CHEMISTRY 1501 − Chemistry for Engineering
Fall Semester 2017 − Course Syllabus

Instructors:

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Office hours will be announced by your instructor on the first day of classes.

Text: Chemistry For Engineering Students, 3rd Edition, Brown and Holme; Brooks/Cole, ISBN 978-1-305-04157-8.

Additional Materials: scientific calculator and ALEKS Access (both available in the campus bookstore)

Course Description

Atomic structure, the mole, stoichiometry, chemical reactions, thermochemistry, electron configuration, periodicity, bonding, molecular structure, states of matter, solutions, thermodynamics, kinetics, equilibrium, acids, bases, and electrochemistry. Taken concurrently with CHEM 1551. High school chemistry recommended. Offered fall semester.

Student Learning Goals & Objectives

- Understand basic chemical concepts and terminology
- Apply chemical concepts to engineering problems
- Understand the role of chemistry in the broader context of engineering

Please note that this course fulfills University General Education Learning Outcome #4: Knowledge of Natural Science.

Attendance

Regular attendance at the lectures is expected. A student may be excused from a scheduled exam time due to a conflict with an authorized ONU function if the instructor is notified in **advance**.

To get the maximum benefit from the lectures, we suggest that you stay ahead of the lecture in reading the textbook and current with the lecture in doing the homework.

Grading Guidance

Assignment	% of Total	Letter	% Range
Exam 1 (Mon., Sept. 18)	20	A	85 - 100
Exam 2 (Wed., Oct. 25)	20	B	70 - 85
Exam 3 (Fri., Dec. 1)	20	C	55 - 70
Homework / Quizzes	15	D	40 - 55
Final Exam (Th., Dec 14)	25	F	< 40

Exams
Due to the nature of the material, each exam will be cumulative. The final will be comprehensive. All exams will be **closed book and closed notes**. A periodic table and needed equations and constants will be provided.

Calculator Requirement
A scientific calculator is required for this class and will be needed for homework, exams, and quizzes.

Quizzes
Quizzes will be given at the discretion of the instructor and may not necessarily be given to all sections.

Homework
Homework will be assigned through ALEKS. This is a system designed to figure out what material you have already mastered and what skills you need to focus on. Please take it seriously. If you have a strong background, you will likely do less homework, but only if your initial assessment is correct. At the end of the course, everyone should have mastered all of the objectives. Part of your grade is based on completion, with the rest dependent on achieving the milestones on time.

Academic Misconduct Policy
The University expects its students to conduct themselves in a dignified and honorable manner as mature members of the academic community and assumes that individually and collectively they will discourage acts of academic dishonesty. The University also expects cooperation among administrators, faculty, staff, and students in preventing acts of academic dishonesty, in detecting such acts, reporting them, and identifying those who commit them, and in providing appropriate punishment for offenders. The University Code of Academic Student Conduct is found in Appendix C of the Student Handbook: http://www.onu.edu/student_life/student_conduct/student_handbook

Special Accommodations Policy
Students requiring particular accommodations because of physical and/or learning disabilities should contact their Dean's office prior to or during the first week of classes. For additional information, see: http://www.onu.edu/student_life/disability_services

Other Policies
To be filled in by the instructors

A Final Note
The only way to really master the material covered in this course is to do the homework. While you are encouraged to study together, submissions must be your own work and should reflect your knowledge of the material. If you have questions or do not fully understand the material, be sure to ask for help.

