Syllabus for CHE 150A – Introduction to Chemistry

Spring 2018 **3 Credit Hours** **BSC304E: TR 10-11.15am**

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Course Description: This course delves into the world of atoms and molecules in order to study the structure of matter and the changes it undergoes. The course will provide an introduction to the field of chemistry. Topics include atomic and molecular structure, stoichiometry, acids and bases, enthalpy, and equilibrium.

Pre or Corequisite: No pre-requisites. However, the accompanying lab course Che 150L is a corequisite.

Course Goals: 1.) To obtain a basic knowledge of fundamental chemistry topics. 2.) To be able to apply the basic chemical principles learned to new chemical problems. 3.) To learn how knowledge and skills learned in chemistry can be applied to real world problems. 4.) To build skills in solving problems.

Relevance to the departmental and college curriculum: After completing this course and the associated CHE150 L course, you may proceed to chemistry courses in the chemistry sub-disciplines: CHE220+L (inorganic and physical chemistry), and/or CHE240+L (organic chemistry), and/or CHE230 (analytical chemistry). CHE150+L can be used to satisfy the general education requirement entitled SUMMIT IN STEM. CHE150+L are also required for the following majors and programs of study: Chemistry, Biochemistry and Molecular Biology, Biology, Neuroscience, dual-degree engineering, dual-degree nursing, and any pre-health tracks.

Required Course Materials:
1. Textbook (hardcopy or ebook): General Chemistry-Atoms First by Donald A. McQuarrie. 4th edition. University Science Books. This may be purchased by alone, or bundled with the required Sapling Online Homework.
http://www.uscibooks.com/mcqgen.htm
http://www.uscibooks.com/Mcq%20Gen%20Chem%20ITS.pdf

2. Sapling online Homework: Sapling online homework to accompany McQuarrie. This is required for students who do not already have access to Sapling through one of the **bundle** packages mentioned above. Students should purchase one semester or two semesters of access to Sapling directly from Macmillan Learning. http://www2.saplinglearning.com/

Moodle (http://courses.agnesscott.edu/): Moodle is a web-based course management system that will be used in this course as well as the lab (Chem 150L). The syllabus, grades, in-class powerpoints, quiz keys, study guides, etc. will be posted for your access.

Resource Center for Math and Science (RCMS) (http://www.agnesscott.edu/rcms/): The RCMS has a Science Learning Center (SLC) in Campbell G-25 and operating hours will be posted on the RCMS website and on posters around campus. During these hours student Learning Assistants (LAs) will be available.

Course Requirements:

2 Exams (25% each)	50%
Cumulative Final Exam	25%
Quiz Average (with 2 lowest grades dropped)	10%
On-Line Homework Assignments	10%
Weekly Workshop Attendance (or weekly one-on-one work with a learning assistant)	5%

Absolute Grading Scale:

A	93-100	B-	80-82	D+	67-69
A-	90-92	C+	77-79	D	63-66
B+	87-89	C	73-76	D-	60-62
B	83-86	C-	70-72	F	0-59

Note: if you have completed all exam/quizzes/homeworks, you may substitute your final exam score for your lowest-scored exam. Additional Note: Student grades will not be curved

Exams: Two exams will be given during the semester, and a comprehensive self-scheduled exam will be given during final exam week. Exams will be taken in the classroom and will be closed-book and with no notes. Please remember to bring your calculators to exams and quizzes.

Make-up Exams: Attendance for quizzes and exams are mandatory. If you know you are going to miss a quiz or exam due to (i) matters relating to death of an immediate family member, or (ii) observance of religious holidays or (iii) participation in events or activities sponsored by the college, please notify Dr. Winget as soon as possible; you will be allowed to take the quiz or exam early. If you suddenly find you miss a quiz, it will count as one of the two quiz scores that will automatically be dropped. If you need to miss an exam because you have become seriously ill or injured or you experience an emergency, you should notify the office of Academic Advising (x5192 or cmcpheeters@agnesscott.edu) of your situation as soon as possible and ask them to notify your advisers and professors of your circumstances. Your professors will then work with that office to discover the best course of action for your personal circumstances.

