Harry S Truman College

One of the City Colleges of Chicago

Our Mission dedicates us to deliver high-quality, innovative, affordable, and accessible educational opportunities and services that prepare students for a rapidly changing and diverse global economy.

Chemistry 205 ABC

Organic Chemistry I (073-0205-1; IAI CHM914) Spring 2013

Welcome!

Instructor: Zoran Miodragovic, Ph.D. **E-mail**: zmiodragovic1@ccc.edu
Office: #3624 **Phone**: 773-907-4694

Office hours:	M, W	12:30 pm – 1:30 pm	Rm #3624
Class hours:	M, W	8:30 am - 12:20 pm	Studio Classroom #3170

Length of the Course: 16 weeks

Credit hours: 6 Contact hours: 8 (4 lecture hours, 4 lab hours) per week

Website: **Blackboard (http://ccc.blackboard.com)**

PLEASE CHECK BLACKBOARD REGULARLY FOR NEW ANNOUNCEMENTS, HOMEWORK ASSIGNMENTS, SCHEDULE UPDATES, POINTS, ETC!

Prerequisites: A grade of C or better in Chemistry 201 (General Chemistry I) & Chemistry 203 (General Chemistry II) or consent of the department chairperson.

Course catalog description

Fundamentals of organic chemistry, orbitals and structural theory, aliphatic and aromatic hydrocarbons, alkyl halides, structural isomerism, introduction to functional groups, nomenclature, stereochemistry, reaction mechanisms, resonance theory, and spectroscopy.

Laboratory emphasis is on basic organic techniques (determination of boiling and melting points, distillation, crystallization, extraction), purification techniques (thin layer chromatography (TLC), and column chromatography), and organic synthesis. Writing assignments, as appropriate to the discipline, are part of the course.

Students for whom the course is intended

Organic Chemistry I is a required course for chemistry majors, biochemistry majors, chemical technology majors, pre-pharmacy students, pre-medical students, pre-dentistry students, pre-chiropractic students, pre-optometry students, pre-nutrition students, physician's assistant, some baccalaureate nursing programs, and a few engineering disciplines.

Required material

- **Textbook:** *Organic Chemistry*, 6th ed., by W.H. Brown, C.S. Foote, and B.L. Iverson, Brooks/Cole/Cengage 2011. ISBN 9780840054982. The earlier 5th or 4th editions are acceptable. Different purchase options (e.g., rent, e-chapters, etc.) are available at this CengageBrain page: http://www.cengagebrain.com/shop/ISBN/9780840054982?cid=APL1

- **Lab manual**: *Chem 205: Organic Chemistry I*, by D.L. Pavia, G.M. Lampman, G.S. Kriz , and R.G. Engel, Compilations C 2012 Cengage Learning, ISBN-13: 978-1-133-73143-6; ISBN-10: 1-133-73143-0; (customized edition for Truman College students).
  Alternatively, students may purchase the integral lab manualversion: *Introduction to Organic Laboratory Techniques: A Microscale Approach*, 4th ed. (or earlier), by D.L. Pavia, G.M. Lampman, G.S. Kriz, R.G. Engel, Brooks/Cole/Cengage **2007.** ISBN 9780495016304. Different purchase options are available at this CengageBrain page: http://www.cengagebrain.com/shop/ISBN/9780495016304?cid=APL1

- Carbonless Laboratory Notebook: ***National Notebook 43-375*** or similar

- *Optional*: ***Molecular Modeling Kit***; the 68845NV Chemistry Molecular Model Set from www.indigo.com would suffice.

Truman College general education goals:

GEG1. The student exhibits social and ethical responsibility and is aware of her or his place in the global community.
GEG2. The student performs effectively in the workplace and has the ability to work and make effective use of a wide variety of current technologies.
GEG3. The student communicates effectively in both written and oral formats.
GEG4. The student demonstrates the ability to think critically, abstractly, and logically.
GEG5. The student gathers interprets and analyzes data.

