CHEMISTRY 2423 (4:3:4)

ORGANIC CHEMISTRY I

INSTRUCTIONAL AREA: CHEMISTRY

DEPARTMENT: SCIENCE

DIVISION: ARTS AND SCIENCES

SOUTH PLAINS COLLEGE

FALL SEMESTER 2019

PROFESSOR WERENKO

LECTURE OUTLINE

Block 1 (Lecture Exam 1)

Chapter 1: The Basics
Chapter 2: Families of Carbon Compounds

Block 2 (Lecture Exam 2)

Chapter 3: Acids and Bases
Chapter 4: Nomenclature and Conformations of Alkanes and Cycloalkanes

Block 3 (Lecture Exam 3)

Chapter 5: Stereochemistry
Chapter 6: Nucleophilic Reactions

Block 4 (Final Exam)

Chapter 7: Alkenes and Alkynes I
Chapter 8: Alkenes and Alkynes II
Chapter 10: Radical Reactions

LAB OUTLINE

Pre-Lab Lessons, Techniques Videos, Experiments, and Graded Lab Reports

The purpose of Organic I Lab is to teach you fundamental techniques used in the organic laboratory.

Exp 1: Measurement of Physical Properties – Melting Point, Boiling Point, Density, Refractive Index
Exp 3A: Simple Distillation of Ethyl Acetate and *trans*-1,2-Dibenzoylethylene
Exp 4A: Solvent Extraction of the System Benzoic Acid, Methylene Chloride, and Water
Exp 8: Column Chromatography – Separating the Components of a Mixture
Exp 6A: Purification of *trans*-1,2-Dibenzoylethylene – Recrystallization and TLC
Exp 9: Gas Chromatography – Separating and Analyzing the Components of a Mixture
Exp 5A: Reduction of a Ketone to a Secondary Alcohol Using a Metal Hydride Reagent

"Organic chemistry nowadays almost drives me mad. To me it appears like a primeval tropical forest full of the most remarkable things, a dreadful endless jungle into which one does not dare enter for there seems to be no way out." – Friedrich Wöhler, 1835

COURSE DESCRIPTION (FROM THE SPC CATALOG). "**(4:3:4)** Fundamental principles of organic chemistry will be studied, including the structure, bonding, properties, and reactivity of organic molecules; and properties and behavior of organic compounds and their derivatives. Emphasis is placed on organic synthesis and mechanisms. Includes study of covalent and ionic bonding, nomenclature, stereochemistry, structure and reactivity, reaction mechanisms, functional groups, and synthesis of simple molecules. THIS COURSE IS INTENDED FOR STUDENTS IN SCIENCE OR PRE-PROFESSIONAL PROGRAMS. Laboratory activities will reinforce fundamental principles of organic chemistry, including the structure, bonding, properties, and reactivity of organic molecules; and properties and behavior of organic compounds and their derivatives. Emphasis is placed on organic synthesis and mechanisms. Includes study of covalent and ionic bonding, nomenclature, stereochemistry, structure and reactivity, reaction mechanisms, functional groups, and synthesis of simple molecules. Methods for the purification and identification of organic compounds will be examined. 4 Semester Hours, 3 Lecture Hours, 4 Lab Hours. Pre-requisite: A grade of "C" or better in CHEM 1412."

INSTRUCTOR.
Professor Werenko
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(The best way to contact me and get a reply.)

OFFICE HOURS. Office hours will be posted on my door at the beginning of the semester.

CLASS CONTENT. All information for this class comes from lectures (overhead transparencies, whiteboard, demos), the textbook, homework problems, and lab experiments. Exams will be given, and you will write lab reports. Blackboard is not used in this class.

CORE OBJECTIVES. This class is intended to develop the following skills:

1. **Teamwork:** Working with your lab partner on experiments and lab reports.
2. **Critical Thinking:** Homework problems, lab work with accompanying data analysis, writing lab reports, exams.
3. **Communication:** Writing lab reports with your lab partner, keeping your lab notebook.
4. **Empirical & Quantitative Skills:** Homework, lab work with accompanying data analysis, writing lab reports, keeping your lab notebook, exams.

