

POLK STATE COLLEGE

CHM 2211C ORGANIC CHEMISTRY II

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CREDIT HOURS, PREREQUISITES, AND COURSE DESCRIPTION:

4 hours Lecture, 3 hours. Lab, 5 credits

Prerequisite: CHM 2210C or equivalent

This course is a continuation of *Organic Chemistry I* (CHM 2210C) and covers the following: preparation and reactions of alcohols, ethers, epoxides, carboxylic acids and their derivatives, amines, and organometallics; aromaticity; benzene chemistry and reactions of substituted benzenes; mass spectrometry, infrared (IR) and nuclear magnetic resonance (NMR) spectroscopy; and reactions of carbonyl compounds, including reactions at alpha carbons. Experiments apply the techniques of preparation, isolation, purification, and characterization of compounds using multistep synthesis when appropriate.

PSC MISSION AND CORE OBJECTIVES: Polk State College is a quality-driven educational institution, providing access to affordable associate and baccalaureate degrees, career certificates, and workforce development programs, delivered by diverse, qualified faculty and staff who are committed to student learning and achievement through the consistent practice of collaboration and focus on excellence. In line with this purpose, PSC's general education develops competence in the areas of 1) Communication, 2) Critical Thinking, 3) Scientific and Quantitative Reasoning, 4) Information Literacy, 5) Diversity, 6) Culture, 7) Ethics and 8) Social Responsibility. Please see the PSC catalog for complete descriptions of these outcomes. A primary focus of this course is competence related to the areas of:

2. Critical Thinking

Demonstrate the ability to reflect on, analyze, synthesize, and apply information through problem solving

3. Scientific and Quantitative Reasoning

Apply mathematical and scientific principles and methods to solve abstract and real-world problems

4. Information Literacy

Demonstrate the ability to access, evaluate, incorporate, organize, and document information

STUDENT LEARNING OUTCOMES (SLOs): Students will be able to:

1. Diagram a synthesis involving use of aromatic compounds, aldehydes, ketones, carboxylic acids, amines, as well as compounds studied in CHM 2210. (2,3,4)
2. Analyze mass spectra, infrared (IR) spectra, and nuclear magnetic resonance (NMR) spectra, involving aromatic compounds, aldehydes, ketones, carboxylic acids, amines and other organic molecules. (2,3,4)

3. Analyze the order in which aromatic compounds, aldehydes, ketones, carboxylic acids, and amines will react relative to the rate of reaction and explain the order, using resonance theory where applicable. (2,3,4)
4. Arrive at structures of aromatic compounds, aldehydes, ketones, carboxylic acids, amines, and other organic molecules given the names and/or vice versa. (2,3,4)
5. Determine organic products of reactions involving aromatic compounds, aldehydes, ketones, carboxylic acids, amines given reagents or write reagents given reactions, indicating major products, if any, and/or no reaction, if any. (2,3,4)
6. Work out the mechanism for organic reactions of aromatic compounds, aldehydes, ketones, carboxylic acids, amines, and other organic compounds. (2,3,4)
7. Analyze structures of carbohydrates, amino acids, and other biological or medicinal molecules from the stereochemical perspective. (Optional at instructor's discretion.) (2,3,4)

TEXTBOOK AND OTHER REQUIREMENTS: For textbook information, visit the campus bookstore, the bookstore website at www.foollett.com, or see the course syllabus.

- Organic Laboratory Handouts will be provided via the PAL website (elearning.polk.edu)

COURSE CONTENT:

Unit 10 – Further Study of Substitution & Elimination Reactions

Unit 11 – Mass Spectrometry

Unit 12 – Infrared (IR) Spectroscopy, Combining Mass Spectral and Infrared Data

Unit 13 – Nuclear Magnetic Resonance (NMR) Spectroscopy

Unit 14 – Aromaticity, Electrophilic Aromatic Substitutions

Unit 15 – Reactions of Substituted Benzenes

Unit 16 – Oxidation & Reduction Reactions, Designing Multistep Synthesis–Part II

Unit 17 – Reactions of Carbonyl Compounds – Class I

Unit 18 – Reactions of Carbonyl Compounds – Class II

Unit 19 – Reactions of Carbonyl Compounds – Class III; Reactions at the alpha–Carbon

Unit 20 – Biological & Medicinal Chemistry (optional at instructor's discretion)

Additional topics may be covered as determined by the instructor.

METHODS OF INSTRUCTION: These will vary according to specific course objectives, student learning needs, and instructional style.