Course objectives

1. Develop students' ability to demonstrate and communicate in both written and verbal modes their understanding of the fundamental principles of organic chemistry, its applications, and its relationship to other disciplines
2. Develop the students' ability to integrate various technologies in collecting, recording, analyzing, evaluating, and presenting data and information
3. Create in the students a culture of safety and integrity in the conduct of their laboratory experiments and in the manner in which they gather, interpret, analyze, and evaluate data
4. Foster student engagement in their own learning
5. Develop process skills that help the students become more competitive in the job market
6. Engage the students in proposing logical solutions to current, unresolved problems relevant to individuals/society using the knowledge and skills acquired in the course

Learning outcomes

Upon satisfactory completion of this course, the student will be able to:

1. Solve complex organic chemistry problems using structural analysis, mechanistic theory, spectroscopic analysis, and principles of organic syntheses

2. Safely handle and manipulate chemicals and standard laboratory equipment Record, graph, chart, analyze, and interpret data obtained from experimentation.technologies
3. Record, graph, chart, analyze, and interpret data obtained from experimentation
4. Integrate the knowledge of organic chemistry, including all of the above, in proposing plausible solutions to current, unresolved problems of relevance to individuals/society
5. Communicate an understanding of the fundamental concepts in organic chemistry in verbal and written form.
6. Search MSDS and be able to understand toxicity data.

Specific student learning outcomes and the general education goals they satisfy:

At the completion of this course, the successful student should be able to:	General education goal(s) satisfied
1. Use valence bond and orbital hybridization theories to rationalize the three-dimensional structure of organic molecules	**GEG3-5**
2. Identify and define structural features of alkanes, cycloalkanes, alkenes, alkynes, alkyl halides, alcohols, ethers, aromatic compounds, aldehydes, ketones, acids, and acid derivatives and how these influence the physical properties of an organic compound	**GEG3-5**
3. Write the names and structural formulas for alkanes, alkenes, alkynes, alkyl halides, alcohols, ethers and aromatic compounds	**GEG3-5**
4. Write line angle formulas of open chain, cyclic and aromatic compounds	
5. Visualize structures of alkanes, alkenes, alkynes, alkyl halides, alcohols, ethers and aromatic compounds in three dimensions and draw and construct model structures as three dimensional representations.	**GEG2-5**
6. Document the relevant reactions in the multi-step synthesis of an organic compound	**GEG2-5**
7. Investigate and discuss the mechanisms of fundamental organic reactions and thus predict simple reaction pathways for major and minor products using kinetics, thermodynamics, and stereochemical considerations	**GEG3,4**
8. Predict the regiochemistry and stereochemistry of the following organic reaction mechanisms using curved arrow notation: free radical substitution, electrophilic and free radical addition, nucleophilic aliphatic substitution, elimination, electrophilic aromatic substitution, catalytic hydrogenation	**GEG3-5**
9. Differentiate enantiomers, diastereomers, and *meso* compounds	**GEG3-5**
10. Propose reaction schemes that result in the generation of a chiral center	**GEG2-5**
11. Differentiate between precision and accuracy	**GEG3-5**
12. Use NMR, IR, MS, and UV-Vis spectroscopy to determine the structure of organic compounds	**GEG4,5**
13. Calculate the theoretical yield and percent yield for organic reactions	**GEG4,5**
14. Perform standard organic laboratory techniques	**GEG1,2,4,5**
15. Prepare compounds discussed in lecture through single and multi-step synthesis using appropriate techniques listed above for their synthesis, purification, characterization, and analysis	**GEG1,2,4,5**
16. Perform laboratory experiments that illustrate basic chemical principles.	**GEG1,2,4,5**
17. Maintain a laboratory notebook through the careful recording of observations and experimental data	**GEG1-5**
18. Correctly implement articulated laboratory safety and hygiene protocols	**GEG1,2**
19. Demonstrate effective laboratory procedures such as transfer of solids, weighing of solids, pouring of liquids, measurement of liquid volume	**GEG1,24,5**
20. Organize and graph experimental data	**GEG3-5**

