

**San José State University**  
**Computer Science Department**  
**CS/BIOL 123A Bioinformatics I, Sec 01 & Sec 02, Fall 2022**

Course and Contact Information

<b>Instructor:</b>	Leonard Wesley
<b>Office Location:</b>	MH 212
<b>Telephone:</b>	408.924.5287 (Office, however, I will not be on campus very frequently during the Fall 2022 semester.)
<b>Email:</b>	Leonard.Wesley@sjsu.edu
<b>Office Hours:</b>	Tuesdays 6:30AM – 8:30AM, Zoom Link For Office Hours For Fall 2022.: <a href="https://sjsu.zoom.us/j/81579190359?pwd=RIMwUGduVy9rSUFMeVZnU2YyMTdlZz09">https://sjsu.zoom.us/j/81579190359?pwd=RIMwUGduVy9rSUFMeVZnU2YyMTdlZz09</a> Passcode 355621
<b>Class Days/Time:</b>	Section 01: Tuesdays and Thursdays 9:00AM – 10:15AM Section 02: Tuesdays and Thursdays 10:30AM – 11:45AM
<b>Classroom:</b>	MH 422. Both sections.
<b>Prerequisites:</b>	BIOL 30 and BIOL 31, or CS 46A and CS 46B

**CoS COVID-19 and Monkeypox:**

Students registered for a College of Science (CoS) class with an in-person component should view the [CoS COVID-19 and Monkeypox Training](#) slides for updated CoS, SJSU, county, state and federal information and guidelines, and more information can be found on the [SJSU Health Advisories](#) website. By working together to follow these safety practices, we can keep our college safer. Failure to follow safety practice(s) outlined in the training, the SJSU Health Advisories website, or instructions from instructors, TAs or CoS Safety Staff may result in dismissal from CoS buildings, facilities or field sites. Updates will be implemented as changes occur (and posted to the same links).

**Catalog Course Description:**

Introduction to the main public domain tools, databases and methods in bioinformatics. Analysis of algorithms behind the most successful tools, such as the local and global sequence alignment packages, and the underlying methods used in fragment assembly packages. Solution of complex biological questions requiring modification of standard code.

**Learning Outcomes:**

Upon successful completion of this course, students will be able to:

ISBN-10: 0-471-47878-4 (cloth)

### **Computational Resources:**

Students are required to make sure that they have access to sufficient UNIX, Windows, or Mac based computational resources (e.g., computers and software) to carryout assignments in the course. An attempt to offer the course in a classroom with sufficient computation resources will be made by the department to support classroom instruction and demonstrations. However, students should be prepared to bring their portable laptops to class.

### **Course Requirements and Assignments:**

#### **Course Logistics**

Students should expect to spend approximately nine (9) hours per week (on average) outside of the classroom preparing for and completing the assigned course work. This includes reading papers, viewing videos as appropriate, completing homework and programming exercises, and so forth. The amount of time that a student actually spends studying and completing course work will depend on individual skills and the time that the student actually allocates to the course. The nine (9) hours per week estimate is based on previous experiences of the instructor and students. So please plan and schedule accordingly.

but not limited to internships, labs, and clinical practica. Other course structures will have equivalent workload expectations as described in the Syllabus/Syllabus.

**Quizzes and Exams:**

There will be three quizzes and one midterm exam all of which will count toward a student's final grade as specified in the "Grades" section below. During quizzes and exams, communication with other individuals via any means is strictly prohibited without the express permission of the instructor. Violations will be met with the full impact of SJSU's academic integrity policy and procedures.

**Full Semester Project:**

A full semester team-based challenging project will take the place of a cumulative final exam. The grade that each member of the team received might not be the same for all team members. Rather, it will depend on the amount and quality of the contribution from each team member. See the rubric for the semester projec

sooner). Assignments, quizzes, and exams will typically be returned (i.e., posted) to Canvas, or manually handed back in class. General questions about the topics covered in assignments, exams, exercises, programming assignments, and the course are permissible at any time.

