

Introduction to Molecular Ecology
BIOS 715/EVPP 515
Colgan Hall 437 S&T campus
4:30-7:10 pm

Instructor: Dr. Patrick Gillevet
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Description:

This course is a basic introduction to Molecular Ecology. We will cover basic concepts of Molecular Biology, Genetics, Molecular Evolution, Bioinformatics, and NextGen Sequencing Technology. The course is geared to students with prior background in Genetics and Evolution. The goal of the course is to equip the student with the basic fundamentals in molecular biology and bioinformatics so they can read and understand the current literature in Molecular Evolution, Conservation Genetics, Genomics, and Biocomplexity. This course or its equivalent with permission of the instructor is the prerequisite for the BIOS 615 course Methods in Evolutionary Biology

Prerequisites: Undergraduate courses in Genetics and Chemistry or consent of the instructor.

Course Textbooks and Materials:

An Introduction to Molecular Ecology, Trevor Beebee & Graham Rowe
Other reading will be assigned from the literature and from the Web.
Blackboard will be used to distribute lectures and assignments.

Other reference Books:

Molecular Cell Biology, Lodish et al, W.H. Freeman and Company, Fifth Edition 2004
Molecular Ecology J.R Freeland
Molecular Methods in Ecology A.J. Baker et al

Credits: This course carries 3 credits.

Grading:

Grades will be based on class interaction (10%), four homework assignments (60%), and a final presentation on a relevant publication (30%). Assignments are due the following week they are posted.

Assignment 0: Written description of students' interests and goals in graduate school. Specifically, what field(s) are they interested in and what they hope to get out of the class.

Assignment 1: Is a review of molecular methodology and pragmatic issues that arise in the wet lab (level 2 in Blooms taxonomy). Students are not allowed to consult with classmates on this assignment.

Assignment 2: Is a practical assignment using text and sequence data to search the databases at NCBI (level 3 in Blooms taxonomy). Students may consult each other on this assignment on problems running software but they have to submit their own work .

Assignment 3: Is a practical assignment on sequence alignment and construction of phylogenetic trees (level 3 in Blooms taxonomy). Students may consult each other on this assignment on problems running software but they have to submit their own work.

Assignment4: Are questions on Conservation biology and population genetics that integrate the knowledge from the course and ask the student to integrate knowledge to draw connections between ideas (level 4 in Blooms taxonomy). Students are required to do this assignment on their own.

Final Project will be a Power point presentation on a current topic of interest that is in the field of microbial ecology and systematics. The goal is to utilize the knowledge acquired in this course to critically interpret and analyze a scientific publication (level 5 in Blooms taxonomy). A Rubric will be provided and presentation will be peer reviewed by classmates.

Class interaction will be measured by participation in class meetings and by participation in on-line discussions.

Computer resources:

You will need to have access to email and the web to access assignments.

Blackboard will be used to distribute lectures and assignments

All of these resources are available to GMU students at PWI and elsewhere.

You may also need to read WWW documents in *.pdf (Adobe Acrobat).

Readers are available for free for Windows, Macintosh and many unix platforms at the Adobe website.

Grading Scale

Letter Grade	Percentage	Registrar's Equivalent on a Scale of 0-4.0
A+	> 96	4.0
A	92.0-96.0	4.0
A-	90.0-91.99	3.67
B+	88.0-89.99	3.33
B	82.0-87.99	3.00
B-	80.0-82.0	2.67
C	70.0-77.99	2.00
F	< 70	0.00

Academic Integrity

GMU is an Honor Code university; please see the University Catalog for a full description of the code and the honor committee process. The principle of academic integrity is taken very seriously and violations are treated gravely. What does academic integrity mean in this course? Essentially this: when you are responsible for a task, you will perform that task. When you rely on someone else's work in an aspect of the performance of that task, you will give full credit to those people in the proper, accepted form. When doing homework, the work must be yours. It is totally unacceptable to copy the work of another student in this course in any form.

GMU Email Accounts

Students must use their Mason email account to receive important University information, including messages related to this class. See <http://masonlive.gmu.edu> for more information. Students will need to have access Blackboard for class lectures and assignments,

Other Useful Campus Resources:

Writing Center: A114 Robinson Hall; (703) 993-1200; <http://writingcenter.gmu.edu>

UNIVERSITY LIBRARIES “Ask a Librarian” <http://library.gmu.edu/mudge/IM/IMRef.html>

Counseling and Psychological Services (CAPS): (703) 993-2380; <http://caps.gmu.edu>

University Policies

The University Catalog, <http://catalog.gmu.edu>, is the central resource for university policies affecting student, faculty, and staff conduct in university academic affairs. Other policies are available at <http://universitypolicy.gmu.edu/>. All members of the university community are responsible for knowing and following established policies.