21. Interpret experimental data and draw inferences from the data **GEG3-5**
22. Summarize the results of experimental observations and data **GEG3-5**
23. Verify experimental data from authentic sources, handbooks, and scientific journals

Topical outline and tentative schedule

(this schedule may be subject to change)

Date	Topic	Related chapter in the textbook
M, 01/14	Course orientation. **LECTURE:** Introduction and Review of Covalent Bonding and Shapes of Molecules Laboratory orientation and check-in; safety instructions	1
W, 01/16	*Quiz 1: Syllabus and Lab Safety* **LECTURE:** Alkanes and Cycloalkanes	2
M, 01/21	**NO CLASSES – MARTIN LUTER KING DAY**	
W, 01/23	*Quiz 2: Covalent bonding and shapes of molecules (Ch. 1)* Review of organic laboratory techniques **LAB 1:** Physical Properties of Organic Compounds (m.p; b.p; ignition test) **LECTURE:** Alkanes and Cycloalkanes	2
M, 01/28	**LAB 2:** Structure in Organic Compounds: Use of Molecular Models I **LECTURE:** Stereochemistry and Chirality	3
W, 01/30	*Quiz 3: Alkanes and cycloalkanes (Ch. 2)* **LECTURE:** Stereochemistry and Chirality	3
M, 02/04	**LAB 3**: Stereochemistry: Use of Molecular Models II **LECTURE:** Acids and Bases	4
W, 02/06	*Quiz 4: Stereochemistry and Chirality (Ch. 3)* **LECTURE:** Acids and Bases **LAB 4**: Distillation (semi-micro/fractional)	4
M, 02/11	*Quiz 5: Acids and Bases (Ch. 4)* **LECTURE:** Alkenes: Bonding, Nomenclature, Properties	5
W, 02/13	*Quiz 6: Alkenes: Bonding, Nomenclature and Properties (Ch. 5)* Review for the Exam 1 **LECTURE:** Reactions of Alkenes	6
M, 02/18	**NO CLASSES – PRESIDENTS DAY**	
W, 02/20	**Exam 1: Chapters 1-5** **LECTURE:** Reactions of Alkenes	6
M, 02/25	*Quiz 7: Reaction of alkenes (Ch. 6)* **LECTURE:** Alkynes: Bonding, Nomenclature, Properties, Reactions	7
W, 02/27	*Quiz 8: Alkynes (Ch. 7)* **LECTURE:** Haloalkanes, Halogenations, and Radical Reactions	8
M, 03/04	**LECTURE:** Haloalkanes, Halogenations, and Radical Reactions **LAB 5:** Synthesis of an Alkene (Dehydration of a Tertiary Alcohol)	8
W, 03/06	*Quiz 9: Haloalkanes (Ch. 8)* **LECTURE:** Nucleophilic Substitutions and β-Elimination	9
M, 03/11	**LECTURE:** Nucleophilic Substitutions and β-Elimination	9
W, 03/13	*Quiz 10: Nucleophilic Substitutions and β-eliminations (Ch. 9)*	