REQUIRED COURSE MATERIALS. The following materials may be purchased at the SPC bookstore. *They will also be used in Organic II.* You will also need a *scientific* calculator (not a smart-phone calculator, which *may not* be used on exams).

- *Organic Chemistry,* 12th Edition, by Solomons, Fryhle & Snyder

- *Study Guide & Solutions Manual,* 12th Edition, by Solomons, Fryhle & Snyder
- *Microscale Organic Laboratory,* 6th Edition, by Mayo, Pike & Forbes
- *Organic Chemistry Fundamentals,* by Quick Study Academic (recommended)
- Organic Chemistry Student Laboratory Notebook (Hayden-McNeil)
- **Laboratory** safety glasses
- Box of laboratory gloves
    - •• Examination style. **Nitrile** is recommended and offers the best protection.
    - •• *Note:* Gloves are not available at the SPC bookstore. You can find them at stores like CVS, Walgreens, etc.

PROPER LABORATORY DRESS. You must wear safety glasses and laboratory gloves for every experiment.

You may not bring snacks or drinks into the lab. They should be placed on the instructor desk, or put in your book bag. Do not set them on the lab bench. You may not eat your lunch in the lab, or use the microwave.

Book bags should be placed next to your lab station, away from foot traffic, not on the lab bench. The lab bench is where experiments are done.

LECTURE EXAMS. There will be three (3) Lecture Exams, each worth 100 points. Questions will be based on topics covered in lecture, and the homework. The dates of Lecture Exams are given in the attached Class Schedule.

FINAL EXAM. The Final Exam will be non-comprehensive and worth 100 points. You will take the Final Exam on the day it is scheduled. Final Exams are scheduled by the college, not the instructor. **If you do not take the Final Exam, you will receive a zero for your score, which will be factored into your class average.**

EXAM REFERENCES. You will be allowed to write reference notes on a **4x6-inch index card,** for use on the Lecture and Final Exams. Your card must be turned in with your exam.

RETURNING OF EXAMS. Exams are like library books: I always get them back! Your graded exams will be returned to you, and you will have time to compare them with the keys I will post. *Your exams must be returned to me at the end of the lecture period, so be sure to keep a record of your scores.* An exam not returned will be entered into the grade book as an irreplaceable zero. Exams will only be brought to class ONCE, so if you were not present on the day an exam was returned, you must come to my office to see how you did.

Note: **Exams and answer keys may not be photographed at any time. If you do so, you will receive an irreplaceable zero for that exam.**

EXAM MAKEUPS. ***Lecture Exams:*** If one (1) Lecture Exam is missed, your Final Exam will count twice. This also applies to students who are away on SPC-sponsored activities. Any other missed exams will be scored as zeros.

Final Exam: Exam times are scheduled by the college, not the instructor. If the Final Exam is missed due to situations beyond your control (in my opinion), I will do my best to fit you in *during Final Exam week.* You must notify me of the reason for your absence as soon as possible (email, voice mail, etc.). A Final Exam makeup must be ***completed*** by 3 p.m. of the Thursday of Final Exam week.

In extreme cases that would *prevent* you from coming in to take the Final Exam during Final Exam week (*example:* cases requiring hospitalization), you may be excused from taking the Final Exam and your grade would be based on the scores you do have. (Unless the college has a contingency plan for such situations.) I won't just "take your word for it," however. I will need proof.

Our Final Exam is scheduled for the Monday of Final Exam week. The Final Exam will not be given earlier to accommodate family vacations, flight schedules, or things of that nature. So plan accordingly!

USE OF TECHNOLOGY. Computers, smart phones, or other electronic devices may not be out or in use during exams. You are permitted to use a ***scientific calculator*** on exams (*example:* Texas Instruments). Smart-phone calculators may not be used.

RECORDING OF LESSONS. Lessons may not be recorded or videotaped, unless you have written permission to do so from Special Services. Unauthorized recording or videotaping will be reported to the Dean of Students.

