

DEPARTMENT OF CHEMISTRY

CHEM 4160 - Chemistry Laboratory IVA-CTW (CRN 81364, 81407 & 92179, 3 credits)

Fall 2017

Instructors: Dr. Keith Pascoe (chekop@gsu.edu)
PSC 316; Tel. # 404-413-5536
Office hours W 10:30 am – 12:00 noon or by appointment

Dr. Nilmi Fernando (nfernando1@gsu.edu)
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Office hours R 11:00 am – 1:00 pm or by appointment

Dr. Joan Mutanyatta-Comar (jmutanyattacomar@gsu.edu)
PSC381; Tel. # 404-413-6544
Office hours, W 10:00 – 12:00 noon or by appointment,

Laboratory: Monday 9:00 am – 1:00 pm

Reading Assignments: **Experimental Organic Chemistry** by Wilcox and Wilcox, **Organic Chemistry** by **John McMurry** (9th Edition) chapter 27, relevant research articles – supplemental reading assignments to be provided by the instructors.

Course Requirements:

Credit Hours	3.0
Prerequisites	CHEM 4000 , CHEM 4110 , CHEM 4330 , CHEM 4600 or equivalent with a grade of C or higher and consent of the instructor
Description	The instructor may waive (a) course prerequisite(s). Concurrent enrollment in [Chem 4160] and [Chem 4170] is not allowed. Advanced laboratory problems; independent research. Laboratory and prior selection of special problems to be arranged. Serves as one of the two Critical Thinking Through Writing (CTW) courses required of all chemistry majors.

Communication:

1. Please send emails from your GSU student e-mail account, not from iCollege. Include the course name (CHEM 4160) in the subject. Check iCollege for important announcements and notes.

Learning outcomes: Students in this class will:

- Demonstrate the ability to perform laboratory techniques safely and effectively such as extraction of essential oils of plant (citrus fruits, medicinal plants and herbs) material by steam distillation.
- Be able to analyze the composition of essential oils by TLC, GC-MS and LC-MC
- Gain an understanding of how to determine the structures of the components of the oils using ^1H and ^{13}C NMR spectroscopy
- Be able to screen the essential oils using biological assays to detect compounds of relevant biological activity
- Critically assess the progress and success of experiments, and adjust experimental procedures when necessary
- Demonstrate the ability to effectively interpret experimental data and observations
- Demonstrate the ability to document clear descriptions of original data, observations and experimental procedures
- Demonstrate the ability to effectively communicate experimental results by writing a formal report and an oral or poster presentation and demonstrate the understanding of the profession by peer reviewing
- Demonstrate safe laboratory practices using appropriate personal protective equipment and appropriate handling of all chemicals, including proper disposal of waste
- Learn how to search the scientific databases for journal articles
- Be able to apply and extend classroom learning, enhance the confidence in their abilities and gain hands-on experience
- Prepare themselves for graduate-level and explore the interests of their career goals

Grading Scheme:	Final report*	100 pts
	Oral/Poster presentation	50 pts
	Notebook**	30 pts

*Must be submitted to receive a passing grade.

**Notebooks will not be returned to students. Please go for office hours to see your lab reports and notebooks

Tentative Letter Grades:

A+	=	96%
A	=	90%
A-	=	87%
B+	=	84%
B	=	80%
B-	=	77%
C+	=	73%
C	=	70%
C-	=	66% etc.

Notes:

1. Complete safety training (RTK, Harzadous waste and CITI) and submit certificates to instructors before you start working in the lab.
2. Attendance to **lab** will be recorded (sign-in/out of lab required). Absences can result in loss of points and lower grades
3. Bound lab notebooks are required. All entries **MUST** be made in ink at the time the experiment is being carried out. Notebooks must be submitted with the Final Report.
4. Students must be properly equipped for lab safety at all times including goggles and closed shoes.
5. Failure to follow safety procedures will result in expulsion from the lab and loss of credit.
6. Final Report grades will not be posted in iCollege. Students can go through their reports in the instructor's office.
7. Final grades are only available in PAWS/GoSolar. They will not be posted in iCollege. Please note that grades will not be given to students by phone, or email.

Chemistry Departments Student Integrity Policy:

The Department of Chemistry follows the University policy on academic honesty published in the "Faculty Affairs Handbook" and the "On Campus: The Undergraduate Co-Curricular Affairs Handbook". All tests taken must represent the student's individual, unaided effort. Any suspected offense may be referred to the Department's Chairman for appropriate action.

All tests taken must represent your individual, unaided efforts. To receive or offer information during any examination is cheating. The use of unauthorized supplementary materials during tests is also cheating. All laboratory work performed during this course must reflect your individual effort. Only original data obtained by your own laboratory experimentation are permitted to be used, except when specifically authorized by your laboratory professor. Data from supplementary sources (handbooks, reference literature, etc) must be clearly referenced (title, author, volume, page(s), etc). Falsification or destruction of data constitutes cheating.

The University requires that faculty members must, on a date after the mid-point of the course to be set by the Provost (or his designee)

1. Give a **WF** to all students who are on their rolls but are no longer taking the class and
2. Report the last day the student attended or turned in an assignment.
Students who are withdrawn may petition the Departmental Chair for reinstatement into their classes.

Laboratory Policy:

Students in CHEM 4160 lab classes have permission to be in the laboratory other than their regularly scheduled lab period only when the lab coordinator or the instructor is present.

Tentative Laboratory Schedule

Deviations from the following may be necessary.

Week	Days	Tentative Laboratory Emphasis
1	08/28	Introduction, safety video, course objectives, safety exam, submit safety training certificates
2	09/04	Labor Day
3	09/11	Steam distillation plant 1
4	09/18	Steam distillation plant 2
5	09/25	Steam distillation plant 3
6	10/02	TLC, GC
	10/07	Field Trip to Tuskegee University (NMR + antimicrobial activities tests)
7	10/09	GC
8	10/16	Intro to LC-MS
9	10/23	LC-MS
10	10/30	LC-MS
11	11/06	Oral presentations
12	11/13	Write final Report
13	11/27	Write Final Report
14	12/04	Submit Final Report + Notebook

NOTE:

***Students with Disabilities:** Students who wish to request accommodation for a disability may do so by registering with the Office of Disability Services. Students may only be accommodated upon issuance by the Office of Disability Services of a signed Accommodation Plan and are responsible for providing a copy of that plan to instructors of all classes in which an accommodation is sought.

***A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent for the observance of a religious holy day shall be allowed to take an exam or complete an assignment scheduled for that day within a reasonable time after the absence.**

***Your constructive assessment of this course plays an indispensable role in shaping education at Georgia State. Upon completing the course, please take time to fill out the online course evaluation.**