Syllabus Draft Date: 1/15/2020

Introduction to Computing for Biologists (BIOL 4800)

Spring 2020 Syllabus

Meeting Time:	10:30-11:50 TTh
Location:	Patrick Taylor 1131
Instructor:	Dr. Jeremy Brown
Email:	jembrown@lsu.edu
Office/Lab:	LSA A243/LSB 248
Office Phone:	578-1745
Office Hours:	By appointment
Recommended Textbook:	Practical Computing for Biologists by Haddock and Dunn.
Additional Resources:	Will be posted to Moodle and GitHub.
Course Website:	Moodle/GitHub
Prerequisites:	None
Course Objectives:	This course will provide students interested in biology with practical computing skills including working in a Linux environment, programming in Python, and using version control. These skills should allow students to participate in computationally oriented research, begin writing their own code, and explore new ideas through simulation.
Grading Structure:	Syllabus Agreement – 1% Weekly Assignments (due Mondays by noon) – 69% Final Project – 30% Weekly assignments will form the majority of your overall course grade and will be scored both on successfully completing a task, as well as the structure and cleanliness of your code or solution. Your final project should demonstrate a variety of skills learned during the course. We will discuss potential final project topics later in the semester.

Grading Scale:

A+ ≥ 97	97 > A ≥ 93	93 > A- ≥ 90
90 > B+ ≥ 87	87 > B ≥ 83	83 > B- ≥ 80
80 > C+ ≥ 77	77 > C ≥ 73	73 > C- ≥ 70
70 > D+ ≥ 67	67 > D ≥ 63	63 > D- ≥ 60
F < 60		

Submitting Assignments: In general, weekly assignments and final projects will be submitted through GitHub in order to allow you to practice version control and sharing code. Full details about how to do this will be provided in the first few weeks of class.

Electronic Device Policy: The use of computers is, obviously, essential to this class. However, during class time students should limit themselves to class-related activities and refrain from messaging, social media, shopping, reading the news, watching videos, etc. This policy applies both to the lab computers and any personal electronic devices (laptops, tablets, or phones) that students may bring with them.

Letters of Recommendation: I am generally willing to write letters of recommendation on behalf of students whose attendance, participation, and course performance are exemplary. Writing positive letters is far easier when students excel at taking initiative and show an active interest in course material beyond simply attending class.

Tips for Course Success: **Come to class** – Pay attention – Do the assigned readings and assignments on time – If course material is not clear, ask! – Work with others – Participate during class – Practice the skills learned in class regularly

Make-up Policy: Make-up assignments will only be offered if evidence can be provided for **unavoidable** absences (e.g., severe illness, death in the family, etc.).

Student Expectations: Students are expected to review all assigned material prior to class, to work productively and respectfully with their peers, to pay attention during presentations, and to turn in assignments on time. Each student is expected to spend a **minimum** of 6 hours per week outside of class reading, practicing computing skills, and completing assignments.

Honors Option: Students wishing to obtain honors credit for the course are welcome to speak with me about options for doing so.

Course Schedule
(subject to change!)

Week 1 – Jan 16

- Introduction, Syllabus, and Survey
- Computer Fundamentals

Assignment: GitHub Setup and HPC Account Setup
Reading: Practical Computing, Before You Begin and Ch. 1

Week 2 – Jan. 21, 23

- GitHub
- Practical Computing Advice
- Filesystems
- Introduction to the Unix Command Line

Assignment: Navigating with Unix Commands
Reading: Practical Computing, Ch. 4 and 5

Week 3 – Jan. 28, 30

- Git and Version Control

Assignment: Version Control
Reading: Software Carpentry, Git Tutorial

Week 4 – Feb. 4, 6

- Regular Expressions

Assignment: Regular Expressions
Reading: Practical Computing, Chs. 2 and 3

Week 5 – Feb. 11, 13

- Computational Thinking
- Advanced Unix Command Line
- Bash Scripts

Assignment: Pipelines and Scripts
Reading: Practical Computing, Chs. 6 and 16

Week 6 – Feb. 18, 20

- Introduction to Python
- Standard Python Variables
- Python Syntax

Assignment: First Python Program
Reading: Practical Computing, Chs. 7 and 8

Week 7 – Feb. 27

- MARDI GRAS
- Setup Final Project Teams

Assignment: Project Team

Week 8 – March 3, 5

- Complex Python Variables

Assignment: TBD (Python)
Reading: Practical Computing, Ch. 9

Week 9 – March 10, 12

- Python Functions

Assignment: TBD (Python)
Reading: Practical Computing, Ch. 10

Week 10 – March 17, 19

- Introduction to Object-Oriented Programming

Assignment: TBD (Python)
Reading: Practical Computing, Ch. 11

Spring Break

Week 11 – March 31, April 2

- More on Object-Oriented Programming

Assignment: TBD (Python)
Reading: Practical Computing, Ch. 12

Week 12 – April 7, 9

- Exceptions and Exception Handling

Assignment: TBD (Python)
Reading: Practical Computing, Ch. 13

Week 13 – April 14, 16

- Advanced Programming Techniques (e.g., recursion, modularity, trees)

Assignment: TBD (Python)
Reading: Practical Computing, Ch. 14

Week 14 – April 21, 23

- High Performance Computing

Assignment: TBD
Reading: TBD

Week 15 – April 28, 30

- Work on final projects

Final Project Presentations: Wednesday, May 6, 3-5 PM

Please sign and return the statement below by the 2nd class (Tues., Jan. 21st).

Statement of Syllabus Receipt and Agreement:

I, _____ , confirm that I have received the syllabus for Introduction to Computing for Biologists (BIOL 4800) taught by Dr. Jeremy Brown in the spring semester of 2020. I further confirm that I have read it and agree to its contents, including the grading structure. I also agree to abide by the LSU Code of Student Conduct. I recognize that this syllabus obligates Dr. Brown to abide by the stated grading structure, to return materials promptly, and to make himself available to answer questions during class and office hours.

_____ _____ _____

Printed Name Signature Date