CHE 253M Fundamentals Lab Course SYLLABUS

FALL 2015

Unique Numbers: 14665 (Monday), 14670 (Tuesday) and 14675 (Wednesday)
Measurement, Control and Data Analysis Laboratory
M-T-W 1:00 - 6:00 p.m. CPE 1.420

Prof. C. G. Willson
Office: WEL 5.240 Office Hour: Mondays 10 to 11a.m.
Contact: willson@che.utexas.edu or by appointment
or 512-471-4342

Teaching Assistants:

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Shuqi Zhang (512-471-1875)	zhang10@utexas.edu

English grader:
Elysia Sotiriou esotiriou@utexas.edu
Office Hour: Friday, 11AM-12noon Location: Welch 5.330

Class website: http://willson.cm.utexas.edu/Teaching/Main/index.php

Communication website: http://engrcomm.che.utexas.edu

JMPSoftware: A link to the JMP software is available on the class website in the "Class News" section.

Prerequisites: ChE 253K, ChE 353 and ChE 333T. ChE 348 is strongly suggested

General Remarks

The 253M lab consists of a total of six experiments involving measurement techniques that are valuable to chemical engineers. These include measurement of temperature, pressure, liquid flow, process control, heat transfer, and viscosity. The experiments will expose you to a variety of instruments and devices that are commonly used in the laboratory and in industry, and to digital data acquisition, statistical experimental design, and statistical analysis of data. The class will help you learn to design and conduct experiments, analyze and interpret data, function effectively in a team and communicate your findings in a professional way.

We have an outstanding group of TA's for this class who are here to help you help yourselves. Feel free to ask them any questions about theory or

procedural problems. TA office hours will be from 2:30-3:30 p.m. on Monday, Tuesday and Wednesday in CPE 1.420 or by appointment.

Groups & Teams

Your class will be divided into teams of approximately 12 students each. Each team of 12 will be divided into 3 groups of about 4 people each. The groups will work on the experiments together. Group and team assignments will be made on the first day of class. Each group will perform one experiment every two weeks. Detailed schedules for each group, as well as detailed lab instruction handouts for the experiments, will be provided to you.

Report Writing

Learning to write a professional quality engineering report is one of the primary goals of this class. You will write six engineering reports during the semester and they will be graded for technical content and for English. The first report will be written as a team exercise. You are to work with all of your team members to produce one report and all members of the team will earn the same grade.

The remaining 5 reports are individual writing tasks. The experiments and data reduction are performed as a team and the team will discuss the sample calculations, but the reports are to be writtin as individual assignments. That is, each individual is required to submit a written report for all but the first experiment that they run. *These five reports are to be written independently.* The writing guide and templates for the reports are available on the department's communication web site at http://engrcomm.che.utexas.edu and at http://engrcomm.che.utexas.edu/che-253m-measurement-control-and-data-analysis/

Please read the writing guide carefully – it is the key to writing your technical reports.

Quizzes and Data Forms

Students are required to take a short (10 min.) quiz at the beginning of each class. The quiz covers the experiment scheduled to be performed by your team on that day. The quiz will be based on the material covered in the laboratory handouts. The purpose of the quiz is to insure that you are familiar with both the theoretical and procedural aspects of the experiment that you will perform on that day. Ten percent of your technical lab grade will be based on the quizzes. Do not underestimate the importance of these quizzes! They can have an important influence on your grade. To prepare for the quiz, you should carefully read and thoroughly understand the lab handout for the experiment you will perform. You are also required to bring a data form or spreadsheet to the laboratory that is configured to record the data for that day's experiment. This spreadsheet will be checked and becomes part of your quiz grade. The purpose of checking this data form is to inspire you to carefully consider exactly what measurements you will be making in the laboratory. There is no final exam in this class.

Grading of Reports

We encourage you to learn from one another. Your team should work together and discuss the experiment in detail, decide how to collect and analyze the data and you may perform sample calculations together. In the case of the first team report the entire report is to be generated as a team project and the grades for that report will be the same for all team members. However, we do expect subsequent lab reports to be original, which means that, other than the sample calculations, the report should be original and created by each individual, not by the team. Indeed, we feel that the experience you gain from writing the reports is a very important part of the course.

The reports are carefully graded for both technical content and for English. The technical work will be assigned 75% of the grade and the English portion 25%. If you receive a cumulative grade of 60 or below on a lab report, you may, if you choose, rewrite the report and resubmit it within two weeks for grading. Your grade will then be calculated as the average of the two report grades.

Lab reports are due at 1:00 PM on the day that your team meets to do the next experiment. This means that you will have two and sometimes three weeks to write the report. *Late reports will **not** be accepted and will earn a grade of zero!* Graded reports will be returned to you two weeks from the day they are turned in, or your next scheduled class day, whichever is later. To allow you to get feedback on your performance, we will make every attempt to return your first team report early, within ten days after it is turned in.

Please turn in one bound copy of the report and send a digital copy of the report as an e-mail attachment to willson@utexas.edu (Note that this is a special address. Do not send your report to Dr. Willson's Department e-mail address). The file should be in the MSWord format (.docx or .doc file type). Please enter the following information in the subject line of your e-mail: Last name, first name, UT EID, Experiment #. These files will be processed by plagiarism search software and compared against a database of past reports.

All reports should be typed and the graphs and figures must be of high quality. The reports should be bound, not stapled. A low cost binding service is provided by the student chapter of AIChE. If you have a question about report grading, take the report in question to the TA or the English grader. Your report grade can be changed up to one week after being returned.