Quizzes: There will be a short (15 min) quiz given in class on most Tuesdays (except exam days). The quizzes are intended to give you a regular check on your comprehension of the material rather than to cause stress, so the lowest two quiz scores will automatically be dropped..

Attendance in Class: Attendance is highly recommended, but not required, for all scheduled class times.

Attendance in weekly evening workshops: It is highly advisable that some of your out-of-class study time be spent attending workshops facilitated by our course LA, so you are required as part of this class to attend a one hour evening workshop each week. Please remember to sign in to the workshop to receive credit for attending. If for some reason you cannot attend a workshop on a given week you may work one-on-one with a Learning Assistant in the SLC for an hour that week. Please let Dr Winget know each time you work with a tutor in lieu of attending a workshop.

Homework Assignments: Homework problems will be assigned through Sapling, and problems will be due on most Tuesdays prior the start of class. You are strongly encouraged to work on your homework assignments in the Science Learning Center (SLC) in Campbell G-25, and to work on problems with your classmates. However, to comply with the honor code, you should only submit work that reflects your personal understanding. .

Workload Statement: This is a 3-credit class that meets "3 hours" per week. To succeed in this course, you should also expect to study 5-6 hours per week outside of class (this does not include the hours you spend on the associated CHE150L lab course).

Appointments: Appointments may be made with Professor Winget and the Learning Assistants by email.

Academic Honesty: The Agnes Scott College honor code embodies an ideal of character, conduct, and citizenship, and is an important part of the College's mission and core identity. This applies especially to academic honesty and integrity. Passing off someone else's work as your own represents intellectual fraud and theft, and violates the core values of our academic community. To be honorable, you should understand not only what counts as academic dishonesty, but also how to avoid engaging in these practices. Please note that in this course you are sometimes encouraged to work with others, but the work completed is your own. In particular, the copying of another student's homework assignment answers (or copying from any other source, for that matter) is an Honor Code violation. The examinations and quizzes are not proctored, although the faculty member will often be close by during an exam to answer any questions. You are expected not to seek aid from anyone (or anything) during these examinations and should not give aid to anyone else taking a quiz or examination. Please pledge ALL your quizzes and exams with "I pledge that I have neither given nor received any unauthorized aid on this assignment. (signed)_____"

Course Evaluation: Near the end of the semester you will be notified by email, and provided with a link to follow, to complete course evaluations online outside of class. You are expected to complete the them as your feedback is extremely valuable to Dr. Winget, the department, and the administration. Of particular importance are constructive comments that help Dr. Winget improve the course.

Accommodations: Agnes Scott College seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in this class, please contact Rashad Morgan in the Office of Academic Advising (X6174 or rmorgan@agnesscott.edu) to complete the registration process. Once registered, please contact Dr. Winget by email in order to make an appointment to discuss the specific accommodations needed for this course.

Inclusion: This course adheres to the principles of diversity and inclusion integral to the Agnes Scott community. We respect people from all backgrounds and recognize the differences among our students, including racial and ethnic identities, religious practices, and gender expressions. We strive for our campus to be a safe space in which all students feel acknowledged and supported. We request and invite your thoughtful and constructive feedback on ways that we can, as a community of learners, respectfully assist and challenge one another in our individual and collective work.

Title IX: For the safety of the entire community, any incidence of, or information about, sexual misconduct must be reported immediately to Title IX Coordinator Marti Fessenden (mfessenden@agnesscott.edu, 404-471-6547), Deputy Title IX Coordinator Karen Gilbert (kgilbert@agnesscott.edu, 404-471-6435), or Vice President for Student Life and Dean of Students Karen Goff (kgoff@agnesscott.edu, 404-471-6449).

This course adheres to the principles of diversity and inclusion integral to the Agnes Scott community. We respect people from all backgrounds and affirm people's decisions about gender expression and identity. Please feel free to correct Dr. Winget if your preferred name or gender pronoun are different from that listed on the class roster.