	LECTURE: Alcohols: Nomenclature, Properties, and reactions	10
M, 03/18	**LECTURE:** Alcohols: Nomenclature, Properties, and Reactions **LAB 6:** Isolation of Ingredients of an Analgesic Drug	10
W, 03/20	*Quiz 11: Alcohols (Ch. 10)* Review for the Exam 2	
M, 03/25	**NO CLASSES – SPRING BREAK**	
W 03/28	**NO CLASSES – SPRING BREAK**	
M, 04/01	**Exam 2: Chapters 6-10** **LECTURE:** Ethers, Epoxides, and Sulfides: Nomenclature, Properties, Reactions	11
W, 04/03	**LECTURE:** Ethers, Epoxides, and Sulfides: Nomenclature, Properties, Reactions **LAB 7:** Column Chromatography	11
M, 04/08	*Quiz 12: Ethers, Epoxides and Sulfides (Ch.11)* **LECTURE:** Benzene and the Concept of Aromaticity: Electrophilic Substitution in Benzene and its Derivatives	21 & 22
W, 04/10	**LECTURE:** Benzene and the Concept of Aromaticity: Electrophilic Substitution in Benzene and its Derivatives **LAB 8:** Synthesis of Acetylsalicylic Acid	21 & 22
M, 04/15	*Quiz 13: Benzene and the Concept of Aromaticity; Electrophilic Substitution in Benzene and its Derivatives (Chapters 21 & 22)* **LECTURE**: IR Spectroscopy and Identification of Functional Groups	12
W, 04/17	**LECTURE**: IR Spectroscopy and Identification of Functional Groups **LAB 9:** Nitration of Methylbenzoate	12
M, 04/22	*Quiz 14: IR Spectroscopy* **LECTURE**: NMR Spectroscopy and Interpretation of ^{1}H & ^{13}C Spectra	13
W, 04/24	**LECTURE**: NMR Spectroscopy and Interpretation of ^{1}H& ^{13}C Spectra **LAB 10:** Purification of a neutral compound by extraction	13
M, 04/29	*Quiz 15: NMR Spectroscopy and Interpretation of ^{1}H & ^{13}C Spectra* **LECTURE**: Mass Spectrometry and interpretation of data Review for the Exam 3	14
W, 05/01	**Exam 3: Chapters 11-14, 21, and 22** Course review	
M, 05/06	Course review	
W, 05/08	**COMPREHENSIVE FINAL EXAM**	

Methods of instruction

Instruction techniques include, but are not limited to, discussions, in-class small group activities (problem solving), lectures, etc. Some of topics may be covered through Process-Oriented Guided Inquiry Learning (POGIL) activities. Selected chapter outlines, highlights, and notes will be available on Blackboard.

Laboratory Activities: Students are expected to have reviewed the appropriate experiment before coming to class. Some of these may be guided inquiry laboratory activities.

Group Exercises / Chem Activities: Some chapter exercises and most laboratory experiments will be done in groups/pairs.

Class Demonstrations: Live demonstrations of reactions and other processes may be done during both the lectures and laboratory work; students are expected to record these and their observations.

Video clips: Certain laboratory techniques, safe operations, hazardous reactions and processes may be shown through short video clips.

Laboratory Demonstration Videos:
Microscale Technique 4: Solvent Evaporation
Microscale Technique 5: Distillation
Microscale Technique 7: Extraction
Microscale Technique 8: Physical Constanta (including melting points)
Microscale Technique 9: Chromatography (including column chromatography)

http://bcs.wiley.com/he-bcs/Books?action=resource&bcsId=5405&itemId=0471215023&resourceId=19612

Methods of Assessment:

- Exams/Quizzes: There are three long examinations and a comprehensive final exam. Chapter quizzes will be given approximately after completion of each chapter, roughly according to the tentative schedule. Quizzes and exams will be based on previously discussed material, on laboratory activities, and on material presented in the textbook.
- Laboratory reports – due one week after each experiment is completed or as instructed
- In class group activities and POGIL team strength assessment – an assessment form will be provided

Methods of evaluation of students' performance

Final course grades will be based on the following:

Class Participation	5%	**A** ≥ 90 %
Lab	25%	80 ≤ **B** < 90 %
Quizzes	25%	65 ≤ **C** < 80 %
Long Exams	25%	50 ≤ **D** < 65 %
Final Exam	20%	**F** < 50 %
Total	100%	

***A student needs to pass both the lecture and laboratory portions in order to pass CHEM 205. A failing average in either one at the end of the term will mean a grade of "F" for the course.**

A grade of I (incomplete) will be given to a student who missed to take the final exam (for an excused reason) but otherwise would receive a passing grade for the course.

ADW will be given at the midterm to a student who (by the midterm date) would not fulfill the minimum requirements of active class participation pursuit.

Class Participation: Student participation in class discussion and POGIL activities, including completed POGIL modules and problem-solving exercises, will determine the class participation score. Managing and completing tasks in a POGIL activity AND five (5) instances of board work or oral response during class discussion earns an automatic full credit in class participation. Ten (10) instances of board work or oral response during class discussion also earns an automatic full credit in class participation.