Final grades will be assigned as follows:

Grade	GPA	Range	Grade	GPA	Range
A	4.0	92-100%	C+	2.33	78 ≤ 80%
A-	3.67	90 ≤ 92%	C	2.0	72 ≤ 78%
B+	3.33	88 ≤ 90%	C-	1.67	70 ≤ 72%
B	3.0	82 ≤ 88%	D+	1.33	68 ≤ 70%
B-	2.67	80 ≤ 82%	D	1.0	62 ≤ 68%
			D-	0.67	60 ≤ 62%

Writing Center:

I strongly encourage you to use the Undergraduate Writing Center, FAC 211, 471-6222: http://uwc.utexas.edu. The Undergraduate Writing Center offers free, individualized, expert help with writing for any UT undergraduate, by appointment or on a drop-in basis. Any undergraduate enrolled in a course at UT can visit the UWC for assistance with any writing project. They work with students from every department on campus, for both academic and non-academic writing.

Whether you are writing a lab report, a resume, a term paper, a statement for an application, or your own poetry, UWC consultants will be happy to work with you. Getting feedback from an informed audience is a normal part of a successful writing project. Consultants help students develop strategies to improve their writing. The assistance they provide is intended to foster independence. Each student determines how to best use the consultant's advice. The consultants are trained to help you work on your writing in ways that preserve the integrity of your work.

Safety Requirements:

You are required to complete three OHS safety courses online. The courses are OH101, OH201, and OH202. These courses are not very time consuming and they are important. They can be found at http://www.utexas.edu/safety/ehs/train/courses.html and there is a link to them on the class web site. **There is a bonus of 5 points available for persons who present completion certificates for these courses before their first scheduled experiment.**

All students are expected to understand the hazards associated with their particular experiments prior to beginning the laboratory work. Unsafe practices on the part of any group or individual in this laboratory will not be tolerated and may result in immediate dismissal from the course. The following safety precautions must be exercised by all students.

- Safety glasses with clear plastic or hardened glass lenses must be worn by all participants. Sun glasses are prohibited. Side shields are desirable but not mandatory.
- Long pants and/or aprons must be worn by all participants, and closed-toe footwear is required. Open-toe sandals may **not** be worn in the laboratory. You will not be allowed to conduct the experiments if you are dressed improperly.
- Smoking, eating, and drinking are not allowed in the laboratory area or the classroom.
- Each student must know the positions and operation of fire extinguishers, safety showers, and eye fountains. Should it become necessary to use any of

these devices, please notify your instructor afterwards so that they may be properly recharged as necessary.

- Good housekeeping procedures are essential in the laboratory. Particularly, accidental spills of water and chemical solvents should be wiped up immediately and disposed of properly. Doing this will prevent poor footing and minimize the possibility of fire and toxic inhalation.
- In the event of a mercury spill, notify your instructor immediately. EHS should be notified (471-3511) to advise about cleanup with mercury spill kits.
- Be wary of possible electrical hazards. All electrical devices should be properly grounded. Frayed or otherwise hazardous electrical cords should be reported and replaced or repaired. Flammable solvents should be kept away from electrical equipment.
- Portable radios are prohibited because they are distracting and therefore hazardous.
- Students are expected to conduct themselves safely and responsibly.

Plagiarism

Plagiarism is considered "academic dishonesty" by The University of Texas and will not be tolerated under any circumstances. To plagiarize is to use someone else's ideas or words and claim them as your own (by not explicitly stating that they are not your own). Copying directly from someone else's report or from an old file report is strictly forbidden. Copying from the experimental handout is also inappropriate and unnecessary. Short phases or statements from references may be used if put in quotation marks with due credit given by reference. Mathematical equations from handouts and references may be used if identified and referenced. If no reference is cited, it is presumed that the work is original. If you have a question about interpretation of this policy, assume the most conservative possible interpretation or ask your Teaching Assistant for an interpretation before turning in your report.

All instances of plagiarism will be subject to strict disciplinary action. If a report includes any aspect of plagiarism, it will receive a grade of zero, and it may not be rewritten in order to receive a grade. I promise to report all cases of plagiarism to the Dean of Students and that report will be come a part of the record of students who cheat. Carefully read the important document titled “Academic Integrity” that is provided to you and please read the information about policy related to cheating or plagiarism on the web site of the Dean of Students: http://deanofstudents.utexas.edu/sjs/acadint_conseq.php

Expectations:

The course is designed to teach you how to make several classical measurements and to apply the statistical methods that you learned in ChE 253K and the writing skills you learned in ChE 333T to report your results in a professional way. You will learn to work in teams and you will learn:

- to make very typical measurements important for chemical engineers

- to report results with appropriate statisitical analysis
- to write a professional laboratory report
- to use JMP software to analyze and plot data and do experimental design
- to understand statistical experimental design & process control charting
- to use interpersonal skills and participate in effective team work

Administrative:

The University of Texas policy states:

Course Instructor Surveys. Students will be informed of the date that the Course/Instructor evaluations will be done. Students are required to attend class on that date unless prior arrangements have been made.

Accommodations for Disabilities: The University of Texas at Austin provides, upon request, appropriate academic accommodations for qualified students with disabilities. For more information, contact the Office of the Dean of Students at 471-6259, 471-4641 TTY.

Religious Holy Days: A student who misses classes or other required activities, including examinations, for the observance of a religious holy day should inform the instructor at least fourteen days prior to the religious holiday so that arrangements can be made to complete an assignment within a reasonable time after the absence.

Absence for Military Service: In accordance with Section 51.9111 of the Texas Education Code, a student is excused from attending classes or engaging in other required activities, including exams, if he or she is called to active military service of a reasonably brief duration. The student will be allowed a reasonable time after the absence to complete assignments and take exams.