

**Classes:** TR @ 9:30 – 10:50AM in 114 Chemistry Research Building (114 CRB)

**Instructor:** Dr. Frank W. Foss Jr.

Office: 202 CRB  
817.272.5245  
ffoss@uta.edu

Office Hours: 1:00 – 2:00 PM TR (contact to schedule another time if needed)

**Materials:**

- *Organic Chemistry*, by John McMurry (7<sup>th</sup> Ed., UTA Customized)
- *Study Guide and Solutions Manual for Organic Chemistry, 7th Edition*, by Susan McMurry (UTA Custom Edition)
- A set of molecular models **is strongly recommended.**
- *Organic Chemistry I as a Second Language* and *Organic Chemistry II as a Second Language* by David Klein **may be helpful.**

### Course Description:

Organic Chemistry II builds upon the relationship between the structure of organic compounds, the physical properties defined by these structures, and the manner in which we can manipulate materials by chemical synthesis. We will investigate methods for structural identification, expand your knowledge of synthetic methods, and discuss in more depth biological species. You are responsible for remembering lessons described in Organic Chemistry I regarding chemical structure, properties, bonding, stereochemistry, reactions, and reaction mechanisms.

### Course Goals:

*In the Curriculum:* CHEM-2322 is intended for students majoring in Chemistry, Biochemistry, Biological Chemistry, Biology, or Physics; or who plan to enter an Engineering (bioengineering, electrical, materials, or nanoscience), Health (allied health, dentistry, epidemiology, medicine, pharmacy or veterinarian), Law (patent), or Other Scientific (earth, environmental, or psychology) related professions.

*In the Classroom:*

- Use analytical data to support the structure of chemical species.
- Understand the three dimensional structure of molecules and be able to represent 3D molecular structures by conventional means.
- Account for the physical properties and chemical reactivity of organic compounds on the basis of molecular structure.
- Predict the outcome of an organic reaction, when given substrates and reagents, or provide adequate reagents to convert starting materials to desired products.

*Additional Goals:*

- Develop your logic and study skills; memorization, while important, will not be sufficient for answering questions in this class.
- Learn to combine the association of ideas and relationships with deductive reasoning and scientific method to solve problems (Chemistry problems and others).
- Gain an informed view of *Chemistry's* impact on our quality of life.

**Course Sequence:**

Chapter 12 Structure Determination: Mass Spectrometry and Infrared Spectroscopy.

Including IR Spectroscopy sections in 15.8, 17.11, 18.9, 19.14, 20.8, 21.10, 24.10

Chapter 13 Structure Determination: Nuclear Magnetic Resonance Spectroscopy.

Including NMR spectroscopy sections in 15.8, 17.11, 18.9, 19.14, 20.8, 21.10, 24.10.

Chapter 14 Conjugated Dienes and Ultraviolet Spectroscopy

**TEST ON CHAPTERS 12-14 (TBA)**

Chapter 15 Benzene and Aromaticity. Review phenol sections 17.1, 17.2, 17.9 and 17.10.

Chapter 16 Chemistry of Benzene: 3 mechanisms & a focus on reactivity and regiochemistry

**TEST ON CHAPTERS 15-16 (TBA)**

Pages 686-694 A Preview of Carbonyl Compounds.

Hand out Chapter 20 – Aldehydes and Ketones in *Organic Chemistry* by D. Klein  
to replace Chapter 19 Aldehydes and Ketones: Nucleophilic Addition Reactions

Chapter 20 Carboxylic Acids and Nitriles.

Chapter 21 Carboxylic Acid Derivatives and Nucleophilic Acyl Substitution Reactions

**TEST ON CHAPTERS 19-21 (TBA)**

Chapter 22 Carbonyl Alpha-Substitution Reactions. Omit Acetoacetic Ester Synthesis

Chapter 23 Carbonyl Condensation Reactions. Omit sections 23.11-23.13

Chapter 24 Amines and Heterocycles.

Omit Hofmann and Curtius Rearr., pp. 933-936, Hofmann Elim., pp 936-939

**TEST ON CHAPTERS 22-24 (TBA)**

Chapter 25 Biomolecules: Carbohydrates. Omit sections 25.11-25.12

Chapter 26 Biomolecules: Amino Acids, Peptides, and Proteins. Omit 26.10 – 26.11

**COMPREHENSIVE FINAL EXAMINATION WED. MAY 12<sup>TH</sup>, 5:30-8:00PM**

**Assessment:***Grading:*

4 - One Hour Exams (Lowest Grade or Missed Exam Dropped) **3 x 22% = 66%**  
1 - Final Examination (Single Comprehensive Exam, Given to All Sections) **34%**

*Self Assessment:*

Work the problems within and at the end of each chapter. I can't stress this enough. I will try to allow time in class for questions regarding problems (YOU MUST PROVIDE THE QUESTIONS), or you can visit me at office hours when time is not available in class. Again, please have a question, general or specific, if you plan on visiting.

