

 FLORIDA ATLANTIC UNIVERSITY	NEW COURSE PROPOSAL Graduate Programs		UGPC Approval _____ UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____
	Department Chemistry and Biochemistry College Science (To obtain a course number, contact erudolph@fau.edu)		
Prefix CHM Number 6936	(L = Lab Course; C = Combined Lecture/Lab; add if appropriate) Lab Code	Type of Course <div style="border: 1px solid red; padding: 2px;">Lecture</div>	Course Title Current Topics in Bioanalysis
Credits (Review Provost Memorandum) 1	Grading (Select One Option) Regular <input checked="" type="radio"/> Sat/UnSat <input type="radio"/>	Course Description (Syllabus must be attached; see Guidelines) The diversity, complexity and variability of biomolecules demand highly sophisticated instruments to measure. Moreover, their fragility and heterogeneity impose tremendous difficulty for isolation and purification. This course aims to introduce the most recent developments and applications of innovative methodologies and technologies for analyzing biomolecules in various biological samples. In addition, multidisciplinary strategies and solutions for sample isolation, characterization and quantification will be discussed. Students will also learn and practice research design, data	
Effective Date (TERM & YEAR) Spring 2023			
Prerequisites N/A		Corequisites N/A	Registration Controls (Major, College, Level) Graduate standing
Prerequisites, Corequisites and Registration Controls are enforced for all sections of course			
Minimum qualifications needed to teach course: Member of the FAU graduate faculty and has a terminal degree in the subject area (or a closely related field.)		List textbook information in syllabus or here Principles of Instrumental Analysis by Douglas A. Skoog, F. James Holler, Stanley R. Crouch, Cengage Learning; 7th edition (January 1, 2017), ISBN-10: 9781305577213, ISBN-13: 978-1305577213	
Faculty Contact/Email/Phone Qi Zhang, Ph.D./zhangq@fau.edu/(561) 799-8575		List/Attach comments from departments affected by new course This will be included as a required course in the Chemistry and Biochemistry Ph.D. and M.S. degree programs; there is currently no equivalent course being taught.	

Approved by Department Chair <u>Andrew C. Terentis</u> College Curriculum Chair <u>Louis Merlin</u> College Dean _____ UGPC Chair _____ UGC Chair _____ Graduate College Dean _____ UFS President _____ Provost _____	Digitally signed by Andrew C. Terentis <small>DN: cn=Andrew C. Terentis, o=Florida Atlantic University, ou=Department of Chemistry and Biochemistry, email=terentis@fau.edu, c=US</small> <small>Date: 2022.10.24 13:29:37 -0400</small>	Date <u>10/26/2022</u> _____ _____ _____ _____ _____ _____
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Email this form and syllabus to UGPC@fau.edu one week before the UGPC meeting.



CHM 6936

Current Topics in Bioanalysis

Spring 2023

Prof. Qi Zhang

Office: PS-216

Telephone: (561) 297-8575

Email: zhangq@fau.edu

Class Meeting Days: TBD

Class Meeting Hours: TBD

Class Location: TBD

Office Hours: Fridays, online or in person by appointment, 2:30PM-3:30PM. Location: PS-216

Course Withdrawal: Jan 20, 2023. Last day to drop course with 25% tuition adjustment. Feb 29, 2023, Last day to drop course without a "W".

Number Credit Hours: 1

I. Course Description:

The diversity, complexity and variability of biomolecules demand highly sophisticated instruments to measure. Moreover, their fragility and heterogeneity impose tremendous difficulty for isolation and purification. This course aims to introduce the most recent development and application of innovative methodologies and technologies for analyzing biomolecules in various biological samples. In addition, multidisciplinary strategies and solutions for sample isolation, characterization and quantification will be discussed. Last but not the least, students will learn and practice research design, data analysis, and result interpretation in their own fields of interests.

II. Course Objectives and Learning Outcomes:

This course is designed to provide students with in-depth knowledge of the invention, application, and modification of latest technologies and instruments for biomedical and pharmacological investigations. Students who successfully complete this course will be proficient in designing, refining, and implementing advanced methods and instruments for bioanalysis. They are expected to apprehend the principles and mechanisms of latest methods, to know-how in application, optimization and adaptation for better sensitivity, precision, versatility. Using a combination of literature discussion and case studies, participating students will develop critical thinking skills in the areas of research design, instrument selection, method development and result interpretation.

III. Instructional methods:

This class is designated as "In-person." Traditional concept of in person instructional method where course content and learning material are taught in person to students. Attendance is mandatory.

IV. Recommended Texts and Materials:

- 1) Principles of Instrumental Analysis by Douglas A. Skoog, F. James Holler, Stanley R. Crouch, Cengage Learning; 7th edition (January 1, 2017), ISBN-10: 9781305577213, ISBN-13: 978-1305577213

V. Course Prerequisites:

VI. Attendance Policy:

Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

VII. Counseling and Psychological Services (CAPS) Center

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <https://www.fau.edu/counseling/>

VIII. Disability Policy Statement:

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at www.fau.edu/sas/.

