

BIOL 471.02 – *Computational Methods in Systematics* **Syllabus**

Instructor: Dr. Christopher Hardy **Office:** Roddy 271 **Tel:** 871-2312
Office Hrs: Mo & Tu 1-3, We 10-11 **Web:** <http://herbarium.millersville.edu/471.php>

Required: USB Flash Drive AND ca. \$5 for trip to Longwood Gardens (Sat. Mar 14)

Schedule:

Week	Topic	Assignment / Exercise
Jan 12	Introduction	
Jan 12	Biodiversity Informatics	1. Sources of Biodiversity Data. 2. Simple Mashups
Jan 19		MLK holiday - no class
Jan 26		SLIKS.
Feb 2		SLIKS.
Feb 9	Biogeographic Mapping, Analysis, and Modeling	Georeferencing & Generating Distribution Maps.
Feb 16		1. DIVA-GIS Tutorial. 2. Distribution and Diversity of Wild Potatoes.
Feb 23		Distribution and Diversity of Species Contained within the James C. Parks Herbarium.
Mar 2		Spring Break - no class
Mar 9		Climatic Envelope Modeling.
Mar 16	Phylogenetic Inference	..by hand.
Mar 23		..based on morphology.
Mar 30		..based on DNA.
Apr 6		..based on DNA.
Apr 13	Species Delimitation	Population Aggregation Analysis.
Apr 20		Use in conservation forensics.
May 1	Final Exam (10:15am-12:15pm)	Final Exam

Grading: Final letter grades are assigned automatically based on the percentage of the total possible points you earn over the course of the semester, as follows: A = 93-100%; A- = 90-92; B+ = 87-89; B = 83-86; B- = 80-82; C+ = 77-79; C = 73-76; C- = 70-72; D+ = 67-69; D = 63-66; D- = 60-62; F = below 60%.

Projects (four)	100
Assignments/HW	50
Quizzes (as announced)	30
<u>Final Exam</u>	<u>50</u>
Total Points Possible	230

Objectives: At the successful completion of BIOL 471.02, a student should be able to

1. Understand the science of systematics and how it relates to the our understanding of the evolutionary origins and patterns of biodiversity.

BIOL 471.02 – *Computational Methods in Systematics* **Syllabus**

2. Understand the theory and practice of common computational approaches systematists take in the study of biodiversity.
3. Build an interactive key to a select group of species.
4. Use software for phylogenetic inference.
5. Use software to map and analyze species distributions.
6. Search for and retrieve biodiversity data from Web-accessible biodiversity informatics databases.
7. Understand the basics of molecular systematics and the molecular evolution of genomes tapped for molecular systematics studies.

Special Needs: Inform me if you have any disabilities that may impact your performance in this course. I will accommodate you.

Attendance: Required. -5 pts for every unexcused absence. Quizzes cannot be made up.

Academic Honesty: Each student must adhere to the MU Academic Honesty Policy found in the Student Handbook. Violation results in a zero for the assignment and or expulsion from class.