Exams/Quizzes: The long exam with the lowest score and the two quizzes with the lowest scores will be dropped before calculating the final grade. The Final Exam is comprehensive.

Up to one missed long exam and one quiz may be made up if the absence was previously properly excused. Otherwise there will be **no make up** for any missed quiz or exam - two lowest scored quizzes and one lowest scored long exam will be dropped instead. A **comprehensive final exam** will be given at the end of the semester.

Cell phones and all other similar electronic devices (including lap tops, i-phones, etc.) may absolutely not be used at any time during the exams and quizzes. They must be switched off and removed from the desks. After the beginning of the exam a students may leave the classroom only if he/she turns in the exam – no bathroom breaks are allowed.

Notes: The final exam is absolutely mandatory. Students who do not attend the final exam will receive a grade of "F" for the course (fail the course). If such a student has a College recognized excuse, she or he will be given a grade of I (incomplete), which will be changed to a passing or failing grade depending on weather the final exam is completed in accordance with the deadline set by the College. Please consult student- handbook and your advisor regarding this matter.

Lab: Each lab is worth 2.5 points. The score will be based on proper conduct during lab (i.e., application of correct lab techniques and observance of lab safety and hygiene), satisfactory completion of the experiment, reasonable results, and prompt submission of the formal report or report sheets. Refer to the list below (and the checklist on Blackboard) for instructions related to the lab reports.

INSTRUCTIONS for the Laboratory:

GENERAL

1. You must do your laboratory work at the time assigned for your section. Attendance will be taken. Study the experiment thoroughly before coming to the lab so that you don't waste time going through the procedure during the lab. Pay attention to the pre-laboratory discussion. **THERE WILL BE NO MAKE UP FOR MISSED LABS**.
2. Follow all instructions carefully. Ask the instructor if you do not understand a direction or part of a procedure.
3. No student may work in the laboratory without an authorized supervisor present.
4. Children are not allowed in the lab.
5. Do not touch any equipment, chemicals, or other materials in the laboratory area until instructed to do so.

6. Do not eat food, drink beverages, or chew gum in the laboratory.
7. Be familiar with the location and proper use of all safety equipment including the first aid kit, eyewash station, safety shower, fire extinguisher, and fire blanket. Know where the fire alarm and the exits are located.
8. Perform authorized experiments only.
9. Horseplay, practical jokes, and pranks are dangerous and prohibited.
10. Work areas should be kept clean and orderly. Bring only your laboratory manual and notebook to your lab station.
11. Keep aisles clear as much as possible.
12. Always work in a well-ventilated area. Use the fume hood when working with volatile substances or poisonous vapors. Never place your head into the fume hood.
13. Be alert and cautious at all times. Notify the instructor immediately if you observe any unsafe conditions.
14. Dispose of all chemical waste properly or as instructed. Never pour chemicals in sink drains. Only water and aqueous solutions designated by the instructor may be poured in the sink. Solid chemicals, metals, matches, filter paper, and all other insoluble materials are to be disposed of in the proper solid waste containers. Always double-check the label of all waste containers before disposing your chemical waste to the container.
15. Read the labels on reagent bottles carefully before use.
16. Read the equipment instructions carefully before use.
17. Keep hands away from any part of your body while using chemicals. Wash your hands with soap and water after performing all experiments.
18. Clean and wipe all work surfaces, equipment, and apparatus at the end of the experiment. All borrowed equipment must be returned on the cart.
19. Never leave an experimental setup unattended.
20. Keep out of the stockroom unless given permission by the instructor. The stockroom attendant will provide assistance.
21. If there is an emergency evacuation during the laboratory period, containers must be closed, gas valves turned off, and any electrical equipment turned off.
22. When using sharp instruments, always carry with tips and points pointing down and away. Always cut away from your body.
23. If you have a medical condition (e.g., allergies, pregnancy, etc.), consult with your physician prior to working in lab.

