UNIVERSITY OF GUAM
DIVISION OF NATURAL SCIENCES

COURSE OUTLINE & SYLLABUS FOR CH 101L-01 Fall 2019
INTRODUCTION TO ORGANIC CHEMISTRY LAB

Instructor: Neelam Khandelwal
Office: SC-236, Rm – 9 ¾.
Office Hours: Monday: 11:30AM -12:30PM, 2:00- 3:00 PM
Wednesday: 11:30AM- 12:30PM, 2:00-3:00 PM
Email: khandelwaln@triton.uog.edu
Catalog Description: CH 101L is the laboratory portion of CH 101 and MUST be taken concurrently. A laboratory based course based on organic reactions and analysis. The laboratory exercise complements the lecture topics on organic chemistry. Simple reactions for the major functional groups will be studied. Important techniques for organinc chemical analysis such as melting point, distillation, recrystalliztion and chromatography will be covered.

Rationale for the Course & Course Content: CH 101L provides coverage of identifying chemical and physical properties of organic compounds and develop skills in synthesis and in purification. synthesis and structure elucidation in organic chemistry. The laboratory experiments and discussions are designed to complement and reinforce topics covered in CH 101 lecture.

Prerequisite: **A pass in** CH 100 and CH101 Lecture (concurrent)

Time and Location: M – 8:00 to 10:50 AM
SC 230

Required Lab Manual: Chemistry Laboratory manual, Timberlake, Pearson, 12th edition, 2006

Credit: **1 credit**

Recommended Molecular Models: Molecular Model Set for Organic Chemistry, The Allyn and Bacon Co. Other commercial model sets will be acceptable.

Teaching Methods & Class Size: Laboratory experiments and frequent problem solving sessions as well as question/answer sessions will be the primary methods of instruction. The anticipated class size is 15 students.

Americans with Disabilities Act Amendments Act (ADAAA) Accommodation Services:

If you are a student with a disability who will require an accommodation(s) to participate in this course, please contact the UOG Student Counseling and Advising Service Accommodations Office to discuss your specific accommodation needs confidentially. You will need to provide me

with an accommodation letter from the Student Counseling and Advising Service Accommodations counselor. If you are not registered, you should do so immediately at the UOG Student Center, Rotunda Office #4 (735-2460) to coordinate your accommodation request.

Campus Security: 888-2456.

Course Objectives: At the conclusion of this course, the student should be able to perform the following tasks:

1. Apply principles of chemical safety in the storage and laboratory manipulation of organic reagents.

2. Isolate and purify organic compounds using recrystallization and distillation.

3. Interpret mathematical concepts, ideas and other quantitative information to solve problems related to percent yield and percent recovery calculations.

4. Carry out simple synthetic reactions using standard glassware kits.

5. Characterize and identify compounds by measuring physical properties such as boiling point and melting point.

6. Identify the primary functional group in a molecule by performing qualitative chemical tests.

7. Relate the results of laboratory work to concepts of organic chemistry and report the findings and conclusions in accordance with a specified format.

8. To interpret current events and issues centered on the role of organic chemicals and processes as they impact the environment and everyday life.

Course Student Learning Outcomes (SLO): Upon completion of course, student will	**Matching Program Learning Outcome(PLO)**	**Matching Institutional Learning Outcomes(ILO)**	**Method of Assessment**
Apply principles of chemical safety in the storage and lab manipulation of organic reagents.	**PLO1** **PLO2** **PLO4**	**ILO1**	**-Lab Reports** **-Final Lab** **Theory Exam**

Isolate and purify organic compounds using recrystallization and distillation.	PLO2	ILO1 ILO2	-Lab Reports -Final Theory Lab Exam.
Interpret mathematical concepts, ideas and other quantitative information to solve problems related to percent yield and percent recovery calculations.	PLO4	ILO1 ILO2	-Lab Notebook -Lab Reports -Final Theory Lab Exam
Carry out simple synthetic reactions using standard glassware kits.	PLO4	ILO1 ILO2	-Lab Reports -Final Theory Lab Exam.
Characterize and identify compounds by measuring physical properties such as boiling point and melting point.	PLO1 PLO4	ILO1 ILO2	-Lab Reports -Final Theory Lab Exam.
Identify a primary functional group in a molecule by performing qualitative chemical tests.	PLO1 PLO4	ILO1	-Lab Reports -Final Theory Lab Exam.
Relate the resultsof laboratory work to concepts of organic chemistry and report the findings and conclusions in accordance with a specified format.	PLO3	ILO1	-Lab Reports -Final Theory Lab Exam.
To interpret current events and issues centered on the role of organic chemicals and processes as they impact the environment and everyday life.	PLO1 PLO4	ILO1 ILO2	-Final Theory Lab Exam.