SCORE REPLACEMENT POLICY. If your score on the Final Exam is higher than the score of your lowest Lecture Exam, the Final Exam will replace your lowest score. This score replacement applies to *one exam only,* even if the same low score is received more than once. A zero obtained for using unauthorized exam materials, not returning an exam, or photographing an exam will not be replaced. Since the Final Exam is non-comprehensive and over new material, no one "tests out of it." The Final Exam counts toward everyone's course grade. *Example:*

Lecture Exam 1	80%
Lecture Exam 2	60% → **85%** (score replaced)
Lecture Exam 3	75%
Final Exam	**85%**

If, due to situations beyond my control (*examples:* snow, illness, jury duty), we are unable to have the Final Exam, each exam will stand on its own and the Score Replacement Policy would not apply. (Unless the college establishes a contingency policy).

CURVING OF SCORES AND EXTRA CREDIT. There are no curves on exams, though there will be extra-credit questions. You may not realize that a "true curve"

curves up if the average is low, but it also curves *down* if the average is high. Otherwise, if the curve is only "up" for low scores, exams do not receive equal treatment. With "grading on a curve," the "average," whatever it is, is usually set at a *C*. So, if you don't do so well on an exam, look for ways to make up for it (*examples:* study better for the next exam, give the extra-credit questions a try, use the Score Replacement Policy to replace your lowest score, write quality lab reports, etc.).

HOMEWORK. Homework is meant to prepare you for the Lecture Exams. Problems will be assigned from the textbook for each chapter and included in homework handouts. Answers to all problems can be found in your Solutions Manual. No other solutions will be posted. Since *worked-out solutions* are in your Solutions Manual, homework will not be collected or graded. However, if you do not or cannot do the homework, chances are you will not do well on the exams.

MISSING CLASS. Missing this class has consequences, whether the miss is due to your job, an SPC activity, etc. If you miss a day of class, it is your responsibility to catch up – from the homework handout. You can see me for the topics you missed, but I will not re-teach that material during office hours or photocopy lesson slides.

Should I have to miss class (due to illness, jury duty, etc.), I will either put a homework assignment together which allows you to cover that material on your own, or we will simply pick up where we left off the next time we meet. This also includes classes officially cancelled due to inclement weather. This could result in the schedule of lessons having to be revised, and exam dates having to be rescheduled.

LAB. You will perform a series of experiments in the lab. Your lab grade will be based on the scores you receive on six (6) lab reports.

Organic Lab is not an "option." You will be allowed one "free" absence from lab all semester. After that, one letter grade will be deducted from your lab report for each day you miss of an experiment. Any kind of absence affects learning. If you miss every day of an experiment, you will receive a zero for that experiment. If you are dismissed from lab because you do not have your safety glasses and gloves, you will receive a letter-grade deduction, per infraction.

You will be working with a lab partner, and will be working with data gathered by *your lab group.* You will officially choose a lab partner at the beginning of the semester and that person will be your lab partner *for the entire semester.* You and your lab partner will submit ***jointly written*** lab reports. This does not necessarily mean you will receive the same grade on a lab report as your lab partner. For example, if you missed one day of an experiment (beyond your "free one") and your lab partner did not, you would receive a letter-grade deduction and your lab partner would not.

You may not share laboratory data between lab groups. Each group is responsible for obtaining its *own data.* The standard group size will be two students. If your lab partner is absent, you will work alone that day. You may not simply join up with another group. *If you are both absent on the same day, the work you missed cannot be made up, and this will adversely affect your lab report grade.* (In such cases you may not even be able to

finish the experiment.) If your lab partner drops the class, you will work alone until I can pair you up with another group. Some shuffling of lab groups may be necessary during the course of the semester, due to drops.

All this is to say, you and your lab partner will need to work together as a team to succeed in the lab portion of this course. Time working outside of the laboratory may be necessary. Be sure your lab partner is doing their share of the work. *And be sure to tell your lab partner if you must miss lab on a particular day.* There is no excuse for not doing so, in this day of email and texting.