USE OF PERSONAL PROTECTIVE EQUIPMENT (PPE)

24. Use a laboratory coat, apron or other personal protective equipment when instructed to do so.
25. Whenever chemicals, heat, or glassware are used in the laboratory, you need to wear your safety goggles.
26. Do not wear contact lenses in the laboratory. The instructor may permit contact lenses for certain activities.
27. Wear appropriate clothing in the laboratory. Long hair must be tied back and dangling jewelry must be secured. Avoid loose clothing as they can be a hazard. Always wear closed footwear to protect your feet.

HANDLING CHEMICALS AND EQUIPMENT

28. Do not touch, taste, or smell any chemicals unless instructed to do so. The proper technique for safely handling specific chemicals will be demonstrated by your instructor.
29. Double-check the label on reagent bottles carefully before removing any of the contents. Take only as much chemical as you need. The instructor will demonstrate the proper technique for transferring small quantities of chemicals.

30. Never return unused chemicals to their original containers.
31. Use a rubber bulb or pipet pump when you need to fill a pipet.
32. Always handle acids with extreme care. Your will be instructed on the proper method for diluting strong acids. Always add acid to water. Be cautious of the heat produced, particularly with highly concentrated acids.
33. Handle flammable hazardous liquids over a pan to contain spills. Never dispense flammable liquids anywhere near an open flame or source of heat.
34. Never bring reagent bottles and chemicals to your lab station. These must remain in the fume hood or the counter at all times.
35. Be extremely careful when transporting acids and other chemicals. Keep the containers secure and walk carefully.
36. Never touch any chemical that is spilled. Notify the instructor immediately.
37. If a chemical splashes in your eye(s) or on your skin, immediately flush with running water from the eyewash station or safety shower for at least 15 minutes. Notify the instructor immediately.
38. Carry glass tubing in a vertical position to prevent breakage and possible injury.
39. Never handle broken glass with your bare hands. Use a brush and dustpan to clean up broken glass. Place broken or waste glassware in the designated glass disposal container.
40. Inserting and removing glass tubing from rubber stoppers can be dangerous. Always lubricate glassware (tubing, thistle tubes, thermometers, etc.) before attempting to insert it in a stopper. Oftentimes, distilled water will do the trick. Always protect your hands with towels when inserting glass tubing into, or removing it from, a rubber stopper. If a piece of glassware becomes “frozen” in a stopper, ask for assistance.
41. Always make sure that you are using clean glassware. Double-check to make sure that there is no crack or chip.
42. Fill wash bottles only with distilled water.
43. Keep your hands dry when handling electrical equipment. When removing an electrical plug from its socket, grasp the plug, not the electrical cord.
44. Report damaged electrical equipment immediately. Do not attempt to use them.
45. If you do not understand the instructions for equipment use, ask for assistance.
46. Exercise extreme caution when using a gas burner. Take care that anything that can catch fire (e.g., hair, clothing, flammable chemicals, etc.) is kept at a safe distance at all times. Do not put any substance into the flame unless specifically instructed to do so. Never reach over a flame. The instructor will demonstrate how to light a burner.
47. Always turn the burner or hot plate off when not in use.
48. The instructor will demonstrate the proper method of heating and boiling liquids in test tubes. Make sure to point the open end of a test tube being heated away from anyone.
49. Heated metals and glass remain very hot for a long time. They should be set aside to cool and picked up with caution. Use tongs or heat-protective gloves if necessary. Do not set hot glassware in cold water or bench top; it may shatter.
50. Never look directly into a container that is being heated.
51. Do not place hot apparatus directly on the bench top. Always use an insulating pad. Allow plenty of time for hot apparatus to cool before touching it.
52. When bending glass, allow time for the glass to cool before further handling. Hot and cold glass have the same visual appearance. Determine if an object is hot by bringing the back of your hand close to it prior to grasping it.
53. Keep the mass balances and the area around them clean. Follow the directions given by the instructor on the proper weighing technique to use. Otherwise, do not place chemicals directly on the balance pans; place a piece of weighing paper, or a small container such as a

watch glass, on the pan first and then weigh your material. Never weigh an object while it is hot.