THE GORDON RULE: The Gordon Rule, State Rule 6A-10.30, requires A.A. program students to complete six semester hours of English and six semester hours of additional courses in which the student must demonstrate college-level writing skills through multiple assignments. Because PSC uses a "Writing Across the Curriculum" approach to meeting the writing requirement, in addition to the required composition courses, any of the required social sciences and humanities courses will fulfill the writing requirement.

This is not a Gordon rule writing course, but it may include writing assignments as part of course requirements.

In addition, State Rule 6A-10.30 requires A.A. program students complete six credits of college level mathematics. Taking the appropriate general education mathematics courses satisfies the mathematics portion of the requirement.

A minimum grade of "C" is required in all courses with primary responsibility for fulfilling the

communications and mathematics areas of the general education requirements. This includes any course taken to complete the general education mathematics requirement, and the courses taken to complete the communications requirement.

STUDENT HELP: The instructor is available for help during posted hours and by appointment during other non-class hours. Students are encouraged to seek assistance from the instructor. To further the educational process, the Teaching /Learning /Computing /Center (TLCC) provides qualified staff and up-to-date equipment and facilities to promote student academic success by providing tutoring services, computing resources, and other instructional support. TLCC hours of operation and tutor schedules are posted in the TLCCs and available on PSC's website at: www.polk.edu/it/tlcc.

WITHDRAWAL: Students may officially withdraw from course(s) during any given term provided the appropriate policy and procedure is followed. Following the conclusion of the Drop/Add period, the student may officially withdraw without penalty from any credit course provided the appropriate forms are submitted to Student Services no later than the deadline published in the term schedule booklet. (The published deadline reflects the 70% point in the course based upon the course's scheduled duration). It is the student's responsibility to submit these withdrawal forms. Failure to do so may result in an "F" in the course. By State rule students are not allowed to withdraw from the third course attempt. If students stop attending class after the deadline, or any time during the third attempt, a grade other than a "W" is assigned and posted. Students cannot use course withdrawal to avoid academic dishonesty penalties. Students who have been penalized for academic dishonesty in a course are not eligible to withdraw from the course.

REPEATING A COURSE: Under the Forgiveness Policy, a student is allowed three attempts in any one college credit course: one initial enrollment and two repeats. A course cannot be repeated unless the previously earned grade is a "D," "F," or "W" (see college catalog for details). Students are not allowed to withdraw from their third course attempt. If students stop attending class, a grade other than a "W" is assigned and posted.

ACADEMIC INTEGRITY: Students are responsible for their own work. It is assumed that each student is honest and will abide by that standard. However, in the event there is an indication or suspicion that there has been a case of cheating/plagiarism, the situation will be dealt with in accordance with published College policy. Copies of this policy are available in Student Services offices.

INFORMATION TECHNOLOGY ACCESS/USE POLICY: All individuals who employ information technology resources provided by Polk State College (this includes, but is not limited to telephones, computers, the PSC local area and wide area networks, and the Internet) must use these resources for academic purposes only. Use of these resources is a privilege, not a right. Inappropriate use can result in revocation or suspension of this privilege.

EQUAL OPPORTUNITY FOR STUDENTS WITH DISABILITIES: If you are a student with a disability and will need special accommodations or auxiliary aids under the Americans with Disabilities Act (ADA), please contact the Coordinator of Academic Advising in Student Services on the Lakeland Campus (863) 297-1000 Ext. 6107 or the Winter Haven Campus (863) 297-1000 Ext. 5227.

EVALUATIVE CRITERIA: The grade for the course will be based upon grades earned on quizzes (optional with instructor), homework (optional with instructor), examinations and/or projects, laboratory reports/notebook, and a comprehensive final examination.

The final grade will be determined from the following:

Examinations and/or Projects:	30%
Homework:	10%
Laboratory:	25%
Quizzes:	15%
Cumulative Final Exam:	20%

The course grade will be determined by using the following scale:

A = 86 - 100%

B = 76 - 85%

C = 66 - 75%

D = 50 - 65%

F = 0 - 49%

The laboratory grade will be the average of the grades obtained on the laboratory reports, the comprehensive lab notebook, and other laboratory assignments. The grade will correspond with the grades on the grading scale shown above.

ATTENDANCE: Regular attendance is the student's responsibility. If a student has excessive absences (more than 3 hours), he/she may be dropped from the course with a "W" grade before the withdrawal date. After the withdrawal date, a student may receive an "F" grade for the course for excessive absences (more than 5 hours accumulated since the beginning of the term).

WORK MISSED: Procedures for work missed are determined by the instructor.