You must come to lab prepared to get to work, which includes your having read the assignment from the laboratory textbook. The actual time Organic Lab ends each day may vary. The bottom line is you must finish each day's tasks. I will inform you of how far you are to get each day. However, **everyone needs to be out of the lab by 3:00 p.m.**

Each of you is responsible for keeping the lab clean and neat. This applies to your workstation and lab locker, as well as to the common-use chemicals, equipment, and instruments.

EQUIPMENT BREAKAGE AND LOSS. The equipment you use in lab is specific to this class, expensive, and in limited supply. And the smaller the piece, the more expensive it seems to be. **If your group breaks or loses something, you may have to work without that piece until I can come up with a replacement. Don't just assume I have an on-the-spot replacement. (Read the first sentence of this paragraph again!)** In Organic I, you will do check-in and exit inventories of your lab locker.

RESTARTING EXPERIMENTS. You must do the experiments on the days they are scheduled. A restart of an experiment (on the same day, only) is meant for something like equipment malfunction, not mistakes or poor results. **You should inform me of your intention to do a restart.** It will be your responsibility to catch back up to the rest of the class – *during lab time, only.* I will not keep the lab open late for a group that is trying to catch up. *An experiment ends on the same day for everyone, restart or not.*

THE ORGANIC LAB NOTEBOOK. The *required kind* is for sale at the SPC bookstore. Further details on how to keep your notebook will be included in the Organic Laboratory Notebook handout you will receive.

LAB REPORTS. Lab reports are worth 30 points each. They will be graded as *A*+ = 100%, *A* = 95%, *A*– = 90%, *B* = 85%, *B*– = 80%, *C* = 75%, *C*– = 70%, *D* = 65%, *F* = 0%, with corresponding *point values* calculated from % x 0.30. (*Example: B*– = 80% = 24 points out of 30.) You and your lab partner will submit a ***jointly written*** report on each experiment. You will get the information you need to write the reports from your lab notebook and lab notes.

Your lab report grade will be based on *my assessment* of your report, which includes neatness, proper handling of data, following of instructions, and how the quality of your report compares with that of the other lab groups. The person you must impress with your report is ME!

After completing an experiment you will receive a handout for writing the lab report. It will detail its format and give the due date. A late lab report will receive a letter-grade deduction, if turned in by the next class day. Later than that, and it's a zero.

ATTENDANCE POLICY. The policy is simple:

YOU DO NOT MISS ORGANIC CHEMISTRY!

A total of 4 absences qualifies you for an Excessive Absence Drop (with a grade of *X* or *F,* at my discretion). Students participating in *official SPC activities* will not be charged with absences for those days, **but** work missed is work missed. It will be your responsibility to make up the lecture material that you missed (from the homework handout). Lab work cannot be made up. **The results of roll call as recorded on my class roster will be the official record of attendance.** If you are not present for roll call, you will be counted absent *for the day.* If you think you may have missed roll call, you should check in with me *that day.* Cutting class and/or lab will count against you. If you are unable to finish this class, complete a withdrawal slip (*W*) at the Registrar's Office. Don't wait to drop, however, because once I drop you for excessive absences, it's either an *X* or an *F.* Neither looks good on your transcript!

Reason: South Plains College requires that each instructor have an attendance policy. SPC in good faith gives you a grade and credit hours for taking this class in-class and in-lab. I will enforce the integrity of this policy. This is not an online class or a self-paced class. You should not even come close to your allowed absences. If you come to me wondering about how many absences you have, you are not approaching this class in the right way!

POINT DISTRIBUTION.

Exams (70% of grade)	
3 Lecture Exams @ 100 pts each	300 pts
1 Final Exam	100 pts
Experiments (30% of grade)	
6 Lab Reports @ 30 pts each	180 pts
Total points for the class	580 pts

GRADES. Grade lines are firm, and will be drawn as follows. When posted, grades will not be changed, unless there has been an arithmetic error on my part. Percentages are computed to the tenths place, and – given extra credit and score replacement possibilities – are not rounded up.

