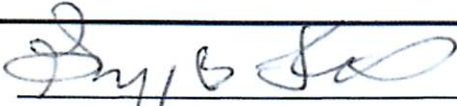

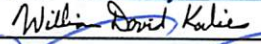


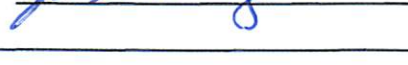
 <b>FLORIDA ATLANTIC UNIVERSITY</b>	<b>NEW COURSE PROPOSAL</b> <b>Graduate Programs</b>		UGPC Approval _____ UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____
	<b>Department</b> Department of Chemistry and Biochemistry <b>College</b> College of Science (To obtain a course number, contact <a href="mailto:erudolph@fau.edu">erudolph@fau.edu</a> )		
<b>Prefix</b> CHM <b>Number</b> 6278	(L = Lab Course; C = Combined Lecture/Lab; add if appropriate) <b>Lab Code</b>	<b>Type of Course</b> <input checked="" type="checkbox"/> Lecture	<b>Course Title</b> Drug Design
<b>Credits</b> (Review Provost Memorandum) 3	<b>Grading</b> (Select One Option) <b>Regular</b> <input checked="" type="radio"/> <b>Sat/UnSat</b> <input type="radio"/>	<b>Course Description</b> (Syllabus must be attached; see <a href="#">Guidelines</a> ) Basic principles of organic chemistry and biochemistry vital to drug design and drug action are the focus of this course with use of clinically important drugs as examples. Students who successfully complete this course will be proficient in understanding the processes involved in drug discovery and development from lead identification to introduction into clinical studies.	
<b>Effective Date</b> (TERM & YEAR) Fall 2019		<b>Prerequisites</b> Graduate Standing	<b>Corequisites</b>  <b>Registration Controls</b> (Major, College, Level)
<b>Prerequisites, Corequisites and Registration Controls are enforced for all sections of course</b>			
<b>Minimum qualifications needed to teach course:</b> Member of the FAU graduate faculty and has a terminal degree in the subject area (or a closely related field.)		<b>List textbook information in syllabus or here</b> Please, see syllabus (attached).	
<b>Faculty Contact/Email/Phone</b> Predrag Cudic, Ph.D.; Dept. of Chem and Biochem.; <a href="mailto:pcudic@fau.edu">pcudic@fau.edu</a> ; 561-799-8375		<b>List/Attach comments from departments affected by new course</b>	

<b>Approved by</b> Department Chair  College Curriculum Chair  2019.08.22 11:08:01 -04'00' College Dean  August 22, 2019 UGPC Chair  UGC Chair  Graduate College Dean  UFS President _____ Provost _____	<b>Date</b> 4/4/19   8/11/19 9-12-19
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------

Email this form and syllabus to [UGPC@fau.edu](mailto:UGPC@fau.edu) one week before the UGPC meeting.

GRADUATE COLLEGE



---

## Drug Design | CHM 6380| SYLLABUS

<b>Instructor:</b>	Prof. Predrag Cudic (pcudic@fau.edu)
<b>Class Meeting Days:</b>	Wednesdays and Fridays
<b>Class Meeting Hours:</b>	TBA
<b>Class Location:</b>	TBA
<b>Office Hours:</b>	By appointment, Location: SE 121
<b>Course Withdrawal:</b>	April 6. Last day to drop course without receiving an "F".
<b>Number Credit Hours:</b>	3

### **I. Course Description:**

Basic principles of organic chemistry and biochemistry vital to drug design and drug action are the focus of this course with use of clinically important drugs as examples. This course covers the basic principles of how new drugs are discovered with emphasis on lead compound discovery and optimization, identification of drug targets, development of bioassays, structure-activity relationships and pharmacophores, drug resistance and drug synergism, drug metabolism and prodrugs. Recent advances in drug design that use rational and combinatorial chemistry approaches will also be covered. The course is further enhanced with student case projects and seminars on selected topics.

### **II. Course Objectives:**

Those who successfully complete this course will be proficient in understanding the processes involved in drug discovery and development from lead identification to introduction into clinical studies. Students will also be proficient in explaining organic chemistry strategies used in drug discovery as well as how drug functions at the molecular level.

### **Recommended Texts and Materials:**

- 1) The Organic Chemistry of Drug Design and Drug Action, R. B. Silverman, M. V. Holladay, Academic Press, 3<sup>rd</sup> edition (2014). ISBN: 978-0123820303
- 2) An Introduction to Drug Synthesis G. L. Patrick, Oxford University Press, 1<sup>st</sup> edition (2015). ISBN: 978-0198708438
- 3) An Introduction to Medicinal Chemistry, G. L. Patrick, Oxford University Press, 5<sup>th</sup> edition (2013). ISBN: 978-0199697397

GRADUATE COLLEGE

### **III. Course Prerequisites:**

Graduate standing

SEP 16 2019

### **Attendance Policy:**

Received

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.

