

# CHEM107 GENERAL CHEMISTRY – Section 5 (FDE)

## SYLLABUS – SPRING 2017

### Instructor:

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Lectures: Tuesday 08:40-10:30 U3, Friday 11:40-12:30 U3

### Course Objectives:

Providing a concise but through introduction on structure of matter and its interactions and connecting with virtually everything in our daily life.

### Tentative Outline of Course Topics:

Chp.	Title	Reading sec.	Class hours
5	Thermochemistry		3
6	Electronic Structure of Atoms		4
7	Periodic Properties of the Elements	7.6-7.8	3
8	Basic Concepts of Chemical Bonding		4
9	Molecular Geometry and Bonding Theories		4
11	Liquids and Intermolecular Forces		4
24	Special Topics (ST 2): The Chemistry of Life	24.1-24.3	4
12	Solids and Modern Materials		4
14, 15	Chemical Kinetics and Equilibrium	15.3-15.7	4
19	Chemical Thermodynamics		4
18,21	Special Topics (ST 1): Green Chemistry and Energy		4

Chapters 1 to 4 is considered to be covered in high school and will not be discussed in the class.

Make sure to go through the chapters in details and discuss with your instructor if you do not know or have difficulty in any of the topics within these chapters.

### Course Materials:

**Required: Chemistry: The Central Science**, 13/E, Brown, LeMay, Bursten, Murphy, Woodward, Stoltzfus, Pearson.  
**Suggested: Chemistry for Engineering Students**, 2<sup>nd</sup> edition, Lawrence Brown and Thomas Holme, Brooks/Cole, Chemistry, **The Central Science**, Brown, Lemay, Bursten, Murphy, 11th Int. Ed., Pearson., **Principles of Modern Chemistry**, Oxtoby, Gillis, Campion, 7<sup>th</sup> Ed. Brooks/Cole.

### Grading Policy:

Evaluation	Weight (%)	Exam Date	Exam Time
Midterm 1	25	March 25, 2017	13:00
Midterm 2	25	April 29, 2017	13:00
Final	35	To be announced	
Make-Up			
Lab	15	as scheduled	

Bonus 2%: In-class pop quizzes + attendance + participation

All sections will take the common exams. Most of the exams will be over the material that is covered since the last exam. However, the course builds on the material that has been delivered earlier. So, the concepts; calculations and techniques from earlier exams may be required. The Final Exam will cover the work of the entire semester.

**NA Grading:** Students will not be allowed to take final exam if sum of the midterm exam 1 and 2 is lower than 40 (out of 200) and the course will be graded NA.

**Laboratory:** The students must collect a minimum score of 30 (out of 60) of their laboratory works. The lab total scores less than 30 will fail the lab and the course.

Students who repeat the course must have at least a score of 30 on their previous lab. works. If you are repeating this course your previous lab. grade has to be higher than 30 otherwise you have to repeat the lab. Repeating students must contact the laboratory coordinator Akif Şafaklı ([asafakli@metu.edu.tr](mailto:asafakli@metu.edu.tr)) and check their score.

The student gets "0" from 2 experiments; he/she cannot take the final exam and fails both from the lab. and course.

**Cheating:** In the case of cheating, you will be graded NA and disciplinary action will be pursued.

**Attendance Policies:** The best place for learning is the classroom. Past experience has shown that the students who attend the classes get higher grades. Moreover, we may cover additional material in the class that is not covered in the textbook. Therefore, we, as the instructors of CHEM 107 strongly recommend you to attend the classes. We will take attendance every class but this is for our own records.

**Make-up Policies:** No excuse except medical report approved from Medical Center of METU. The student must deliver the report to the instructor within 5 days after the exam. The make-up exams will be held at the end of the semester.

## Assigned Questions from Chemistry: Exercises-The Central Science, 13/E

### Chapter 5-Thermochemistry

4, 9, 19, 25, 29, 37, 41, 45, 51, 55, 59, 66, 73, 77, 79, 87, 97, 107, 116.

### Chapter 6-Electronic Structure of Atoms

12, 19, 25, 31, 37, 45, 47, 51, 55, 57, 59, 61, 71, 75, 79, 80, 83, 88, 93, 102.

Videos to watch (Chapter 6):

<https://www.youtube.com/watch?v=UjaAxUO6-Uw>

<https://www.youtube.com/watch?v=Hk3fgjHNQ2Q>

<https://www.youtube.com/watch?v=TQKELOE9eY4>

<https://www.youtube.com/watch?v=8ROHpZ0A70I>

### Chapter 7-Periodic Properties of the Elements

13, 15, 17, 18, 25, 29, 30, 34, 35, 39, 40, 43, 44, 45, 46, 59, 61, 62, 65, 68, 79, 81, 85, 88, 96, 98.

### Chapter 8-Basic Concept of Chemical Bonding

4, 9, 11, 13, 19, 21, 25, 31, 35, 39, 41, 45, 47, 55, 61, 63, 69, 71, 75, 81, 85, 90, 101, 107.

### Chapter 9-Molecular Geometry and Bonding Theories

6, 8, 10, 16, 17, 19, 20, 21, 25, 26, 29, 31, 34, 37, 41, 44, 47, 48, 51, 57, 64, 68, 71, 75, 77, 79, 90, 91, 105, 114.

### Chapter 11-Liquids and Intermolecular Forces

4, 7, 13, 16, 17, 18, 19, 21, 22, 23, 25, 26, 27, 33, 37, 41, 43, 45, 47, 51, 59, 61, 64, 74, 75, 76, 78, 81, 84, 85, 86, 89, 92.

### Chapter 12-Solids and Modern Materials

6, 8, 13, 15, 19, 21, 23, 25, 29, 31, 33, 34, 39, 51, 53, 57, 59, 61, 67, 71, 73, 75, 79, 83, 87, 89, 95, 97, 113, 117.

### Chapter 14-Chemical Kinetics

8, 19, 21, 29, 33, 34, 35, 36, 37, 38, 45, 61, 71, 73, 74, 79, 93, 95, 99, 107, 110, 120.

### Chapter 15-Chemical Equilibrium

5, 7, 11, 13, 15, 17, 21, 23, 27, 33, 35, 37, 43, 45, 47, 53, 55, 59, 61, 71, 74, 77, 83, 93.

### Chapter 19-Chemical Thermodynamics

4, 6, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 25, 27, 29, 31, 33, 35, 37, 41, 43, 47, 48, 49, 53, 55, 57, 58, 59, 61, 63, 65, 77, 83, 85, 96, 99, 101, 114.

### Chapter 18-Chemistry of the Environment

6, 7, 8, 13, 15, 17, 19, 23, 25, 27, 29, 31, 37, 41, 45, 47, 53, 55, 57, 59, 61, 62, 68, 71, 77, 85, 89, 90, 94, 91.

### Chapter 21-Nuclear Chemistry

5, 7, 9, 11, 13, 15, 17, 19, 23, 25, 29, 31, 37, 39, 43, 47, 51, 53, 57, 61, 63, 72, 76, 84.

### Chapter 24-The Chemistry of Life: Organic and Biological Chemistry

7, 13, 23, 31, 33, 39, 43, 44, 45, 49, 53, 57, 58, 59, 61, 63, 65, 67, 68, 69, 71, 73, 74, 75, 77, 79, 85, 88, 90, 91, 94, 95, 99.