

AMERICAN COLLEGE of THESSALONIKI
Division of Science and Technology

SNCC 117: General Chemistry for the Biological Sciences

Fall 2019

Lecture Syllabus

Instructor: **Mary S. Kalamaki, Ph.D.**

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Class schedule and Office hours:

	Section	Monday	Tuesday	Wednesday	Thursday	Friday
Office hours*		9:30 – 10:00	9:30 – 10:00			9:30 – 10:00
Lecture	K	10:00 – 11:30	10:00 – 11:30		(lab)	10:00 – 11:30
Office hours*		11:30 – 12:00	11:30 – 12:00			11:30 – 12:00
Lecture	L	12:00 – 13:30	12:00 – 13:30		(lab)	12:00 – 13:30
Office hours*		13:30 – 14:00	13:30 – 14:00			13:30 – 14:00
Lecture	M	14:00 – 15:30	14:00 – 15:30		(lab)	14:00 – 15:30
Office hours*		15:30 – 16:00	15:30 – 16:00			15:30 – 16:00
Lecture	N	16:00 – 17:30	16:00 – 17:30		(lab)	16:00 – 17:30

* also available by appointment

Course description

This course meets 3 times a week for 90 minute sessions. It is designed to introduce biology students to the fundamental principles of chemistry. Topics to be covered include atomic structure, chemical equations, the periodic table, chemical bonding and intermolecular interactions, thermochemistry, reaction spontaneity, reaction rates, chemical equilibria, acid base chemistry and reactions in aqueous systems. Emphasis will be given to applications of chemical principles in biological systems.

Learning goals

This course provides an introduction to the principles and practical aspects of chemistry. Students will develop an understanding of the:

1. Atomic structure and chemical properties of elements
2. Chemical reactions and reaction stoichiometry
3. Nature of chemical bonding and molecular shape
4. Significance of intermolecular forces
5. Thermodynamics of chemical reactions
6. Chemical kinetics, chemical equilibria, reaction rates
7. Acid base chemistry
8. Buffers, acid base equilibria

Textbook and Materials

1. Chemistry: An atoms-focused approach with SmartWork registration card. Thomas R. Gilbert, Rein V. Kirss, Natalie Foster, 2nd edition. ISBN 9780393284218 (hardcover), ISBN: 978-0-393-61532-6 (ebook) Norton (www.wwnorton.com)
2. Access to SmartWork on-line homework system. <https://digital.wwnorton.com/atoms2>
3. SmartWork student set: **193440**
4. Scientific calculator

Attendance

Students are required to attend their assigned section. It is the student's responsibility to keep a record of the absences made.

ACT Absence Policy

Students are expected to attend and participate in all of their courses throughout the term, including the first week. Those who fail to do so may be administratively withdrawn from individual courses of the College. **This may affect the students' scholarship and financial aid eligibility.**

A student is considered to have successfully attended a course if s/he has **attended 75% of the course lectures**. Thus, for a typical ACT course with 42 hours of contact time, this translates to **10 hours per course**. This policy applies to all ACT students, degree-seeking and Study Abroad. **Please note that absences are counted on an hourly basis.** Absences due to participation in school-related trips and activities may count toward this limit.

Grading

Two midterm exams and a comprehensive final exam will be given. During the semester there will also be 10 required on-line homeworks available via SmartWork. Homework is graded automatically via SmartWork upon submission. Homework will be due every Tuesday at 8:00pm.

The final grade for the course will be computed as follows:

- 15%** – Homework
- 25%** – 1st MidTerm exam
- 25%** – 2nd MidTerm exam
- 35%** – Final exam

Grading will be performed using an absolute scale.

Grade Description	% points	US Letter Grade	US point grade
Excellent	95-100	A	4.0
Very Good (high)	90-94	A-	3.67
Very Good (low)	85-89	B+	3.33
Good (high)	80-84	B	3.0
Good (low)	75-79	B-	2.67
Satisfactory (high)	70-74	C+	2.33
Satisfactory (low)	65-69	C	2.0
Fail	0-64	F	0

Academic Integrity

Students must comply with the ACT College-wide Policy on Academic Integrity:

College-wide Policy on Academic Integrity

All academic divisions at ACT, both undergraduate and graduate, will apply the following policy on academic integrity:

“A student committing an act of Academic Dishonesty in a given course will receive an F (0 percentage points) in the assignment where the academic infraction took place. If a student

commits an act of Academic Dishonesty for a second time in the same course, this student will receive a failing grade in that course.

The individual faculty is responsible for enforcing the policy in a conscientious manner, for reporting all cases to the Academic Standards & Performance Committee (AS&PC) for record-keeping and for informing the affected students of their right to appeal the faculty's decision to the AS&PC. Faculty must also insert the college's policy on Academic Integrity in their course syllabi."

Classroom Expectations

- Students are expected to come to class on time, stay for the whole class, refrain from side conversations, and be courteous to the professor and their fellow students.
- Phones or any other form of technology should be silenced before class.
- Texting, using Facebook and surfing the Internet during class is not conducive to learning. If this type of behavior becomes disruptive, the professor may ask a student to leave class for that lecture period.
- There will be no make-up exams or extensions to the homework deadlines.

How to prepare for each lecture

Students must prepare for every lecture by reading in advance the appropriate chapter of the assigned textbook and/or supplementary material provided by the instructor. Students are expected to monitor instructor's announcements and/or extra material posted on the course's web site at <http://moodle.act.edu/moodle2019/>. A copy of the power point slides used in lecture will be available at Moodle. Check Moodle regularly for an up-to-date, day-by-day schedule of reading assignments for each chapter.

