposal)

Part 3 (10%): You and your partner (graduate students on their own) will present your proposal (Part 2) to the class. This presentation will last 15 minutes and a portion of this grade will depend on whether you have sufficiently convinced the class to “fund” your proposal.

COMMUNICATING WITH YOUR PROFESSOR

Emailing is the best way to contact me outside of class and is how I will be contacting you when necessary. You must utilize your VSU email account (DO NOT EMAIL ME THROUGH BLAZEVIEW) when contacting me and it is your responsibility to check your email account regularly in order to receive emails from me; I will not send emails to any other email account. When you email me you should be polite, respectful and professional, therefore you must adhere to the following:

1. Include your course number and section in the subject line of the email
2. Do not use all caps, exclamation points, text speak or improper grammar
3. Use a greeting, salutation and full name at the end of all emails.
4. Email me at: ekcroteau@valdosta.edu

Failure to do any of the above will result in your email going unanswered.

ACADEMIC INTEGRITY

Cheating will not be tolerated in this course. Cheating includes but is not limited to:

1. The unauthorized copying of exams, tests, quizzes, assignments, discussion materials, term papers, and presentations that are not your own work.
2. Giving or receiving help from an unauthorized person during a quiz, test or exam.
3. Using unauthorized materials or devices during a quiz, test or exam.
4. Presenting unacknowledged material as if it were your own work (plagiarism)

Students are responsible for complying with the VSU Student Code of Conduct in Appendix A of the Student Handbook. Students' failure to comply with this code of cheating will at the very least receive a failing grade ('F') for the assignment in question and possibly for the course. The penalty is at the discretion of the professor.

CLASSROOM CONDUCT

Classroom behavior will be dictated by a policy of rules and responsibilities developed by the students during the first class session. This policy will be posted to Blazeview and strictly enforced during class(es). Violations of the class policy may result in removal from the class session, and repeated occurrences may result in permanent removal from the course or affect your grade negatively.

CELL PHONE/TECHNOLOGY USE

Use of cell phones is not permitted. Persons found using cell phones during class will be excused and will receive a deduction of 2% off of their final grade (per offense). Use of computers or tablets for taking notes is allowed; abuse of this rule (i.e. not using these resources for note taking) will result in the same penalty as for cell phones.

ACCESS OFFICE

Students requesting classroom accommodations or modifications due to a documented disability must contact the Access Office for Students with Disabilities located in Farber Hall. Phone numbers: 245-2498(V/VP) and 219-1348 (TTY).

FEDERAL PRIVACY ACT (FERPA)

The Family Educational Rights and Privacy Act (FERPA) prohibits the public posting of grades by social security number or in any manner that personally identifies an individual student. Additionally, it is illegal to release personal information about an individual to others. Therefore, grades or personal information cannot be given via email or telephone since the individual receiving this information cannot be positively identified.

STUDENT SUCCESS CENTER

The Student Success Center (SSC) at Valdosta State University is located in Langdale Residence Hall above the Tech Shop and is available to all students. The SSC provides free peer tutoring in core curriculum courses, including biology, chemistry, math, writing, and foreign languages. The SSC also provides free professional academic advising and on-campus job information in one location. Call 333-7570 to make an appointment, or visit the website: www.valdosta.edu/ssc.