



Separation Methods Laboratory

The University of Toledo
Department of Chemistry and Biochemistry
CHEM 4350/6350/8350

Instructor:	Emanuela Gionfriddo	Term:	Spring 2022
Email:	emanuela.gionfriddo@utoledo.edu	Class Location:	BO 2095
Office Hours:	TR 3:30-5 pm or by appointment	Class Day/Time:	F 8 a.m.-12:50 p.m.
Office Location:	BO 2007E	Credit Hours:	1
Office Phone:	419-530-1508		

COURSE/CATALOG DESCRIPTION

This laboratory teaches some practical analytical methods for quantitative determination of analytes by separation platforms such as gas- and liquid- chromatography. Special emphasis is also given to sample preparation methods, calibration strategies, statistic and data processing.

COURSE OVERVIEW

The purpose of this course is to present the practical aspects of the most commonly used chemical separations, to describe instrumentation used and provide examples of separation methods used for real case scenarios of chemical analysis.

STUDENT LEARNING OUTCOMES

The "Separation Methods Laboratory" course is devoted to the students' deep understanding of both fundamental and practical aspects of the separation processes that govern chromatography, extraction processes and other aspects of chemical analysis. After completion of the course the student will be able to:

- *Perform basic experiments related to gas- and liquid-chromatography*
- *Perform sample preparation prior gas- and liquid-chromatography*
- *Evaluate the separation quality of a chromatogram and learn strategies and factors to improve the chromatographic separation*
- *Perform calibration procedures to determine unknown concentration of analytes*
- *Process and perform statistics of chromatographic data*

TEACHING STRATEGIES

This course consists of laboratory sessions where the student will perform experiments and use chromatographic systems. Additional literature and links to online learning tools and videos will be provided to support the course material. Discussion during the laboratory sessions is highly encouraged.

PREREQUISITES AND COREQUISITES

For undergraduate students: Instrumental analysis



REQUIRED TEXTS AND ANCILLARY MATERIALS

- Laboratory handbook is available on Blackboard.
- Additional reading material will be provided as needed.
- Laboratory safety goggles (full coverage)
- Note that proper clothing and footwear are required to ensure safety while in the laboratory. Students not properly dressed will not be allowed into the laboratory! Legs, arms, shoulders and feet should be covered all the time in the laboratory. Full length Pants (Should cover the lower limbs)
- Flat closed-toe footwear with full heel and sock
- Eating, drinking and the use of communication, entertainment devices are not allowed.

TECHNOLOGY REQUIREMENTS

A laptop computer is recommended for access to online videos and tutorials. The students should be familiar with use of Microsoft Excel for data processing.

UNIVERSITY POLICIES

The University is an equal opportunity educational institution. Please read [The University's Policy Statement on Nondiscrimination on the Basis of Disability Americans with Disability Act Compliance](#).

Academic Accommodations

The University of Toledo is committed to providing equal access to education for all students. If you have a documented disability or you believe you have a disability and would like information regarding academic accommodations/adjustments in this course please contact the [Student Disability Services Office](#).

ACADEMIC POLICIES

Students are expected to follow the guidelines of student conduct as outlined in the Student Handbook ([http://www.utoledo.edu/student affairs/pdfs/studenthandbook.pdf](http://www.utoledo.edu/student%20affairs/pdfs/studenthandbook.pdf))

Academic Dishonesty: *The academic honesty policies, as stated in the 2017-2018 UT Catalog will be strictly enforced. Any student found violating the UT academic honesty policies will be penalized in accordance with these policies.*

COURSE EXPECTATIONS

*Attendance to the laboratory is mandatory. An absence will be excused in accordance with the University Missed Class Policy upon notification to the instructor by email or voicemail prior the beginning of the class. It is the student responsibility to independently study the topics covered during the missed class. **During the laboratory sessions, it is not allowed texting, use of social media or Skype, use of cameras, recorders and mobile phones.** In case of emergency situations during the laboratory sessions, the students are invited to discuss with the instructor, prior to the beginning of the laboratory session, temporary use of mobile phones. Each student found to disturb or interrupt the experiments will be gently invited to leave the laboratory with the only purpose of guaranteeing a proper learning experience to other students. The students are highly advised to arrive on time!*



GRADING

Course points: please refer to the following table for the distribution of points that will contribute to the final grade for the course

Report #1	200 points
Report #2	200 points
Report #3	200 points

Final Grading

The final grading will be calculated based on the percentage of total points acquired from reports of the experiments performed during the laboratory. Please refer to the following table to relate the calculated percentages to the final grades.

	A \geq 90%	A- \geq 87%
B+ \geq 83%	B \geq 79%	B- \geq 75%
C+ \geq 71%	C \geq 67%	C- \geq 63%
D+ \geq 59%	D \geq 55%	D- \geq 50%
F < 50%		

COMMUNICATION GUIDELINES

The students are welcome to communicate with the instructor about any aspect of the course with concerns you have or any item that might limit your success, both by email and/or during office hours. All email communications need to be addressed to Dr. Gionfriddo (emanuela.gionfriddo@utoledo.edu) and contain the course name and your name in the email object. Emails will generally be answered within 24 hours.

STUDENT SUPPORT SERVICES

The students are welcome to discuss with the instructor, by email or in person, any concern or support needs.