Grade	Percent (%)	Total Points
A	≥ 90.0	≥ 522
B	≥ 80.0	≥ 464
C	≥ 70.0	≥ 406

D	≥ 60.0	≥ 348
F	< 60.0	< 348

COMPUTING YOUR AVERAGE. You can compute your up-to-the-minute average by dividing the total number of points you have earned by the number of points available in the class *up to that point in time. Example:* (256/290) x 100 = 88.3% = *B.* Remember to use lab report *points* in your calculation, not percentages. (See the conversion under Lab Reports, above.)

If, due to situations beyond my control (*examples:* snow, illness, jury duty), we are unable to have the full allotment of exams and labs, your grade will be calculated based on the scores we *do have* at the end of the semester. (Unless the college establishes a contingency policy).

You will receive your official final letter grade posted to your SPC transcript. Further information on the posting of grades will be given on the day of the Final Exam.

SMART PHONES AND TEXTING. Texting during testing = Cheating = Irreplaceable zero on that exam. Smart phones **may not** be used as calculators on exams, may not be out or in use during exams (and must be silenced), and must be silenced and not used during lectures and labs. I do not want to hear phones vibrating during class! If I can hear it, your classmates can too.

DISRUPTIVE BEHAVIOR. I expect behavior that is in keeping with a college classroom. If you are disruptive in class (*examples:* talking with your friend while I am lecturing, making inappropriate comments, etc.), you will receive a warning. If it continues, I will report your disruptive behavior to the Dean of Students. This may also result in an Administrative Drop from the class (with *X* or *F,* depending on your grade at the time).

WEATHER DELAYS. If, due to inclement weather, the start of class is officially delayed until our lab period, **we will meet during lab.** Be sure to check the SPC website or local news sources for instructions during times of inclement weather.

I reserve the right to modify any of these syllabus policies, given the circumstances, if I feel it is in fairness to a student, to the class as a whole, or if it is otherwise dictated. This will be the exception, not the rule.

This class is taught in accordance with SPC classroom policies.

CHEM 2423 FALL 2019 CLASS SCHEDULE (MW)

Note: The following schedule shows each day's agenda. We will adhere to it as closely as possible. I will announce any changes, should they be necessary. If nothing is listed for lab on a particular day, we will use that period as needed (TBA = To Be Announced = finishing a lecture, catching up, etc.).

Date	**Lecture**	**Lab**
Aug 26	Intro/Chapter 1	Chapter 1
Aug 28	Chapter 1	Chapter 1
Sep 2	*Labor Day Holiday*	
Sep 4	Chapter 1	Lab Check-in
Sep 9	Chapter 1/2	Exp 1
Sep 11	Chapter 2	Exp 1
Sep 16	Chapter 2	Exp 1
Sep 18	Chapter 2	Exp 1
Sep 23	Chapter 3	Exp 1
Sep 25	***Lecture Exam 1***	TBA
Sep 30	Chapter 3	Exp 3A
Oct 2	Chapter 4	Exp 3A
Oct 7	Chapter 4	Exp 3A
Oct 9	Chapter 4	Chapter 4
Oct 14	Chapter 5	Exp 4A
Oct 16	***Lecture Exam 2***	TBA
Oct 21	Chapter 5	Chapter 5
Oct 23	Chapter 5	Exp 4A
Oct 28	Chapter 5/6	Exp 4A
Oct 30	Chapter 6	Exp 8
Nov 4	Chapter 6	Exp 6A
Nov 6	Chapter 6/7	Exp 6A
Nov 11	Chapter 7	Exp 6A
Nov 13	***Lecture Exam 3***	TBA
Nov 18	Chapter 7	Exp 6A
Nov 20	Chapter 8	Exp 9

Nov 25	Chapter 8	Exp 5A
Nov 27	*Thanksgiving Holiday*	
Dec 2	Chapter 10	Exp 5A
Dec 4	Chapter 10	Lab Checkout
Dec 9	***Final Exam**** 10:15 a.m. – 12:15 p.m.	

*** You will take the Final Exam at the designated time.** Exam times are scheduled by the college, not the instructor.