COURSE: Organic Chemistry Laboratory II (CHEM 2021)
SEMESTER: Fall 2012 – Spring 2013
INSTRUCTOR: Dr. Matthew D. Smith, Office NCSI 119, Phone 585-6881
E-Mail – Matthew.Smith@ws.edu

Course Contact Dr. Jeff T. Horner, Dean of Natural Science, Office NSCI 126,
Supervisor: Phone: 423-585-6954, E-Mail: Jeff.Horner@ws.edu
Office Hours: Instructor’s Office Hours are posted on his office door.
FAX: 423-318-2762
Secretary: 423-585-6865 (Sherry Woody)

REQUIRED TEXTBOOKS AND SUPPLEMENTARY MATERIALS:
Laboratory Manual: Experiments designed by the instructor are on eLearn.
Safety Goggles: From WSCC Bookstore
Notebook: Laboratory Notebook – Must be capable of duplicate copies

COURSE DESCRIPTION
An introductory sequence course in organic chemistry which considers the occurrences, structure, properties,
and uses of the more important classes of organic compounds with laboratory experiments and exercises
which correspond to lecture material in CHEM 2020. (Corequisite: CHEM 2020) - 1 Credit

OBJECTIVES AND COMPETENCIES
Students will acquire the skills needed for advanced laboratory work in chemistry, related disciplines, or the
chemical industry by demonstrating competencies in the following areas:

1. Laboratory Techniques
   - Simple distillation, fractional distillation, flash distillation, vacuum
distillation, steam distillation, recrystallization, vacuum filtration, liquid-
   liquid extraction, solvent drying, column chromatography, thin layer
   chromatography, gas chromatography, high performance liquid
   chromatography, sample preparations for infrared spectrophotometry - thin
   film, nujol mull and KBR pellets, infrared spectroscopy and melting point
determination.

2. Laboratory Instrumentation
   - Lab industries, Aquametry I, Karl Fisher Titrator; Milton-Roy, Model
     1200, UV/VIS spectrophotometer interfaced with IBM PS/II computer,
     Varian, Vista 6000 gas chromatograph interfaced with Spectra-Physics,
     SP4100 Computing Integrator; Hewlett-Packard, 5890 Series II gas
     chromatograph interfaced with a Hewlett-Packard HP-3396 Series II
     integrator. Instruments for Industry and Research, Polarimeter; Laboratory
     Devices, Mel-Temp and Chem-Dry; Buchi, Flash Evaporator with Gast,
     vacuum/pressure pump and Aldrich, dry-ice/acetone condenser; Rigah
     “Snowman” Dry-Ice Maker; Scientific System, HPLC system interfaced
     with Hewlett Packard, Model 3394A Integrator; Nicolet, Model Spectronic
     IR100, FT-IR, with ATR; Napco, Model 5851 Vacuum Oven; and Abbe
     Benchtop Refractometer.
3. Paper-Work Maintaining an FDA-type journal, reading MDSD documents, familiarization with the WSCC Chemical Hygiene Plan, using the common handbooks of organic chemicals, using GLP labeling techniques and in doing material balance calculations.

**COURSE TOPICS**
Experiments will be selected which will meet the objectives outlined above. Potential experiments include:

- Photochemical Reactions: Synthesis of Benzopinacol
- Electrophilic Aromatic Substitution: Synthesis of Methyl \( m \)-Nitrobenzoate
- Complete Methyl \( m \)-Nitrobenzoate
- Karl Fischer Titration
- Benzopinacol-Benzopinacolone Rearrangement
- The Diels-Alder Reaction: Synthesis of Endo-Norbornene-5,6-cis-Dicarboxylic Anhydride
- The Grignard Reaction: Start Benzoic Acid
- DEET
- Benzocaine
- TAS Project – This project will be presented at the TAS meeting at WSCC in the spring
- Aldol Condensation: Synthesis of Tetraphenylcyclopentadienone

Please remember that this list may be added to or altered so that the laboratories coincide with lecture as best as possible.

**METHODS OF INSTRUCTION**
1. Introductory lecture and demonstration
2. Student experimentation

**EVALUATION**
1. Quizzes (3) 20%
2. Experiments 60%
3. Comprehensive Final Exam 20%

Grades will be determined by the students' percentile rank as follows:
- A = 90-100
- B = 80-89
- C = 70-79
- D = 60-69
- F = 0-59

**Course Ground Rules:**
Students should attend the first day of class or contact the instructor prior to the first class. Failure to do this may result in being dropped from the class.

