

**ChE 102**  
**Spring 2011**  
**Introduction to Chemical Engineering**

Instructors:

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Class: 4:00-5:15 M W  
G3 ESB

Course Goals: The goals of this course are to introduce students to the field of Chemical Engineering, to introduce students to useful computational tools, and to demonstrate application of these computational tools to chemical engineering principles.

Learning Outcomes:

1. Students will be able to solve an open-ended design project.
2. Students will have increased their proficiency in converting word problems into mathematical expressions and then solving these problems.
3. Students will have increased their proficiency in writing technical reports.
4. Students will have increased their proficiency in making oral presentations.
5. Students will have gained an understanding of basic functions, basic data analysis, and reinforced computing concepts (including software such as Word, Excel, PowerPoint) learned in ENGR 101.
6. Students will have gained experience in working within a team of their peers.

Grading:	Problem assignments	10%
	Brief project	10%
	Short projects (3 @ 15% each)	45%
	Large project	20%
	Study lab attendance	10%
	Out-of-class experiences	5%

Grades:	The nominal grading scale is	≥90%	A
		≥80%	B
		≥70%	C
		≥60%	D
		<60%	F

At the instructor's discretion, this scale may be lowered, but not raised.

Course Policies (exceptions at discretion of instructor):

1. All assignments are due at the beginning of class or at the stated time.
2. A late assignment = no assignment.
3. Any classes canceled due to inclement weather (or any other reason, such as fire alarms) will be rescheduled.
4. If you carry a cellular phone, smart phone, or PDA, it should be turned off during class. If your cellular phone rings during class, if your smart phone or PDA sounds an alert, or

if you are observed using your smart phone or PDA in class, your final grade will be reduced by one point and you will be asked to leave the class and not return on that day. You will still be responsible for all material covered in class.

5. Attendance will be taken at every class meeting. Unexcused absences will result in a penalty of one point per occurrence. One-half point will also be deducted from the final grade for each occurrence of arriving late.

#### Attendance Policy:

Attendance is expected at all classes. Unexcused absences will result in a loss of one point per absence from the final grade. Consistent with WVU guidelines, students absent from class, regularly scheduled examinations, or schedule presentations because of authorized University activities will have the opportunity to make them up at an alternate time. Make-up exams or presentations for absences due to any other reason will be at the discretion of the instructors.

#### List of Assignments (There will also be brief problem assignments throughout the semester.):

1. Brief project: Prepare a brief report on a traditional area of chemical engineering or a modern/emerging area of chemical engineering. This assignment will be done in pairs with both individuals participating in the oral presentation. More details will be presented in class. A written report and an oral presentation (5-7 minutes) are both required.
2. Short project #1: This will involve application of computational and graphical techniques using Excel. This assignment will be done in pairs (one group of 3, if necessary). More details will be presented in class. A written report and an oral presentation (5 minutes) are both required. Both (or all) team members must speak.
3. Short project #2: This will involve writing a visual basic program to solve a chemical engineering problem. This assignment will be done in pairs (one group of 3, if necessary). More details will be presented in class. A written report and an oral presentation (8-10 minutes) are both required. Both (or all) team members must speak.
4. Short project #3: This will involve optimization of a chemical or biochemical process. This assignment will be done in pairs (one group of 3, if necessary). More details will be presented in class. A written report and an oral presentation (8-10 minutes) are both required. Both (or all) team members must speak.
5. Large project: This will involve solving a chemical engineering problem that may require use of all techniques taught previously in the semester. This assignment will be done in teams of 3 or 4. More details will be presented in class. A written report and an oral presentation (15 minutes) are both required. All team members must speak.

#### Honors Students in Honors Section

Honors students will complete additional assignments for some of the above projects.

## Approximate Syllabus

<u>Week</u>	<u>Monday Date</u>	<u>Topic</u>
1	1/10	Introduction, initial survey Traditional chemical engineering, Modern chemical engineering Introduction to brief assignments
2	1/17	(Martin Luther King's Birthday Recess on Monday) Proper use of Word and PowerPoint Oral and written communications Learning styles
3	1/27	<b><i>Brief project #1 due on Monday</i></b> <b><i>Presentations Monday and Wednesday</i></b>
4	1/31	Feedback on first report and presentation Problem-solving skills Introduction to Excel and computational logic Assignment of first short project
5	2/7	Excel Work on first short project <b><i>First short project due on Wednesday – presentations</i></b>
6	2/14	Feedback on first short project Intro to programming logic Introduction to Visual Basic for Applications
7	2/21	Visual Basic Assignment of second short project
8	2/28	Visual Basic Work on second short project
9	3/7	<b><i>Second short project due on Monday</i></b> <b><i>Presentations on Monday and Wednesday</i></b>
10	3/14	Feedback on second short project Optimization Assignment of third project
11	3/28	Introduction to Matlab Work on third project
12	4/4	<b><i>Third short project due on Monday</i></b> <b><i>Presentations on Monday and Wednesday</i></b> Introduction to large design project
13	4/11	Feedback on third project Ethics and professionalism Work on large project
14	4/18	<b><i>Large project due on Monday</i></b> <b><i>Presentations on Monday and Wednesday</i></b> Junior design presentations at 1:00 pm on 4/20, 11:00 am on 4/21 – 401 ESB
15	4/25	Course review and feedback on large project Senior design presentations at 2:30 pm on 4/26 and 4/28 – NRCCE Bldg. Sophomore design presentations at x:00 pm on 4/2x & 4/2x