

SPK-001-57 Evolution of Electronics

Course Outline: If we look around us, most gadgets and devices that play an almost indispensable role in our everyday life is built on electronic technology. This ranges from simple calculators to complex medical equipment such as an Electrocardiogram. As the world gets more and more automated, the footprint of electronics keeps becoming larger. This seminar will provide a historical perspective (worth more than 100 years) of the evolution of electronic devices beginning from the invention of the vacuum tube (by J. A. Fleming) in 1904 to today's cutting edge inventions in microprocessor technology that will find its way into our society in the near future. Several electronic systems will be provided as examples throughout the course, including applications where the role of electronics is sometimes not so obvious. The trajectory of future electronic research will be discussed based on current needs and constraints. Contact activities for the course will include group discussions and other video demonstrations dealing with the history of electronics. Students will also be required to write a research paper on an electronic technology of their choice (with inputs from the instructor). As part of this assignment, they will be required to read and understand relevant literature, identify significant research questions, propose potential solutions (if possible) and present it to a general audience (in both oral and written form). The students will also gain experience in critiquing their peers work through the peer-review of the research paper and the presentation.

Course Learning Outcomes

- (a) Students will be able to formulate a research question with specific emphasis on electronics technology (GE PLO 1)
- (b) Be able to effectively perform a literature survey using online and other campus resources (GE PLO 2)
- (c) Effectively communicate with a diverse audience in both written and oral forms (GE PLO 3)
- (d) Constructively critique their peers work. (GE PLO 2)
- (e) Work effectively in diverse groups with an emphasis on synergy. (GE PLO 3)

Course Materials: There is no required textbook for this class and all required materials including research papers and online videos will be posted on CatCourses. The class will cover the basics of navigating through CatCourses.

Number of units: 4

When: TR 3:30 - 5:20 pm

Where: GRAN 145

Instructor: Prof. Sushma Shrinivasan

Office Hours: TR 2:15 - 3:15 pm or by appointment

Office: AOA 143

Email: sshrinivasan@ucmerced.edu; **Phone:** (209) 228 3043

Grading

- Attendance: 10%
- Class participation: 10%
- Mid-semester research proposal: 15%
- Mid-semester presentation: 15%

- Final research paper: 25%
- Final Presentation: 25%

The in-class activities, discussion and the assigned reading outside of class will culminate in a research paper (10 pages including references) that will be turned in at the end of the semester. The paper will formulate a research question that is relevant to the topic of the seminar, perform an in-depth literature survey and provide potential solutions (if relevant). In preparation for this final paper, the students will submit a mid-semester research proposal that will discuss the research question along with its importance and outline the methods that will be adopted to answer the formulated question. The students are required to work closely with the instructor to formulate their research question in such a way that it is worthy of a final paper for the class. Students will also be required to present their work (both for the proposal and the final paper) in-class. The mid-semester presentations will be 10 minutes and the final presentations will be 20 minutes with additional time for questions. The assignments will be uploaded through CatCourses to Portfolium ePortfolios. Portfolium is a popular digital portfolio (ePortfolio) service that allows students to build a portfolio for showcasing their skills, extracurricular activities, projects, and school work in a professional way. Students can share the portfolio for graduate school, potential employers, and other networking. The online service is available to students through CatCourses while they are at UC Merced and through Portfoliums website after they graduate at no cost to the student.

The instructor reserves the right to change the grading policy and syllabus depending on the overall course progress but any change will be communicated in advance to the students.

Academic Dishonesty Statement

- Each student in this course is expected to abide by the University of California, Merced's Academic Honesty Policy. Any work submitted by a student in this course for academic credit will be the student's own work.
- You are encouraged to study together and to discuss information and concepts covered in lecture and the sections with other students. You can give "consulting" help to or receive "consulting" help from such students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an e mail, an e mail attachment file, a diskette, or a hard copy. Should copying occur, both the student who copied work from another student and the student who gave material to be copied will both automatically receive a zero for the assignment. Penalty for violation of this Policy can also be extended to include failure of the course and University disciplinary action.
- During examinations, you must do your own work. Talking or discussion is not permitted during the examinations, nor may you compare papers, copy from others, or collaborate in any way. Any collaborative behavior during the examinations will result in failure of the exam, and may lead to failure of the course and University disciplinary action.

Accessibility Statement: University of California, Merced is committed to creating learning environments that are accessible to all. If you anticipate or experience physical or academic barriers based on a disability, please feel welcome to contact me privately so we can discuss options. In addition, please contact Student Accessibility Services (SAS) at (209) 228-6996 or disabilityservices@ucmerced.edu as soon as possible to explore reasonable accommodations. All accommodations must have prior approval from Student Accessibility Services on the basis of appropriate documentation.

If you anticipate or experience barriers due to pregnancy, temporary medical condition, or injury, please feel welcome to contact me so we can discuss options. You are encouraged to contact the Dean of Students for support and resources at (209) 228-3633 or <https://studentaffairs.ucmerced.edu/dean-students>.