Plagiarism, cheating, and other forms of academic dishonesty are prohibited.

Students with disabilities must register with Student Support Services (CCEN), Room 262 (phone 423-585-6892) if they need any special facilities, services, or consideration.

Students in need of tutoring assistance are encouraged to contact the Office of Student Tutoring located in the College Center (CCEN), Room 261. The phone number is 423-585-6920.
Students receiving any type of financial aid or scholarship should contact the Financial Aid Office before making any changes to their schedule. Schedule changes without prior approval may result in loss of award for the current term and future terms.

Students who have not paid fees on time and/or are not correctly registered for this class and whose names do not appear on official class rolls generated by the Admissions and Records Office will not be allowed to remain in class or receive credit for this course.

Cellular phones and other electronic devices (ipods, headphones, etac.) use during classroom interaction is prohibited. Cellular phones must be turned to the non-audible mode until after class, at which time calls can be received or checked. (See the Walters State Catalog/Handbook)

For information related to the cancellation of classes due to inclement weather, please check the college’s Web site at www.ws.edu or call the college’s student information line, 1-800-225-4770, option 1; InfoConnect, (423) 581-1233, option 1045; the Sevier County Campus, (865) 774-5800, option 9; or the Greeneville/Greene County Center for Higher Education, (423) 798-7940, option 4. Also, please monitor local TV and radio stations for weather-related announcements. For additional information on this policy see the college catalog.

In the event of a pandemic or other college declared critical event that impacts the college’s ability to proceed with academic course activities as planned, the college reserves the right to alter this course plan. In the event of a pandemic or other event, please refer to the college’s home web page, www.ws.edu or call InfoConnect, (423) 581-1233 for further information.

Regular class attendance is a student’s obligation. (See the Walters State Catalog/Student Handbook) If for some reason a student misses class, it is his or her responsibility to see the instructor regarding missed assignments and/or activities and to be prepared for the next class. Excessive absences may substantially lower the semester grade. The college requires the instructor to keep accurate records and to report when students are not attending class.

Students are required to supply a #2 pencil for each lecture exam.

The wearing of hats and caps in class is not allowed! Students will be asked to remove their hats and caps.

STAY AWAKE IN CLASS. Your mere presence in class is not sufficient—you must be able to actively process the information presented! Sleeping in class is disruptive in two ways: the student who is snoozing is not interested and not participating in the classroom discussion; secondly, sleeping in class is considered to be disrespectful to the teacher and other students. The penalty for sleeping in class may range from the student being requested to leave the class with a following conference with the instructor, to notification of the Vice-President of Academic Affairs (in the cases of habitual sleepers). If you have a medical condition that prevents you from staying awake in class, please discuss this with the instructor.

Safety:
1. There will be NO food, drink or tobacco products in the laboratory.
2. NO opened-toe shoes can be worn during lab. You will not be allowed to stay in the laboratory if the lab exercise uses any sort of glassware or chemicals.
3. NO purses, bags or coats on top of the student tables.
4. NO visitors in the laboratory without prior approval of the instructor.
Your Right to Know:
Tennessee Law requires that you are provided notice that some of the laboratory exercises involve contact with chemicals which have been identified with potential health hazards. These chemicals include, but are not limited to: acetone, chloroform, formalin, acids and bases. While every effort has been made to make the materials as safe as possible these chemicals are toxic and you must be responsible for their safe handling. If you feel you may be at a higher risk than normal, if pregnant for example, we recommend you consult your physician.

WSCC Catalog Notification Statement:
All students attending Walters State Community College, regardless of the time and location of the class, must abide by the rules and regulations outlined in the current Walters State Catalog/Student Handbook and the current “Walters State Timetable of Classes.” A copy of the Catalog/Handbook and the “Timetable of Classes” may be obtained from the Admissions Office on the Main campus or at any of our off-campus sites. You may also access the Catalog/Handbook on-line at the following web address: http://www.ws.edu/catalog.

Alternative Teaching Plan
In the event of a pandemic or other college declared critical event, the lead faculty member for this course will use eLearn to communicate with the students. If the lead faculty member is affected by this event, another member from the teaching team will assume instruction for the course. The course will continue utilizing an online format of instruction and testing.

ATTENTION: The Natural Science faculty members are concerned with proper academic advising of students in ALL Pre-Professional programs. It is our explicit desire to help you with any advising problems you may encounter.