

This is a web based syllabus and is best viewed/utilized on-line

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**Course Description:** Introduces the methods used to manufacture Micro and Nano technologies. Traces semiconductor processing from raw material to a finished integrated circuit using planar technology. Introduces the processes and equipment used to create devices on the micro and nano scale. Emerging applications of MEMS and Nanotechnology are discussed.

This course is part of the introduction to the MT degrees and certificates, and complements MT 101 and MT 102. The three course set is required for the AAS degree and the Certificates of Completion. MT104 should be taken instead of this course for the certificate and option in Solar Voltaics.

**Credits:** 1

**Text Book:** Introduction to Semiconductor Manufacturing Technology, Xiao

**Prerequisites:** none

**Course Objectives:**

- Describe basic construction sequence of micro and nano-electronic devices, and the processes used in their manufacture, with industry professionals.
- Use understanding of emerging uses and opportunities with MEMS and Nanotechnology in everyday life.
- Use developed abilities and habits in the information methods of the industry to communicate and find information on: business news, processes, advances, technical data, etc.

**Instructional Program:** Classes will mainly involve discussions of the reading assignments, but will also include some lectures and videos. Outside reading will be assigned and should be completed prior to the next class session. Classes will also have problem sessions and tests over the material covered in the course. Each student will create a journal of news items related to the semiconductor industry and articles that they have read during the term.

In the online version of this course the lectures are presented as web pages, but we will still have the same discussions, quizzes and assignments, emailing files, and using the discussion boards and other features of the Desire2Learn program.

This class is cross-listed with another section (combined Mon/Tues with the Thurs/Fri sections). This means that students enrolled in the other section of this class will be able to see your discussion board posts and may be present in online office hours (web conferences). You must let me know if you would prefer not to be visible to students enrolled in the other section of this class and I will take measures to prevent this.

**Grading:** Course grades will be assigned on the basis of the points earned by each student during the term. The approximate distribution of points is:

<u>Grade Components</u>		<u>Grade Scale</u>	
Participation	20%	88 – 100% of total points	A
Quizzes	10%	75 – 87% of total points	B
Homework	30%	65 – 74% of total points	C
Journal	20%	55 – 64% of total points	D
Final Exam	20%	< 55% of total points	F

**Tentative Course Schedule:**

Week	Topic	Reading
1	CMOS Process Flow	Ch. 2.4, 13, 14
2	Oxidation, Doping, Deposition, Planarization	Ch. 5, 7.7.1, 8, 10, 11, 12
3	Photolithography, Etch	Ch. 6,7.7.2, 9
4	Packaging, Emerging Technology, exam	Ch. 2.5-6, 3.6, 4.6, 5.8, 6.4, 8.6, 9.6, 10.10, 12.6, 13.6, 14.5

- Reading is due before the class meeting covering the topic. This is an introductory class; you don't need to pick up all the technical details. Pay attention to the vocabulary and relationships.

**Other:**

- Assignments and exams can only be made up by prearrangement.
- On-campus classes: tests and quizzes are closed book, one hand written crib sheet (8.5"x11") allowed. Distance-learning classes: there are no restrictions, but you will find the tests and quizzes much easier if you prepare a crib sheet.
- Assignment/exam calendars may be changed in response to the weather or institutional problems.
- Students who wish to make an auditory or visual recording of any portion of the class must speak with the instructor ahead of time. Any such recording is for personal use only. It may not be shared, shown to others, copied, uploaded to the Internet, and/or distributed, EVER! Sharing of recorded content is a violation of Oregon state law and of the [PCC Student Code of Conduct Policy and Procedures](#) [www.pcc.edu/student-conduct/conduct/student-code-of-conduct-policy-and-procedures/].
- If you have an accommodation form from [Disability Services \(DAS\)](#) [www.pcc.edu/resources/disability], please make arrangements to meet with me privately at the beginning of the term to discuss your needs.
- Grades are assigned based on the [PCC grading policy](#) [http://www.pcc.edu/resources/academic/standardspractices/AcademicStandardsandPractices-GradingGuidelines.html]. Students should be aware of the grading options and the associated deadlines.
- Academic Integrity: Submitting improperly cited work copied from other sources is a violation of PCC's [Code of Student Conduct](#) [http://www.pcc.edu/about/policy/student-rights/documents/student-conduct.pdf] and [Academic Integrity policy](#)[http://www.pcc.edu/about/policy/student-rights/documents/academic-integrity.pdf]. All work submitted (homework, presentations) should be the student's original work. Any assignment in violation will receive a zero.
- Here are some other items you should know as a PCC student: <http://catalog.pcc.edu/handbook/s704-syllabus-standardsforcreditcourses/>