

Spring 2017 Syllabus

Course Code: BI 104-01



I. Instructor Information

Mark Speck, PhD
Postdoctoral Fellow/Adjunct Faculty
Henry Hall Lab 9
2PM–5PM
mark.speck@chaminade.edu

II. Course Information

F 9:30AM–10:20AM
Hale Hoaloha 101

III. Required Text

No text required

IV. Course Title: BI 104 Digital Biology

V. Course Description: This course is intended to be an examination on the role of technology and computational tools available to modern life scientists. Students will be exposed to a breadth of applications used in the information age to answer important biological questions across multiple disciplines. Computers enable scientists to improve data quality and laboratory efficiency more effectively than just a decade ago. Computational tools help researchers probe and model complex biological phenomena and more quickly react and adjust to changes in their fields of science. It's a quickening of discovery, which can increase breakthroughs, and health benefits from research by transdisciplinary teams. Although the Digital Biology course is an introduction to data sciences and scientific questions and how information technologies have impacted biology it is now considered an emerging discipline. In general, digital biology can be grouped into three areas as recently defined at the symposium, *Digital Biology: the Emerging Paradigm*, held at the National Institutes of Health in Bethesda Maryland, "1) scientific data integration, 2) multi-scale biological monitoring and 3) the networking of science." The expectation is that students will see the amazing scope of information directly available to researchers and the need to integrate other disciplines (e.g. computer science or information technology) into solving challenging biological questions.

VI. Learning Outcomes

At the conclusion of BI 104, students will:

1. Describe how vast amounts of data are being generated and integrated into science.
2. Describe or conceptualize how data is used to model scientific information from the cellular to the global scale.
3. Describe how various scientific disciplines are now integrated to solve biological questions.
4. Describe the six different levels of scientific questions.

VII. Course Elements

Grading will be based on student points earned from attendance, assigned homework, and two group projects. Homework will be discussed in class with assignments selected randomly from

students at the beginning of class. Projects will focus on material and sources discussed in class and using a team approach to problem solving. Groups will be expected to present their work in class and lead any subsequent discussions.

VIII. Grading Scale

A	Excellent	>90%	180-200 points or more
B	Good	>80%	160-179 points
C	Average	>70%	140-159 points
D	Below Average	>60%	120-139 points
F	Failure	<60%	119 points or less

IX. Assignments and Grading

<u>Specific Assignment</u>	<u>Points</u>	<u>% Of Grade</u>
Attendance	20	10%
Homework	80	40%
Group Projects	100	50%

XI. Additional Departmental and University Policies

1. Electronic Devices

Use of music devices and cell phones is prohibited during all Natural Science and Mathematics classes at Chaminade, unless specifically permitted by your instructor. Use of cellphones and music devices in laboratories is a safety issue. In addition, use of cellphones and music devices in any class is discourteous and may lead to suspicion of academic misconduct. Students who cannot comply with this rule will be asked to leave class and may be subject to laboratory safety violation fines. You will be asked to leave class and marked absent if you do not comply. This will negatively affect your grade. Please refer any questions to the Dean of Natural Sciences and Mathematics.

2. ADAA Statement

2.1 Pursuant to several federal and state laws, including the Americans with Disabilities Act of 1990, as amended by the ADA Amendments Act of 2008, and Section 504 of the Rehabilitation Act of 1973, all qualified students with disabilities are protected from discrimination on basis of disability and are eligible for reasonable accommodations or modifications in the academic environment to enable them to enjoy equal access to academic programs, services, or activities. If a student would like to determine if they meet the criteria for accommodations, they should contact the Counseling Center at 808-735-4845 for further information.

3. Attendance & Tardiness

3.1 Students are expected to attend regularly all courses for which they are registered. Students should notify their instructors when illness or other extenuating circumstances prevents them from attending class and make arrangements to complete missed assignments. Notification may be done by emailing the instructor's Chaminade email address, calling the instructor's campus extension or by leaving a message with the instructor's division office (Natural Science and Math 1 (808) 440-4204). It is the instructor's

prerogative to modify deadlines of course requirements accordingly. Any student who stops attending a course without officially **withdrawing** may receive a failing grade.

3.2 Unexcused absences equivalent to more than a week of classes may lead to a grade reduction for the course. Any unexcused absence of two consecutive weeks or more may result in being **withdrawn** from the course by the instructor, although the instructor is not required to **withdraw** students in that scenario. Repeated absences put students at risk of failing grades.

3.3. Tardiness

Tardiness; Class begins at 9:30 AM and ends at 10:20 AM; there is no accepted variation to this schedule

4. Policy on Make-Up Tests

There are no extra points; the work expected from you in this course should be sufficient to obtain your desired grade. Make-Up exams will be decided on a case-by-case basis but are typically not given.

5. Policy on Communication

5.1 The University provides a Chaminade email address for all students. Official Chaminade communications will be sent to the students' Chaminade email address and instructors will use only this email to communicate with students. It is the responsibility of the student to check their email frequently. Report email-related problems to the Helpdesk at 808-735-4855 or helpdesk@chaminade.edu.

6. Laboratory Safety Information

The following guidelines are established to provide instructions in maintaining safety for students, staff, and faculty while using any of the science laboratories at Chaminade University. The Division of Natural Sciences and Mathematics (NSM), along with the University Environmental Safety Office are responsible for enforcing the regulations set forth in the current Student Handbook. Queries should be addressed to: Dean of Natural Sciences and Mathematics (808) 440-4204; Environmental Safety Officer (808) 739-4811

7. Title IX Declaration

Chaminade University of Honolulu recognizes the inherent dignity of all individuals and promotes respect for all people. Sexual misconduct, physical and/or psychological abuse will NOT be tolerated at CUH. If you have been the victim of sexual misconduct, physical and/or psychological abuse, we encourage you to report this matter promptly. As a faculty member, I am interested in promoting a safe and healthy environment, and should I learn of any sexual misconduct, physical and/or psychological abuse, I must report the matter to the Title IX Coordinator. Should you want to speak to a confidential source you may contact the following:

- Chaminade Counseling Center! 808 735-4845.
- Any priest serving as a sacramental confessor or any ordained religious leader serving in the sacred confidence role.

8. Academic Honesty

Students are expected to have read and to abide by the "Student Rules of Conduct" which are available in your copy of Chaminade University's Student Handbook. Cheating in the form of plagiarism, collusion, deception and will not be tolerated and will negatively affect your grade.

9. The instructor may modify elements of this syllabus according to the operational needs of the class.

Course content with tentative schedule

Week	Dates	Lecture Topic
1	20 Jan	Scientific Questions
2	27 Jan	Descriptive Questions
3	3 Feb	Descriptive Questions, continued
4	10 Feb	Exploratory Questions
5	17 Feb	Exploratory Questions, continued
6	24 Feb	Inferential Questions
7	3 Mar	Inferential Questions, continued
8	10 Mar	Group projects
9	17 Mar	Predictive Questions
10	24 Mar	Spring Recess
11	31 Mar	Predictive Questions, continued
12	7 Apr	Causal Questions
13	14 Apr	Causal Questions, continued
14	21 Apr	Mechanistic Questions
15	28 Apr	Mechanistic Questions, continued
16	5 May	Group projects
17	May	Group projects, continued