**Important Dates:**

January 19<sup>th</sup>, First Day of Classes

February 3<sup>rd</sup>, Census Date

March 15<sup>th</sup>-19<sup>th</sup>, Spring Vacation – No Classes

April 2<sup>nd</sup>, Last date to drop a course

May 7<sup>th</sup>, Last day of classes

**May 12<sup>th</sup>, 5:30 to 8:00 PM, Comprehensive Final Examination**

**Course Policies:***Class Preparation:*

You are expected to read ahead for this class. You will be asked to review material that is not covered in detail during class. You are responsible for understanding this material as it pertains to future lessons and your exams. My role during class is to enhance understanding, tie together themes and ideas, and teach you *how* to learn organic chemistry.

Working through problems in the book will point out areas that you need to review for better comprehension (See *Self-Assessment*). If you are prepared for class, then you will be able to ask questions in areas that will benefit your knowledge greatest.

*Attendance:*

Your book, like your instructor, does not have all the answers. Unfortunately, the text cannot restate an idea if it is unclear. Material from class discussions *will* be emphasized on exams. Attendance is necessary for success in this course.

*Exams:*

The exams will include both multiple choice questions and written questions. You will need a scantron **Mini Essay Book Number 886-E** (or a similar Scantron booklet or 8.5 x 11 in. Scantron Sheet which has a place for writing out answers in addition to answering multiple choice questions), **a number 2 pencil with eraser**, a **pen** for written questions. Remember to clearly state your answers for written questions and circle your final answer. Partial credit will not be awarded in situations where it is unclear what structure or statement is your answer.

*Make-up exams:*

Please see me outside of class if you miss more than one exam, or feel that your grade will be significantly improved by taking an exam you have missed. In such a case, you **MUST** have documentation of a genuine excuse for having missed the exam. If extenuating circumstances exist, you will not take the same exam as your classmates.

*Honor Code:*

All students are expected to pursue their scholastic careers with honesty and integrity. Academic dishonesty will not be tolerated by the Department of Chemistry and Biochemistry. Academic dishonesty includes (but is not limited to) cheating, falsification of data, plagiarism, and contracting/collusion with others to take your test or do your work. Cheating is the use or acquisition of information (data, constants, formulas, textual material, etc.) from either unauthorized sources or in an unauthorized manner. Examples of cheating include, but are not limited to:

- exchanging information during a test or quiz.
- looking at another student's paper during a test or quiz.
- bringing information other than personal knowledge and what is allowed by the instructor into the test or quiz. This includes written notes (crib sheets) and digitally stored information (formulas, constants, textual, etc.).
- looking at a book or other unauthorized source during the test or quiz except as authorized by the instructor.
- accessing information by any electronic means (cellular phones, pagers, radios, calculators, etc.).
- processing data or information in an unauthorized manner using a programmable calculator or computer. In other words, unless you have received authorization, you are not permitted to use any computer program. This includes specialty computers or calculators in which the "programming" is built into the computer. You are permitted to use simple calculators in which arithmetic, logarithmic, and trigonometric functions are preprogrammed.

In the event that test proctors decide that a student is cheating, the following actions will be taken:

- the student will be notified and, if the situation merits, asked to explain their actions.
- the source of the unauthorized information will be removed during the remainder of the test period and returned to the student following the test, if appropriate.
- the student may be asked to move to a different location to complete the test.
- calculator/computer memory will be cleared of stored information and programs as appropriate. In some cases the proctor will need to examine temporarily the calculator/computer to verify unauthorized use. The calculator will be returned to the student to permit the student to finish the test.
- a record of the events and actions surrounding the alleged act of cheating will be submitted to the Associate Vice Provost for Student Affairs for further action. See the Undergraduate Catalog for further information.

*Bomb Threat Policy:*

In the event of a bomb threat to a specific facility, University Police will evaluate the threat. If required, exams may be moved to an alternate location, but they will not be postponed. UT-Arlington will prosecute those phoning in bomb threats to the fullest extent of the law.

**Americans with Disabilities Act**

In an effort to be certain that students with documented disabilities are reasonably accommodated, I would like to ask your cooperation in informing me of any legitimate needs you might have in this course. Your need for this request will be verified through the appropriate University office to be certain the best accommodation is provided for your particular disability as it relates to this course. It is important for you to understand that this document will be held in the strictest confidence and will not be kept with any of your permanent student records.

Name: \_\_\_\_\_ SS#: \_\_\_\_\_

Course: \_\_\_\_\_ Section: \_\_\_\_\_

Disability: \_\_\_\_\_

Suggested Accommodation: \_\_\_\_\_  
\_\_\_\_\_

Also, if you do not require an accommodation but would be agreeable to having your class notes duplicated or assist in another manner with a disabled peer, please indicate below.

Name: \_\_\_\_\_ SS#: \_\_\_\_\_

Note Sharing: \_\_\_\_\_ Other Assistance: \_\_\_\_\_