



Course Approval Form

For instructions:
<http://registrar.gmu.edu/facultystaff/catalog-revisions/course/>

Action Requested:

 (definitions available at website above)

Create NEW Inactivate
 Modify (check all that apply below)

Course Level:

Undergraduate Graduate

Title (must be 75% similar to original) Repeat Status Prereq/coreq Grade Mode
 Credits Schedule Type Restrictions Other: _____

College/School: Department:
Submitted by: Ext: Email:

Subject Code: Number: Effective Term: Fall Spring Summer Year
(Do not list multiple codes or numbers. Each course proposal must have a separate form.)

Title: Current
Banner (30 characters max w/ spaces)
New **Fulfills Mason Core Req?** (undergrad only)
 Currently fulfills requirement
 Submission in progress

Credits: (check one) Fixed → Variable → _____ to _____
 Lec + Lab/Rct → or **Repeat Status:** (check one) Not Repeatable (NR)
 Repeatable within degree (RD) → Repeatable within term (RT) → Max credits allowed: (required for RT/RD status only)

Grade Mode: (check one) Regular (A, B, C, etc.) Satisfactory/No Credit Special (A, B, C, etc. +IP)
Schedule Type: (check one) Lecture (LEC) Lab (LAB) Recitation (RCT) Internship (INT)
 Independent Study (IND) Seminar (SEM) Studio (STU)
LEC can include LAB or RCT if linked sections will be offered

Prerequisite(s) (NOTE: hard-coding requires separate Prereq Checking form; see above website):
 Corequisite(s):

Restrictions Enforced by System: Major, College, Degree, Program, etc. Include Code(s).
Equivalencies (check only as applicable):
 YES, course is 100% equivalent to _____
 YES, course renumbered to or replaces _____

Catalog Copy

 (Consult University Catalog for models)

Description (No more than 60 words, use verb phrases and present tense) Introduces students to basic concepts of molecular biology, genetics, molecular evolution, bioinformatics, NextGen Sequencing and Technology. Students should have prior background in genetics and evolution.	Notes (List additional information for the course) <input type="text"/>
Indicate number of contact hours: Hours of Lecture or Seminar per week: <input type="text" value="3"/> Hours of Lab or Studio: <input type="text"/>	
When Offered: (check all that apply) <input checked="" type="checkbox"/> Fall <input type="checkbox"/> Summer <input type="checkbox"/> Spring	

Approval Signatures

Department Approval _____ Date _____ College/School Approval _____ Date _____

If this course includes subject matter currently dealt with by any other units, the originating department must circulate this proposal for review by those units and obtain the necessary signatures prior to submission. Failure to do so will delay action on this proposal.

Unit Name	Unit Approval Name	Unit Approver's Signature	Date
School of Systems Biology	Kylene Kehn-Hall		10/06/16

Undergraduate or Graduate Council Approval

UGC or GC Council Member _____ Provost's Office _____ UGC or GC Approval Date _____

Course Proposal Submitted to the College of Science Curriculum Committee (COSCC)

The form above is processed by the Office of the University Registrar. This second page is for the COSCC's reference. Please complete the applicable portions of this page to clearly communicate what the form above is requesting.

FOR ALL COURSES (required)

Course Number and Title: BIOS 715

Date of Departmental Approval: September 23, 2016

FOR INACTIVATED/REINSTATED COURSES (required if inactivating/reinstating a course)

- Reason for Inactivating/Reinstating:

FOR MODIFIED COURSES (required if modifying a course)

- Summary of the Modification:

FOR NEW COURSES (required if creating a new course)

- Reason for the New Course:
This is one of two new courses that have been developed to support the new Concentration in Biocomplexity and Evolutionary Biology within the Biosciences Ph.D. Program.
 - Relationship to Existing Programs:
None
 - Relationship to Existing Courses:
This course has been modified from EVPP 515: Molecular Environmental Biology. Prerequisites have been added and the content will be taught at a higher level. It will be cross-listed with EVPP 515 with permission of the ESP Department.
 - Semester of Initial Offering:
Fall 2017
 - Proposed Instructors:
Dr. Patrick Gillevet
 - Insert Tentative Syllabus Below
-

Molecular Ecology
BIOS 715/EVPP 515
Robinson Hall, Room 328
4:30-7:10 pm

Instructor: Dr. Patrick Gillevet
Professor, Department of Biology
Director, Microbiome Analysis Center
George Mason University, MSN 4E3,
Manassas, VA 20100
Office: 426 Colgan Hall
703-993-1057
pgillevet@gmu.edu

Office hours: Wednesday 3:00-4:00 pm and by appointment

Phone: Cell: 703-966-2746

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.

Assignment 4: 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.

Class Schedule Fall Semester 2016

Date	Topic	Readings (Chapters)				Assignments	Points
	MOLECULAR BIOLOGY	Beebee/Rowe 2 ND Edition	Baker	Lodish	Freeland		

1	August 31	Introduction	2	1	1	1		
2	September 7	Chemical Foundations		2	2 & 3			
3	September 14	Recombinant DNA I			4			
4	September 21	Recombinant DNA II			9			
5	September 28	Polymerase Chain Reaction		3			Assignment I	15
6	October 5	DNA Sequencing						
		BIOINFORMATICS						
7	October 12	Database Text Search	NCBI				Assignment II	10
8	October 19	Database Sequence Search						
9	October 26	Phylogenetic analysis	MBAC				Assignment III	15
		Molecular Ecology						
10	November 2	Mitochondria	1					
11	November 9	Microsatellites and Population Genetics	5	7		2,3,4		
12	November 16	Conservation & Phylogeography	7	10			Assignment IV	20
	November 2	Thanksgiving Holiday						
13	November 30	Molecular Systematics & Ecology	3 & 9			5		
14	December 7	Presentations					Presentations	30
							Participation	10
							Total Points	100

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.