54. Notify the instructor immediately in the event of an accident or injury, no matter how trivial it may appear.
55. If you or your lab partners are hurt, immediately get the instructor's attention.

SERIOUS OFFENSES

56. Certain activities will result in your dismissal from the course, receiving a grade of F, and referral to the Dean. These are:
    a. Flagrant and willful violation of safety standards
    b. Falsification of data, "dry-labbing" experiments, copying from another student's notebook, quiz, or lab report, turning in a product that you did not make yourself
    c. Engaging in unauthorized experiments
    d. Theft of chemicals, glassware, or other items from the laboratory or from another student

LAB REPORTS:

1. **RECORD ALL DATA IN INK IN YOUR LAB NOTEBOOK WHILE YOU WORK.** Do not write data, even temporarily, on scraps or other pieces of paper. Make sure your data is complete. **Do not forget your name or the unknown number**, if applicable. Pay attention to significant figures. If you make a mistake, delete entries by crossing them out neatly with a single line. Do not erase or "white out" mistakes. BEFORE LEAVING THE LABORATORY, HAVE THE LABORATORY INSTRUCTOR SIGN YOUR REPORT SHEET THEN SUBMIT THE DUPLICATE.

2. Write up the report according to the format below and answer all Post Laboratory Questions posted.

3. The report must be clear, complete, and concise. Use a word processor for all text although chemical equations and calculations may be handwritten.

4. The pages must be named and stapled together.

5. Hand in your lab report to your lab instructor one week after you perform the experiment. A 20% deduction will be assessed a report not handed in on time up to one week after the due date; **reports submitted more than one week late will not be accepted.**

6. Each lab is worth 25 points. The lab notebook will be graded and is equivalent to one lab experiment. The lowest lab score (excluding the lab notebook grade) will be dropped. The point distribution is included in the lab report format below while the grading rubric is posted on Blackboard.

7. The lab report should include the following (see also the Lab Checklist on Blackboard for guidance):

   General information: Your name, Course # and section #, the title of the experiment, the date it was performed. (1 pt)
   Abstract: A brief summary of the experiment, including the most important results. (5-10 sentences; 2 pts)

Introduction: This section includes a statement of the objectives of the experiment, a very brief background into the theory behind the laboratory, and techniques used. Balanced chemical equations, if applicable, should be included as well. (2pts)

Materials and Methods: A narrative of the experimental procedure. Published procedures should not be rewritten; rather, the references need to be cited. Modifications done to the published method should be written in this section. (2 pts)

Results/Data: This section includes a brief narrative of the experimental results and should refer to any tabulated results. (5 pts)

Data Analysis and Discussion: Present all calculations performed using the results of measurements. Discuss the relationship of the experimental results to the expected results and the plausible reasons (not limited to experimental errors) that may be taken into account to explain possible differences. Include the relevance of the results and your experience doing this experiment in relation to the stated objectives. (5 pts)

References: List your sources. For example: Handbook of Chemistry and Physics, the proper citation of the handout, texts, or websites. (1 pts)

Figures, Tables, Data, Spectra: This includes your tabulated data and results, calculations, graphs, and spectra. (5 pts)

Answers to Questions (2 pts)

NOTE: Points assigned to the **Results** and **Figures, Tables, Data, and Spectra** sections include laboratory performance score. Scores in these sections can be reduced if you failed to follow the experimental procedures and laboratory techniques, or disregarded proper laboratory safety and hygiene.

***Course Policy*:**

Correspondence with Instructor: FERPA (Family Educational Rights and Privacy Act) is a federal law that protects the privacy of student educational records. See the following webpage: www.ed.gov/policy/gen/guid/fpco/ferpa/index.html. Faculty cannot reveal information about students, or discuss student records over the phone or unsecured e-mail. **CCC student e-mail** meets FERPA requirements and **must be used when communicating with the instructor after hours**.