Spring Semester 2018 – Tentative CHE150A Schedule

	DATE	Topic	Relevant Chapter	Assignment due	Quiz	Lab Schedule
1	**T-Jan 9**	Welcome, units, accuracy and precision	1.4, 1.6-1.7			No lab
2	**Th-Jan 11**	Sig fig rules, dimensional analysis, elements	1.7-1.9, 2.1			
3	**T-Jan 16**	Atoms, molecules, compounds, nomenclature, molecular mass	2.6-2.8			*Lab 1:* Conversions & Units
4	**Th-Jan 18**	Protons, neutrons, electrons, isotopes, ions, balancing chemical equations	2.9-2.12, 3.1-3.2			
5	**T-Jan 23**	the periodic table, ionization energies	3.3-3.4, 4.1-4.2	A1 (lec 2-4)	Q1	*Lab 2:* Recycling Plastics
6	**Th-Jan 25**	Electromagnetic radiation, emission spectra	4.3-4.5			
7	**T-Jan 30**	Atomic orbitals, electron configurations	5.2, 5.7	A2 (lec 5-6)	Q2	*Lab 3:* Metals in Natural Waters
8	**Th-Feb 1**	Electron configurations, periodic trends atomic radii and ionization energies, ionic bonding	5.10, 5.12, 6.1, 6.5			
9	**T-Feb 6**	Sizes of ions, molar mass, Avogadro's number, empirical formula	6.6, 11.1-11.3	A3 (lec 7-8)	Q3	No lab
10	**Th-Feb 8**	Covalent bonding, Lewis structures, formal charges	7.1-7.5			
11	**T-Feb 13**	Resonance, free-radicals, electronegativity	7.6-7.9	A4 (lec 9-10)	Q4	*Lab 4:* MolarMass
12	**Th-Feb 15**	VSEPR	8.1-8.6			
--	**T-Feb 20**	**Exam 1 (classes 2-10, A1-A4)**	--			*Lab 5:* Analysis of White Powders
13	**Th-Feb 22**	Molecular Orbital (MO) theory	9.1-9.4			
14	**T-Feb 27**	Hybridization of orbitals	9.5-9.8	A5 (lec 11-13)	Q5	*Lab 6:* Molecular Shapes (VSEPR)
15	**Th-Mar 1**	Multiple bonds, delocalization	9.9-9.13			
--	**T-Mar 6**	**PEAK WEEK**	--			No lab
--	**Th-Mar 8**	**PEAK WEEK**	--			
--	**T-Mar 13**	**SPRING BREAK**	--			No lab
--	**Th-Mar 15**	**SPRING BREAK**	--			
16	**T-Mar 20**	Intermolecular forces	8.9, 15.4	A6 (lec 14-15)	Q6	No lab
17	**Th-Mar 22**	Polyatomic ions, precipitation, acid-base, redox	10.1-10.2, 10.9-10.11			
18	**T-Mar 27**	Stoichiometry calculations	11.7-11.8	A7 (lec 16-17)	Q7	*Lab 7:* Oil Inquiry Lab
19	**Th-Mar 29**	Limiting reactant, percent yield	11.10-11.11			
--	**T-April 3**	**Exam 2 (classes 11-17, A5-A7)**	--			*Lab 8:* Stoichiometry
--	**Th-April 5**	**No Class Today**	--			
20	**T-April 10**	Solutions, molarity, titrations	12.1-12.2, 12.6	A8 (lec 18-19)	Q8	*Lab 9: Water* Hardness
21	**Th-April 12**	Electrolytes, dilutions, stoichiometric calculations for solutions	12.3-12.5			
22	**T-April 17**	Work and heat, enthalpy	14.1-14.3	A9 (lec 20-21)	Q9	*Lab 10:* Dilutions & Solutions
23	**Th-April 19**	Enthalpy changes, ΔH_f, bond enthalpies	14.4-14.6			
--	**T-April 24**	**SpARC – NO CLASSES**	--			Team Assessment
24	**Th-April 26**	Introduction to kinetics	17.1			
25	**T-May 1**	**Review – catch up**	--	A10 (lec 22-24)	Q10	No lab