IX. Code of Academic Integrity Policy Statement:

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high-quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see [University Regulation 4.001](#).

X. Policy on the Recording of Lectures:

COVID-19 Statement

Due to the surge in COVID19 cases and the delta variant, all students regardless of vaccination status are expected to wear masks while indoors in any FAU facilities, including classrooms and laboratories. Students experiencing flu-like symptoms (fever, cough, shortness of breath), or students who have come in contact with confirmed positive cases of COVID-19, should immediately contact FAU Student Health Services (561-297-3512). Symptomatic students will be asked to leave the classroom to support the safety and protection of the university community. For additional information visit <https://www.fau.edu/coronavirus/>. In classes with face-to-face components, quarantined or isolated students should notify me immediately as you will not be able to attend class. I will not be able to offer an online version of the class but will make reasonable efforts to assist students in making up the work. Vaccinated students have much lower chances of needing to quarantine and a much lower chance of missing class time.

Students enrolled in this course may record video or audio of class lectures for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach students about a particular subject. Recording class activities other than class lectures, including but not limited to student presentations (whether individually or as part of a group), class discussion (except when incidental to and incorporated within a class lecture), labs, clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, and private conversations between students in the class or between a student and the lecturer, is prohibited. Recordings may not be used as a substitute for class participation or class attendance and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University's Student Code of Conduct and/or the Code of Academic Integrity, see [University Regulation 4.001](#).

XI. Final presentation:

There will be a final presentation (20 min with 5 min Q&A) for every student. The content of presentation is a case study of a recently published research paper or an application of a newly published bioanalytic method.

There will be no make-up presentation, except in the following cases:

1. Medical emergency or problem
2. Death in the immediate family
3. Participation in an FAU-sponsored academic or athletic activity/event
4. Required appearance in a civil or criminal court
5. Military obligations
6. Religious Holiday

A request for exemption from the exam policy for any of the above reasons will be considered only if the student *does not attempt* a given exam AND written documentation (e.g., medical certificate etc.) is submitted to the professor within 1day (before or after) of the scheduled exam date. Also, please see the Attendance Policy.

XII. Assignments (for 6139):

Biweekly assignment for literature discussion or case study will be given at the beginning of the two-week period. For literature discussion, the assignment will compose of one or two review papers and one primary research paper, which are all related to a novel bioanalytic technique or method. Every student is expected to read through all assigned papers and to present the primary research papers in terms of background, hypothesis, rational, approaches, results, conclusion, and prospective. For case study, all students will be given a specific problem related to a topic covered in the lectures. The students are expected to prepare a case study to solve the problem. The students will be divided to two to three groups for a 30-minute-long PowerPoint presentation to present their research design, methodology, expected data and interpretation.

Final project assignment will be a research proposal chosen by each student. Every project should be based on methodologies and technologies covered by the lectures. A six-page proposal in the style of NIH R21 will be due at the day of Exam 2. The presentation of final project assignment will occur after Exam 2.

The assignment will be graded based on the following criteria: knowledge of the topic, understanding of the assigned materials, feasibility of the proposed strategy, oral presentation, and participation during discussion.

XIII. Course Grade:

The grading scale for the course will be A (95-100%), A- (90-94%), B+ (87-89%), B (83-86%), B- (79-82%), C+ (75-78%), C (71-74%), C- (68-70%), D+ (64-67%), D (60-63%), and F (<59%).

The course grade is made up of the following components:

Components	Points
Assignments	= 50 points
Participation	= 20 points

Presentation	=	30 points
Total	=	100 points (max)

Incomplete grade: Incompletes will not be given unless: a) a student is passing the course and b) a student encounters severe and unexpected problems and was not able to complete some portion of the work assigned to all students as a regular part of the course. Incompletes are given only by arrangement with the instructor. Students are expected to make up incompletes as soon as reasonably possible. Incompletes are not given because a student is doing poorly in the course.

XIV. Tentative Course Schedule:

Date	Information
Jan 13 th	Intro to literature discussion and case study (Format and Methods)
Jan 20 th	Discussion of topics for the course and final presentations.
Jan 27 th	Literature discussion (optical methods), Part I
Feb 3 rd	Literature discussion (optical methods), Part II
Feb 10 th	Case study (fluorescence sensors), Part I
Feb 17 th	Case study (fluorescence sensors), Part II
Feb 24 th	Literature discussion (single molecule imaging methods)
Mar 6 th – 10 th	Spring break (no class)
Mar 17 th	Case study (structural analysis techniques), Part I
Mar 24 th	Case study (structural analysis techniques), Part II
Mar 31 st	Literature discussion (Mass Spec and omic applications), Part I
April 7 th	Literature discussion (Mass Spec and omic applications), Part II
April 14 th	Student final presentation, session 1
April 21 st	Student final presentation, session 2
April 28 th	Student final presentation, session 3