**Tentative course calendar of assignment due dates & exam dates:**  
 (Please note that course calendar below, and its content is “subject to change with fair notice”)

Week and Class Mtg #	Tue	Thur	Module # & Name	TOPIC	Assignment  See Canvas For Module & Weekly Assignment Details and Due Dates
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Week 1	8/23	8/25	&
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Week 3	9/6	9/8	#2 Bioinformatics DBs	9/6: - NCBI Gene, Protein, and Nucleotide DBs  9/8: - Possible Projects - Entrez DB - Ensembl DB	Learning Module #2
Week 4	9/13	9/15	#2 Bioinformatics DBs	9/13: - Entrez DB - Ensembl DB  9/15: <b>In-Class Exercise 1 Covers topics in Week 1 thru Week 4</b>	Learning Module #2  The new deadline for students to Add or Drop classes via MySJSU with no petition is September 15 (per University Policy S22r6)
Week 5	9/20	9/22	#2 Bioinformatics DBs	9/20: - Ensembl DB - UCSC Genomic DB  9/22: - UCSC Genomic DB	Learning Module #2  Project Proposals Due Wed 9/21
Week 6	9/27	9/29	#3 Alignment	9/27: - Pairwise Alignment  9/29: - <b>Quiz 1 (~40 mins): Covers Topics Week 1 thru Week 5</b>	Learning Module #3

Week 7      10/4      10/6      #3  
Alignment

Week

Week 12	11/8	11/10	#4 Phylogeny	11/8: <b>In-Class Exercise 3 Topics Covered Week 6 to Week 10</b>  11/10: <b>Quiz 2 (~40 mins): Covers Topics Week 5 thru Week 10</b>  Molecular Phylogenetic Trees	Learning Module #4
Week 13	11/15	11/17	#4 Phylogeny  &  #5 Bioinform atic Frontiers	11/15: - Molecular Phylogenetic Trees  11/17: - CRISPR-CAS9	Learning Module #4 & Learning Module #5
Week 14	11/22	11/24	#5 Bioinform atic Frontiers	11/15: - CRISPR-CAS9 cont.  11/17 <b>THANKSGIVING</b>	Learning Module #5
Week 15	11/29	12/1	#5 Bioinform atic Frontiers	11/29: - CRISPR-CAS9 cont.  12/1: <b>In-Class Exercise 4</b> (Work on Projects, Q&A)	Learning Module #5
Week 16	12/6	N/A	#5 Bioinform atic Frontiers	12/6: <b>Quiz 3: Covers Topics Week 9 thru Week 15</b>	Learning Module #5
			<b>Final Project Report and Code Due To Canvas Wednesday December 14, 2022 By 11:59PM</b>		





chat, tweet, web-surf on the internet, and so forth. If you cannot follow these simple rules, please do not enroll in this class.

Lab Mode: This is when <BUILDING AND ROOM NUMBER> is used as a computer lab for in-class exercises, Canvas exams, and related assignments that involve the use of computers. Use the computers and share your ideas and solutions with your classmates except during exams or when otherwise instructed. For in-class exercises,

Grading Percentage Breakdown (NOTE: Ranges might change if point totals change)

Grading Percentage Breakdown		
Percent of Total Points	Points	Letter Grade
96.66%	t 1063	A plus
93.33%	t 1027	A
90.00%	t 990	A minus
86.66%	t 953	B plus

plus

## **Late Assignment Submission**

Late assignments will receive a 25% point deduction of a graded assignment for each 24hr period after the submission deadline. For example, if an assignment is worth 10 points, and the grade for the assignment is 8/10, and the assignment is submitted one day late, then the point deduction equals 2.5, and the final grade for the assignment is  $\text{MAX}(0, 8 - 2.5) = \text{MAX}($