MT 223 Vacuum Technology - Syllabus Fall 2021

Instructor:	Eric Kirchner		
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Office Hours:	See PCC staff web directory.		Fri 8 AM – 9:50 PM D2L

Course Description: Covers the theory and practice of vacuum as used in semiconductor manufacturing. Topics include vacuum principles, vacuum systems and their components such as pumps, gauges and valves, and finally vacuum trouble-shooting.

Credits: 3
Prerequisites: MT 101, MT102, MT103 or MT104, CH 100 or higher and WR 121.
Optional Textbook: Any general chemistry book covering ideal gas laws, Intro to Vacuum Technology by D.Hata (out of print but available on reserve in the library)

Course Outcomes:

- Apply basic vacuum principles such as the behavior of gas and behavior of a vacuum system while evaluating a pump down.
- Consider basic mechanisms and characteristics of vacuum system components such as pumps, valves and gauges while troubleshooting.
- Be able to perform basic operations of a vacuum system such as measuring pressure correctly, venting a vacuum system, a rough pump down and a high vacuum pump down with correct valving sequence.
- Be able to perform simple maintenance of vacuum systems including installation or replacement of various pipes, fittings, valves, gauges, and simple pumps.
- Be able to perform vacuum trouble-shooting including leak isolation and detection.

Instructional Program: MT223 Vacuum technology will be delivered in a lecture and lab format. The lecture portion on the course may include formal presentations by the instructor followed by discussion and problem sessions and tests over the material covered in the course. Reading and/or homework will be assigned and should be completed prior to next class session. The laboratory, three hours per week, will include a series of experiments demonstrating gas laws and analyzing the behavior and operation of a high vacuum system. Students will normally work in groups of two to four students.

- Due Dates: given in class, generally one week after assignment given.
- Lab Practical Exam: demonstration of vacuum equipment proper operation is required to pass the course.
- Some labs may require extra lab time outside of scheduled class hours (second half of term)

Grading:

Quizzes/Homework/Participation	35%	88 – 100% of total points	A
Midterm Exam	10%	75 – 88% of total points	B
Final Exam	20%	65 – 75% of total points	C
Lab performance/report grade	35%	55 – 65% of total points	D
		< 55% of total points	F

No class on the following dates: November 11, 25 and 26

Other:

- I will use your PCC email if I need to reach you – please check it regularly.
- Attendance: counts as participation. Please see me regarding any class you must miss.
- Exams, labs and homework can only be made up by prearrangement. Work submitted late will be penalized.
- 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: http://catalog.pcc.edu/handbook/s704-syllabus-standardsforcreditcourses/