Active Pursuit and Withdrawal: In order for you to remain enrolled in the course, you must actively pursue the completion of its objectives. A student will be withdrawn from the course (i.e., given a grade of ADW) at midterm if up to that point at least two of the following apply:

1. Less than 70% of the homework have been completed
2. Less than 70% of the labs and reports have been done and submitted
3. Less than 70% of the quizzes have been attempted
4. Less than 70% of the class sessions have been attended

The last day for student initiated withdrawal is on April 8th. Merely stopping from attending class beyond midterm does not constitute an official withdrawal. If your name appears in the final grade roster at the end of the semester and you have stopped attending long before then, you will receive a grade of 'F' for the course. Moreover, failure to withdraw may result in mandatory payment of tuition/fees, forfeiture of financial aid eligibility, and/or a failing grade (*Student Policy Manual*, p. 26)
http://www.ccc.edu/departments/Documents/studentpolicymanual.pdf.

"No Show" Withdrawal (NSW) Policy: If a student registered for a course before the start time of the first class period, but did not attend the first two class periods will be withdrawn from the course by the instructor and issued an NSW (*Student Policy Manual*, p. 25**)** http://www.ccc.edu/departments/Documents/studentpolicymanual.pdf.

Student Conduct: Each student is responsible for adhering to the Standards of Conduct according to the Student Policy Manual. http://www.ccc.edu/departments/Documents/studentpolicymanual.pdf)

All cellular phones or mobile devices must be turned off or put on the silent mode and put away during lecture and laboratory sessions. If you really have to take an emergency call, please live the classroom and take it in the hall. No CD/MP3/tape/music/iPod/iPhone is allowed to be operated while class is in session.

No eating, drinking, chewing gum, or smoking is allowed in the studio classroom.

Academic Integrity: Academic dishonesty is a serious offense, which includes but is not limited to the following: cheating, complicity, fabrication and falsification, forgery, and plagiarism. Cheating involves copying another student's paper, exam, quiz or use of technology devices to exchange information during class time and/or testing. It also involves the unauthorized use of notes, calculators, and other devices or study aids. In addition, it also includes the unauthorized collaboration on academic work of any sort. Complicity, on the other hand, involves the attempt to assist another student to commit an act of academic dishonesty. Fabrication and falsification, respectively, involve the invention or alteration of any information (data, results, sources, identity, and so forth) in academic work. Another example of academic dishonesty is forgery, which involves the duplication of a signature in order to represent it as authentic. Lastly, plagiarism involves the failure to acknowledge sources (of ideas, facts, illustrations and so forth) properly in academic work, thus falsely representing another's ideas as one's own.

"The City Colleges of Chicago is committed to the ideals of truth and honesty. In view of this, students are expected to adhere to high standards of honesty in their academic endeavor. Plagiarism and cheating of any kind are serious violations of these standards and will result, minimally, in the grade of "F" by the instructor." – p. 40 of the Student Policy Manual (http://www.ccc.edu/departments/Documents/studentpolicymanual.pdf)

Student Services

The Student Services Department provides a broad range of services to assest students in achieving their academic and life goals.

Students with Disabilities

The Truman College Disability Access Center (DAC) verifies needs pursuant to the American Disabilities Act (ADA), determines student academic accommodations, and issues accomodation letters. The center is located in room 1428 with phone number: (773) 907-4725.
Linda Ford is the director.

Tutoring Center

The Tutoring Center is located in room L129, 773-907-4785

TRIO Student Support Services

TRIO is for low-income students, first generation college students, or students with disabilities who need academic support: room 1435, (773) 907-4797
Registration is required at the start of each semester.

Student Success and Leadership Institute (SSLI)

SSLI is for students who need various other support services to achieve their educatinal goals: room 1435, (773) 907-4714

Wellness Center

The Wellness Center provides a variety of services at no cost for students including counseling, crisis intervention, support groups and more. (773) 907-4045, Room 177, McKeon Admin. Bldg.

Ray Cosgrove Library: Room L625, Phone (773) 907-4865