SJSU SAN JOSÉ STATE UNIVERSITY

College of Science · Computer Science

Advanced Topics in Computer Science

CS 286

Spring 2026 Section 01 In Person 3 Unit(s) 01/22/2026 to 05/11/2026 Modified 02/05/2026

Contact Information

Instructor: Dr. Sayma Akther

Email: sayma.akther@sjsu.edu
Office: MH 213

Office Hours:

TuTh 9:30AM - 10:30AM (MH 213)

Course Information

Course Description and Requisites

Selected topics in computer science. Topics vary each semester and may be repeated for a maximum of 6 units.

Prerequisite(s): Suitable upper division background in mathematics and computer science as set by instructor. Graduate standing. Allowed Declared Major: Computer Science, Bioinformatics, Data Science.

Letter Graded

Classroom Protocols

To foster a **positive and productive** learning environment, please keep the following policies in mind:

Course Materials and Updates

- All course materials will be available on **Canvas**: http://sjsu.instructure.com.
- Regularly check **MySJSU** and your **SJSU email** for important announcements and updates.

Recording and Privacy Policies

- **Recording of class activities, including lectures, is only permitted with prior instructor approval.**
- **Sharing or distributing class recordings is strictly prohibited.**
- All **instructor-generated materials** (e.g., syllabi, lectures, presentations) are protected by copyright. Unauthorized distribution may lead to referral to the **Student Conduct and Ethical Development** office.

Classroom Etiquette and Respect

- Be **respectful** and courteous to your peers and instructor.
- Avoid any form of **interruptive or disruptive behavior** during class.
- Electronic devices should be used **only for course-related activities**.
- The **full Code of Conduct** is available on **Canvas** for reference.

Academic Integrity: Plagiarism and Cheating

- **Homework Assignments**: Any instance of plagiarism or academic dishonesty will result in a **zero** for that assignment.
- **Exams**: Cheating on an exam will result in a **failing grade (F) for the entire course**.
- As per **University Policy F15-7**, all cases of cheating or plagiarism must be reported to the university.

By adhering to these policies, we can maintain a **collaborative, fair, and engaging** learning experience for everyone.

Program Information

Diversity Statement - At SJSU, it is important to create a safe learning environment where we can explore, learn, and grow together. We strive to build a diverse, equitable, inclusive culture that values, encourages, and supports students from all backgrounds and experiences.

Course Learning Outcomes (CLOs)

By the end of the course, students will be prepared to design, implement, and evaluate AI-powered wearable health solutions that enhance public health and everyday well-being. B y the end of the course, students will be able to:

1. *Understand Wearable Health Technologies* – Explain the role of wearable sensors in mobile health (mHealth), their capabilities, and limitations in public health and personal wellness.
2. *Process and Analyze Health Signals* – Apply signal processing techniques to extract meaningful insights from physiological data collected via wearable devices.
3. *Develop AI Algorithms for Wearable Data* – Implement machine learning and deep learning models for tasks such as activity recognition, anomaly detection, and predictive health analytics.
4. *Design AI-Powered mHealth Systems* – Architect end-to-end AI solutions integrating wearable sensor data, cloud/edge computing, and mobile applications.
5. *Evaluate AI-Based Health Solutions* – Assess the accuracy, reliability, and effectiveness of AI-driven wearable health applications in real-world scenarios.
6. *Address Ethical and Privacy Concerns* – Analyze ethical considerations, data privacy regulations (e.g., HIPAA, GDPR), and responsible AI practices in digital health.

7. *Explore Industry Applications and Innovations* – Investigate how AI-powered wearable health solutions are used in industry settings (e.g., fitness tracking, disease monitoring, telemedicine).
8. *Apply AI in Public Health Contexts* – Develop AI models that support population health monitoring, early disease detection, and personalized healthcare interventions.
9. *Understand Business and Commercialization Aspects* – Explore the market trends, startup opportunities, and business models for AI-driven wearable health technologies.
10. *Work on Real-World mHealth Projects* – Design and implement a hands-on project involving AI-powered wearable health data analytics

Course Materials

Textbook

Mobile Health - Sensors, Analytic Methods, and Applications, by James M. Rehg, Susan A. Murphy, Santosh Kumar, published by Springer in 2017.