Lecture Schedule

Date	Topic and Textbook Sections (textbook pages)
September 23	Introduction / Atoms, Ions and Molecules (independent review) 1.1 – 1.8; 2.3-2.6 (pp 10-38; 56-75)
September 24	Atomic spectra and atomic structure 3.1-3.4 (pp 86-100)
September 27	Atomic orbitals & electron configurations 3.6-3.9 (pp 105-120)
September 30	Periodic trends 3.10-3.12 (pp 121-130)
October 1	Compounds & formulas; chemical bonds 4.1-4.2 (pp 142-154)
October 4	Lewis structures, resonance and formal charges 4.3, 4.4, 4.7 (pp 154-165; 171-174)
October 7	Properties of covalent bonds 4.5, 4.6, 4.8, & 4.9 (pp 165-170; 174-182)
October 8	Molecular shape & polarity 5.1-5.3 (pp 192-209)
October 10	Valence bond theory & hybridized orbitals; molecular recognition 5.4-5.6 (pp 209-223) (during lab session)
October 11	Types of intermolecular interactions 6.1-6.2; (pp 248-258) Trends in solubility; properties of water 6.3 & 6.5 (pp 258-263; 266-270)
October 14	Chemical reactions & stoichiometric calculations 7.1-7.3 (pp 278-291) Limiting reactant and percent yield 7.7 (pp 302-308)
October 15	Review for midterm 1
October 18	Midterm exam 1 (Chapters 2, 3, 4, 5, 6, 7)
October 21	Aqueous solutions, electrolytes, & acid/base reactions 8.1-8.4 (pp 320-335)
October 22	Precipitation & redox reactions; titrations 8.5 -8.7 (pp 336-356)
October 25	Fall Break
October 28	Fall Break
October 29	Heat, work, & the 1st Law; enthalpy 9.1-9.3 (372-384) Heat transfer; reaction calorimetry; lattice enthalpies 9.4-9.8 (pp 384-412)
November 1	Osmosis, dialysis and vapor pressure, Henry's law 11.1-11.3, 11.6 (pp 480-491; 505-508) (first Athens trip)

Date	Topic and Textbook Sections (textbook pages)
November 4	Spontaneity & entropy 12.1-12.3 (pp 518-529)
November 5	The 2nd Law & free energy 12.4-12.6 (pp 530-542)
November 8	Osmosis, dialysis and vapor pressure, Henry's law 11.1-11.3, 11.6 (pp 480-491; 505-508) (second Athens trip)
November 11	Kinetic molecular theory of gases 10.1-10.2 (pp 432-439) Rates of reaction & rate laws 13.1-13.3; 21.3 (pp 560-584; 978-982)
November 12	Reaction energetics & mechanisms 13.4-13.5 (pp 585-596) Catalysts & enzymes 13.6 (597-602)
November 15	Review for Midterm 2
November 18	Midterm exam 2 (Chapters 8, 9, 11, 12, 13)
November 19	Reversible reactions & equilibrium constants 14.1-14.3 (pp 620-632)
November 21	Equilibrium calculations; LeChâtelier's Principle 14.4-14.8 (pp 633-652) (during lab)
November 22	Relating thermodynamics & chemical equilibrium 14.9-14.10 (pp 653-663)
November 25	Acid/base equilibria; strength of acids and bases; relation to structure; pH and autoionization of water 15.1-15.5 (pp 676-699)
November 26	Acid/base calculations 15.6, 15.7 (pp 700-707)
November 29	Equilibrium under stress; common ion effect 16.1-16.2 (pp 724-728)
December 2	pH buffers and indicators, acid/base titrations 16.3-16.4 (pp 729-745)
December 3	Lewis acids and bases; formation of complex ions 16.5-16.6 (pp 746-752)
December 6	Final review
December 9-12	Final exam, TBA (final exam is cumulative)

The instructor reserves the right to make changes in the course syllabus during the semester. If changes are made, students will be officially notified in class and the changes will be posted at Moodle.

A College-wide Policy on Academic Integrity

Statement on Academic Integrity

"The College has the responsibility of maintaining the highest possible standards of academic integrity for the purpose of ensuring the quality of education it provides, underscoring its dedication to fostering a love of learning for its own sake, and of protecting those who rightly practice integrity in their academic affairs. It is the responsibility of the student to be informed about the college's policy on Academic Integrity, to refrain from infractions of that policy and from conduct, which may lead to suspicion of infractions, and to refrain from aiding or encouraging others in such infractions. It is the responsibility of the faculty to establish and maintain an environment which is conducive to Academic Integrity."

Academic Honesty

"Academic Dishonesty is the violation of Academic Integrity, committed by engaging in any form of unethical behavior which violates acceptable standards of scholarly conduct. Such practices as cheating on examinations, submitting borrowed or purchased papers and/or prepared bibliographies as one's own, plagiarizing, falsifying or copying lab reports, or aiding another person in any of the above infractions of Academic Integrity, constitute acts of Academic Dishonesty."

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Academic Standards & Performance Committee

A student may appeal an initial decision made by an individual faculty to a formal body called the Academic Standards & Performance Committee (an existing standing Committee), chaired by the Director of Academic & Student Affairs.

The AS&PC will meet as needed to evaluate appeals on alleged cases of academic dishonesty referred to the Committee by an involved party. Each case referred to the Committee will have a separate hearing (several hearings could conceivably take place during a single session of the Committee). Cases sent before the Committee deemed invalid will be dismissed. The AS&PC will keep records of all academic infraction cases, whether appealed or not and it will reserve the right to invite a student who has breached repetitively the school's policy to a hearing that may lead to sanctions ranging from failure of an assignment, to failure of a course, semester-long dismissal from the college, expulsion from the college.