Tentative Class Schedule

Week	Date	Topic (Chapter)	Week	Date	Topic (Chapter)
1	21-Aug	Syllabus, Intro to Science	9	16-Oct	Chapter 9
	23-Aug	Chapter 1		18-Oct	Chapter 9
	25-Aug	Chapter 1		20-Oct	Chapter 9
2	28-Aug	Chapter 2	10	23-Oct	Review, Chapters 4, 5, 9
	30-Aug	Chapter 2		25-Oct	Exam 2
	1-Sep	Chapter 2		27-Oct	Chapter 9
3	4-Sep	no class - Labor Day	11	30-Oct	Chapter 10
	6-Sep	Chapter 2		1-Nov	Chapter 10
	8-Sep	Chapter 3		3-Nov	Chapter 10
4	11-Sep	Chapter 3	12	6-Nov	Chapter 12
	13-Sep	Chapter 3		8-Nov	Chapter 12
	15-Sep	Review, Chapters 1-3		10-Nov	Chapter 12
5	18-Sep	Exam 1	13	13-Nov	Chapter 12
	20-Sep	Chapter 3		15-Nov	Chapter 12
	22-Sep	Chapter 4		17-Nov	Chapter 12
6	25-Sep	Chapter 4			Thanksgiving Break
	27-Sep	Chapter 4	14	27-Nov	Chapter 11
	29-Sep	Chapter 4		29-Nov	Review, Chapters 10 & 12
7	2-Oct	Chapter 4		1-Dec	Exam 3
	4-Oct	Chapter 5	15	4-Dec	Chapter 11
	6-Oct	Chapter 5		6-Dec	Chapter 11
8	9-Oct	no class - Fall Break		8-Dec	Chapter 11
	11-Oct	Chapter 5		14-Dec	Final Exam (4:15-6:15 pm)
	13-Oct	Chapter 9			

Suggested Homework Problems

Chapter	Homework Exercises
1. Introduction to Chemistry	8, 9, 11, 13, 15, 16, 18, 20, 21, 31, 32, 33, 37, 40, 42A-B, 44, 46, 48, 49, 50, 57A-B, 60, 61, 63, 64, 65, 68, 69, 70, 73, 84, 85, 88
2. Atoms and Molecules	4, 8, 10A-B, 12, 13A-B, 14A-B, 19, 20, 26, 30, 31, 34, 35,38, 39, 40, 42, 44, 45, 50, 51, 53, 57, 59, 62, 64, 70, 71, 72, 74, 76, 77
3. Molecules, Moles, and Chemical Equations	6, 7, 9, 12, 13, 16A-B, 19, 21, 22, 24, 26, 27, 30, 31A-C, 35A-B, 38, 42, 43A-B, 47, 49, 51A-B, 53, 54, 56, 57, 59, 62, 64A-B, 65A-B, 66, 67A-B, 68A-B, 85, 86, 87, 90, 99, 100, 102, 110, 112
4. Stoichiometry	4, 7A-B, 9, 10A-B, 13A-B, 15, 16, 18, 23, 26, 29, 35, 37, 39, 42, 43, 47, 51, 52, 55, 68, 90, 91, 102
5. Gases	2, 8, 9, 10, 12, 15A-C, 16, 19, 20, 24, 28, 30, 31, 32, 33, 40, 42, 44, 51, 52, 53, 56, 57, 63, 64, 71, 73, 77, 84, 86, 88, 90, 95, 113
9. Energy and Chemistry	1, 2, 7, 8, 10, 18, 19, 20, 23, 26, 27, 30, 31, 33, 34, 35, 38, 39, 46, 48, 53, 54, 56, 58A-B, 61, 65, 67, 68, 77, 80, 84, 97
10. Entropy and the Second Law of Thermodynamics	7, 8, 10, 11, 23, 25, 26, 28, 35, 39, 41, 42, 44, 45, 47A-B, 53, 56, 59, 60, 61, 68, 69A-B, 70A-B, 71, 73, 82, 83, 87, 88
11. Chemical Kinetics	1, 8, 10, 13, 16, 17, 18, 23, 25, 26, 27, 28, 30, 32, 35, 36, 37, 39, 40, 43, 45, 46, 47, 48, 53, 55, 57, 62, 63, 64, 67, 68, 69, 70, 72, 75, 77, 78, 97, 98, 99, 100
12. Chemical Equilibrium	9, 12, 15, 17A-C, 20, 22, 26, 29, 36, 39, 44, 45, 48, 50, 53, 56, 59, 60