Chemistry Program Learning Outcomes

PLO 1: Demonstrate the knowledge of fundamental concepts of chemistry and its relevance to the scientific method and other fields in science

PLO 2: Demonstrate the skills to make observations, experimentation, collect and collate data, analyze and interpret data in a safe chemical environment

PLO 3: Demonstrate the ability to clearly articulate, formulate, and communicate scientific information using computer, written and oral communication skills

PLO 4: Demonstrate critical thinking, problem solving skills and the ability to use chemical knowledge and mathematical skills to identify, evaluate, analyze, synthesize, and integrate data and abstract ideas in solving problems

PLO 5: Demonstrate the knowledge and skills in advanced instrumentation, applications, interpretation, and experimental design to address scientific queries in chemistry, industry, the environment, health, and related fields
PLO 6: Demonstrate a sense of exploration and research approach that enables students to pursue lifelong learning in chemistry
PLO 7: Demonstrate interaction skills and teamwork

Institutional Expected Student Learning Outcomes

Some of the expected fundamental knowledge, skills, and values that the University of Guam student will have demonstrated upon completion of any degree are:
ILO1: Mastery of critical thinking and problem solving
ILO2: Mastery of quantitative analysis
ILO3: Effective oral and written communication
ILO4: Understanding and appreciation of culturally diverse people, ideas and values in a democratic context
ILO5: Responsible use of knowledge, natural resources, and technology
ILO6: An appreciation of the arts and sciences
ILO7: An interest in personal development and lifelong learning

Methods of Evaluation: Sections of the laboratory text are designed to serve as the basis for the preparation of the laboratory reports. These reports will be collected at pre-announced times and graded. **Late reports will not be accepted for grading, and will merit a score of zero.** A final laboratory exam and quizzes will account for the balance of the course grade.

Students are advised that the instructor will dismiss and issue a failing grade to any student who violates the safety rules of the chemistry laboratory.

STRICT ADHERENCE TO SAFETY IN THE LABORATORY IS A REQUIREMENT FOR PASSING THIS COURSE.

Grading: The lab grade will be apportioned in the following way:

Laboratory Reports	**= 60%**
Lab Notebook	**= 10%**
Final Theory Lab Exam	**= 30%**

The final letter grades for CH 101L will be identical and will be computed according to the following scale:

GRADING SCALE

A > 90 %, B 80-89%, C 70-79% , D 60-69%, F < 60%

RULES FOR THE ORGANIC CHEMISTRY LAB

1. Attendance : Lab begins promptly at 8.00AM. A sign-in sheet at the start of the lab period may be circulated and collected promptly. For reasons of safety, students are required to attend the entire pre-lab in order to carry out each experiment. **Students may NOT go directly to the lab without permission of the instructor.** Laboratory forums may be scheduled following completion of major experiments to clarify results and implications of the completed laboratory work. Attendance is required for these sessions.

2. Make - ups : There will be no make - up labs. Those who miss a lab will receive a score of zero for that lab in the absence of a bona fide reason for such absence.

3. SAFETY : STUDENTS ARE WARNED TO KEEP THEIR EYES COVERED WITH *APPROVED EYE GOGGLES* AT ALL TIMES WHILE IN THE LABORATORY. THE INSTRUCTOR HAS THE RIGHT TO SEVERELY PENALIZE ANY OFFENDERS (UP TO 100 % OF THE DAY'S LAB GRADE) OR TO DISMISS THE STUDENT FROM THE LAB IF WARNINGS ARE NOT HEEDED. NO CONTACT LENSES ARE PERMITTED IN THE LAB.

4. Tobacco-free/Smoke-free/beetle nut-free Campus

UOG is a tobacco free and beetle nut free campus. Thank you for not using tobacco products and beetle nut on campus, and for helping make UOG a healthy learning and living environment.

5. Cell Phones & Beepers : Warning! Students are required to turn off all such devices during **all** class and laboratory periods.

Fall 2019 CH 101L-01 *TENTATIVE* SCHEDULE OF EXPERIMENTS

Neelam Khandelwal (Monday 8 to 10:50 AM)

WK/DATE	TITLE	*Laboratory #
Wk2, 8/26	Safety video; Laboratory Orientation, Check-in	
Wk3, 9/2	Holiday (Labor Day)	
Wk4, 9/9	Structure of alkanes, alkenes: Lewis structure	22
Wk5, 9/16	Reactions of Hydrocarbon	23
Wk6, 9/23	Melting Point Determination	Handout
Wk7, 9/30	Recrystallization	Handout
Wk8, 10/7	Reactions of alcohols and phenols	24
Wk9, 10/14	Reactions of aldehydes and ketones	25
Wk10, 10/21	Chromatography	Handout
Wk11, 10/28	Carboxylic acids and esters	28
Wk12, 11/04	Test for carbohydrates	27
Wk13, 11/11	Holiday (Veteran's Day)	
Wk14, 11/18	Saponification and soaps	32
Wk15, 11/25	Distillation(Demo only), Lab Review	Handout
Wk16, 12/2	Final Theory Lab Exam	
Wk17, 12/9	Holiday (Lady of Camarin Day)	

Laboratory # - Laboratory number in the sequence given in the Chemistry Laboratory Manual by Timberlake, 9th edition.