

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 silicon solar cells. Traces cell processing from raw material to a finished product using planar technology. Introduces the processes and equipment used to create pure single crystal silicon wafers and the processes used to form the solar devices on top of these substrates.

This course is part of the introduction to the MT degree option and certificate in Photo Voltaics, and complements MT 101 and MT 102. The three course set is required for the AAS degree and the Certificates of Completion. MT103 should be taken instead of this course for the certificate and degree in Microelectronics Technology.

Credits: 1

Text Book: <http://www.pveducation.org/pvcdrom>. Recommended: Microchip Fabrication, Peter Van Zant

Prerequisites: none

Course Objectives:

- Describe the single crystal wafer substrate formation sequence and the processes involved with industry professionals.
- Describe the basic construction sequence of a solar cell and the processes used in its manufacture with industry professionals.
- 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 Blackboard program.

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/Quizzes/Homework	60%	88 – 100% of total points	A
Journal	20%	75 – 87% of total points	B
Final Exam	20%	65 – 74% of total points	C
		55 – 64% of total points	D
		< 55% of total points	F

Tentative Course Schedule:

Module	Topic	Reading
1	PV Cell overview, Assembly, Energy conversion/efficiency	Web, Ch. 2, 3, 9
2	Process flow, Wafering, Cell processing (etch, dope, oxidize)	Web, Ch. 4
3	Cell processing (etch, deposit, screen pattern, fire, test/sort)	Web, Ch. 10, 11, 12, 17
4	Module Assembly, Special topics, Review, Exam	Web, Ch. 16, 10, 19

- 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, exams and quizzes 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.
- 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, and as a human being: <http://catalog.pcc.edu/handbook/s704-syllabus-standardsforcreditcourses/>