#### **IV. 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 <http://www.fau.edu/counseling/>*

#### **V. Disability Policy Statement:**

*In compliance with the Americans with Disabilities Act (ADA), 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/](http://www.fau.edu/sas/)*

#### **VI. 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.*

#### **Exams:**

There will be two midterm exams (80 min each). The final exam (120 min) is a cumulative exam. Exam rules will be clearly shown on the front page of each exam and it is the responsibility of each student to read and adhere to these rules.

Projects will comprise strategies that students will devise for the design of lead compounds for specific biological targets and lead optimization, and will be based on the class lectures and available literature. Written form of the project cannot exceed four pages and PowerPoint presentations will be 30 min long. Student projects (written form and PowerPoint presentations) will be graded based on the following criteria: clarity, depth of the description of the proposed strategy, feasibility of the proposed strategy, literature used for project preparation, class discussion.

There will be no make-up exams, 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. 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 2 days (before or after) of the scheduled exam date.

**VII. Assignments:**

One written assignment will be given to each student during the semester. The assignment will be to design a drug discovery strategy starting with a clinical lead compound from the literature (a drug for which no clinical studies have been published). Students will select an underserved disease, describe the clinical need and financial viability of the proposed new drug and identify drug target that could provide improved clinical treatment for the disease. Students will also describe how the target will be validated, how lead compounds acting on the target will be identified, how these lead compounds will be optimized and the criteria you will use to select a clinical candidate compound. Due dates are toward the end of the semester to maximize the amount of information available to the student prior to completing the assignment.

**VIII. 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:

Exam 1	=	15 points
Exam 2	=	15 points
Final exam (cumulative)	=	30 points
Student assignments	=	<u>40 points</u>
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.

**IX. Tentative Course Schedule:**

Week of	Topic	Information
Jan. 10	Concepts of drug discovery	general consideration, finding a lead, optimizing target interactions, optimizing access to the target, etc.
Jan. 17 and 24	Lead discovery and lead modification	general consideration, sources of lead compounds, identification of pharmacophore, functional group modification, structure-activity relationship, structure modification to increase potency, therapeutic index and ADME properties, combinatorial and parallel synthesis, etc.

Feb. 7 and 14	Receptors	general consideration, drug-receptor interactions, determination of drug-receptor interactions, assay design, etc.
Feb. 21	Exam 1	<b>Time: TBA</b> <b>Location: TBA</b>
Feb 28 and Mar. 7	Enzymes	general consideration, mechanisms of enzyme catalysis, coenzyme catalysis, enzyme inhibition and inactivation, assay design, etc.
Mar. 14	DNA-interactive agents	general consideration, DNA-drug interaction, classes of drugs that interact with DNA, etc.
March	Student assignment 1	
Mar. 21	Drug resistance and synergism	general consideration, mechanisms of drug resistance, mechanism of drug synergism, use of multiple drugs for the same target, etc.
Mar. 28	Drug metabolism	general consideration, synthesis of radioactive compounds, pathways for drug deactivation and elimination, reductive reactions, conjugation reactions, etc.
Mar. 30	Exam 2	<b>Time: TBA</b> <b>Location: TBA</b>
April 4 and 11	Prodrugs	general consideration, enzyme activation of drugs, types of prodrugs, mechanisms of drug inactivation, etc.
April 18	Drug delivery systems	general consideration, macromolecular drug carrier systems, bioprecursor prodrugs, oxidative activation, reductive activation, etc.
Toward the end of the semester	Student assignments	Selected topics (Written form and 30 min PowerPoint presentations, class discussion)
April 25	Reading day	
May 2, Wednesday	Final Exam	<b>Time: TBA</b> <b>Location: TBA</b>



Charles E. Schmidt College of Medicine  
777 Glades Road  
Boca Raton, FL 33431  
(561) 297-2910  
Fax: (561) 297-2221

Dear Dr. Cudic,

This memo is to confirm that your proposed new course "Drug Design" does not duplicate the content of the College of Medicine course, Pharmacology (GMS 6513)

Sincerely,

A handwritten signature in black ink that reads 'Marc Kantorow'.

Marc Kantorow, Ph.D. FARVO  
Assistant Dean for Graduate Programs  
Professor of Biomedical Science  
Charles E. Schmidt College of Medicine  
Florida Atlantic University  
Boca Raton, FL 33467