ISBN-10: 3319513931

ISBN-13: 978-3319513935

Other Readings

Artificial Intelligence: A Modern Approach" by Stuart Russell and Peter Norvig

This is a comprehensive text that covers a wide range of AI topics and is often considered a standard

in university courses.

Deep Learning" by Ian Goodfellow, Yoshua Bengio, and Aaron Courville

This book is essential for understanding the fundamentals of deep learning, a key subset of AI

Course Requirements and Assignments

Assignments/Homework (10%)

Weekly or bi-weekly assignments based on lecture content and hands-on exercises.

Late Submission Policy: Marks will be gradually deducted over time for late submissions.

Exam

Mid-term (25%)

Final (25%)

Project

Mid Demo (20%)

Final Demo (20%)

Grading Information

A+	97 and above
A	93-96
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

University Policies

Per University Policy S16-9 (PDF) (http://www.sjsu.edu/senate/docs/S16-9.pdf), relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for recording of class, etc. and available student services (e.g. learning assistance, counseling, and other resources) are listed on the Syllabus Information (https://www.sjsu.edu/curriculum/courses/syllabus-info.php) web page. Make sure to visit this page to review and be aware of these university policies and resources.

Course Schedule

The schedule may change with advance notice and will be announced on Canvas.

Week	Date	Day	Topic	Activities / Notes
1	Jan 22	Thu	Course Introduction	Syllabus overview, expectations
2	Jan 27	Tue	Introduction to Wearable Sensor Technologies	In -class activity
	Jan 29	Thu	mHealth & Sensor Data	In -class activity
3	Feb 3	Tue	Wearable Sensors in Real Life	**HW1 Assigned**
	Feb 5	Thu	Physiological Signals & Data Acquisition	**Initial project discussions**
4	Feb 10	Tue	Hands-on Sensing of wearable AI	**HW1 Due**
	Feb 12	Thu	Visualization-Driven AI	**HW2 Assigned**, Project group discussion, **Exam 1 declared**
5	Feb 17	Tue	Sensor Data Acquisition and Noise Removal	Hands-on dataset analysis
	Feb 19	Thu	Feature Engineering for Health Applications	**HW2 Due**
6	Feb 24	Tue	Wearable AI Models 1	midterm review;Project Presentation Schedule
	Feb 26	Thu	**Midterm Exam**	—
7	Mar 3	Tue	Classical ML Models	in class activity
	Mar 5	Thu	ML for Wearable Health	Project dataset discussion

Week	Date	Day	Topic	Activities / Notes
8	Mar 10	Tue	Model Evaluation	In-class activity
	Mar 12	Thu	Advanced ML Techniques for Wearable Health	Research paper Peer evaluation and feedback
9	Mar 17	Tue	Probabilistic Models for Wearable Health	HW3 Assigned
	Mar 19	Thu	Finalizing project groups & objectives	Mid-Project Evaluations
10	Mar 24	Tue	Finalizing project groups & objectives	Mid-Project Evaluations
	Mar 26	Thu	Finalizing project groups & objectives	Mid-Project Evaluations
11	Mar 31	Tue	Spring Recess	No class
	Apr 2	Thu	Spring Recess	No class
12	Apr 7	Tue	Deep Learning Foundations	Mid-Project Evaluations
	Apr 9	Thu	Deep Learning Models for Wearable Health	In class activity
13	Apr 14	Tue	AI models for Wearable Health	In class activity
	Apr 16	Thu	Advanced AI Topics	
14	Apr 21	Tue	Final Project Evaluations	Project Demo (Session 2): Teams 1–3
	Apr 23	Thu	Final Project Evaluations	Project Demo (Session 2): Teams 4–6

Week	Date	Day	Topic	Activities / Notes
15	Apr 28	Tue	Final Project Evaluations	Project Demo (Session 2): Teams 7–9
	Apr 30	Thu	Final Project Evaluations	Project Demo (Session 2): Teams 10–11
16	May 5	Tue	AI Wrap-up Lecture	In class activity
	May 7	Thu	Review Session	Comprehensive course review
Finals	TBA	—	**Final Exam**	Covers full course content