

ORIGINATOR'S SECTION:														
1. College: <input type="checkbox"/> CHABSS <input type="checkbox"/> CoBA <input type="checkbox"/> CoEHHS <input checked="" type="checkbox"/> CSM	Desired Term and Year of Implementation (e.g., Fall 2008): Fall 201 ⁷ 6													
2. Course is to be considered for G.E.? (If yes, also fill out appropriate GE form*) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No														
3. Course will be a variable-topics (generic) course? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No ("generic" is a placeholder for topics)														
4. Course abbreviation and Number:* CHEM 532														
5. Title: (Titles using jargon, slang, copyrighted names, trade names, or any non-essential punctuation may not be used.) <u>Medicinal Chemistry</u>														
6. Abbreviated Title for PeopleSoft: (no more than 25 characters, including spaces) Medicinal Chemistry														
7. Number of Units: 2														
8. Catalog Description: (Not to exceed 80 words; language should conform to catalog copy. Please consult the catalog for models of style and format; include all necessary information regarding consent for enrollment, pre- and/or corequisites, repeated enrollment, crosslisting, as detailed below. Such information does <u>not</u> count toward the 80-word limit.) Introduces current drug targets and the design and development of drug candidates to cure diseases based on the modulation of these targets, including proteins, nucleic acids, and other receptor-based functionalities. Focus will be on structure-activity relationships, pharmacokinetics, and pharmacodynamics. <i>Prerequisite: A minimum grade of C (2.0) in CHEM 202L and CHEM 341 or CHEM 352 or classified graduate standing.</i>														
9. Why is this course being proposed? This course is being proposed as part of the new Masters in Chemistry program. CHEM 532 will serve as an elective course.														
10. Mode of Instruction* For definitions of the Course Classification Numbers: http://www.csusm.edu/academic_programs/curriculumsheduling/catalogcurricula/DOCUMENTS/Curricular_Forms_Tab/Instructional%20Mode%20Conventions.pdf														
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Type of Instruction</th> <th style="text-align: center;">Number of Credit Units</th> <th style="text-align: center;">Instructional Mode (Course Classification Number)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Lecture</td> <td style="text-align: center;">2</td> <td style="text-align: center;">C-02</td> </tr> <tr> <td style="text-align: center;">Activity</td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">Lab</td> <td></td> <td></td> </tr> </tbody> </table>	Type of Instruction	Number of Credit Units	Instructional Mode (Course Classification Number)	Lecture	2	C-02	Activity			Lab		
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Lecture	2	C-02												
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11. Grading Method:* <input checked="" type="checkbox"/> Normal (N) (Allows Letter Grade +/-, and Credit/No Credit) <input type="checkbox"/> Normal Plus Report-in-Progress (NP) (Allows Letter Grade +/-, Credit/No Credit, and Report-in-Progress) <input type="checkbox"/> Credit/No Credit Only (C) <input type="checkbox"/> Credit/No Credit or Report-in-Progress Only (CP)														
12. If the (NP) or (CP) grading system was selected, please explain the need for this grade option.														
13. Course Requires Consent for Enrollment? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Faculty <input type="checkbox"/> Credential Analyst <input type="checkbox"/> Dean <input type="checkbox"/> Program/Department - Director/Chair														
14. Course Can be Taken for Credit More than Once? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, how many times? (including first offering)														
15. Is Course Crosslisted: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, indicate which course and check "yes" in item #22 below.														
16. Prerequisite(s): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No CHEM 202L and CHEM 341 or 352 or classified graduate standing.														
17. Corequisite(s): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No														



18. Documentation attached:
<input type="checkbox"/> Syllabus <input checked="" type="checkbox"/> Detailed Course Outline
19. If this course has been offered as a topic, please enter topic abbreviation, number, and suffix:*
20. How often will this course be offered once established? In a 2.5 to 3-year rotation of elective courses.

PROGRAM DIRECTOR/CHAIR - COLLEGE CURRICULUM COMMITTEE SECTION: (Mandatory information – all items in this section must be completed.)	
21. Does this course fulfill a requirement for any major (i.e., core course or elective for a major, majors in other departments, minors in other departments)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
If yes, please specify: Elective course in the Masters of Science in Chemistry.	
22. Does this course impact other discipline(s)? (If there is any uncertainty as to whether a particular discipline is affected, check "yes" and obtain signature.) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
If yes, obtain signature(s). Any objections should be stated in writing and attached to this form.	
Discipline	Signature _____ Date _____ Support _____ Oppose _____
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SIGNATURES : (COLLEGE LEVEL) :

J. Trischman 8/4/2016
 1. Originator (please print or type name) Date
 2. Program Director/Chair 8/9/16 Date
 3. College Curriculum Committee 12/14/16 Date
 4. College Dean (or Designee) 12/14/16 Date

(UNIVERSITY LEVEL)

5. UCC Committee Chair _____ Date
 6. Vice President for Academic Affairs (or Designee) _____ Date
 7. President (or Designee) _____ Date

Course Outline: Chem 532 Medicinal Chemistry

Course Description: Provides an understanding of current drug targets and the design and development of drug candidates to cure diseases based on the modulation of these targets. This course is focused on receptors, enzymes, and oligonucleotides. In class different groups of molecules will be discussed, which have been developed to modulate the function of these proteins. Aspects of biochemistry and physical organic chemistry will be covered as necessary to understand the chemistry of drug action and metabolism in the body. Furthermore, we will discuss aspects lead drug discovery and optimization. **Prerequisites:** Chem 202L and Chem 341 or 352.

Learning Outcomes

- Review the basic principles that govern medicinal chemistry
- Explore the structure-activity principles in a variety of chemical structures
- Demonstrate fundamental critical thinking skills, including pattern recognition and analogous reasoning
- Critically discuss the rational development of a new drug or therapy.

Text: Reader will be based on materials from current journals and selected texts, including:

- Medicinal Chemistry: The Modern Drug Discovery Process, E. Stevens, *Prentice Hall*, 2013.
- The Billion Dollar Molecule: One Company's Quest for the Perfect Drug, B. Werth, *Simon & Schuster*, 1995.
- Metals in Medicine, J. C. Dabrowiak, *Wiley-Blackwell*, 2009.

Selected useful journals:

- Journal of the American Chemical Society
- Angewandte Chemie-International Edition
- Journal of Medicinal Chemistry
- Nature Reviews Drug Discovery

Attendance: Attendance is mandatory and essential to do well in the class.

Examination: Two mid-term examinations and one final exam will be given.

Quizzes: Four quizzes are anticipated for the semester. The 10-minute quizzes will be based on readings and class notes since the last quiz.

Problem Sets: Seven problem sets will include synthetic strategies, structure activity analyses, enzyme mechanisms, and metabolic pathways. Essay style questions in these problem sets will fulfill the All University Writing Requirement.

Grading: The course will be graded based on the following criteria:

Presentation:	20	
Problem Sets:	140	(7 problem sets @ 20 points each)
Quizzes:	100	(4 quizzes @ 25 points each)
Participation:	30	
Midterm Examinations:	200	(2 exams @ 100 points each)
Final Examination:	<u>200</u>	
Total Possible Points	690	

Topics

Week 1	Drug discovery process
Week 2	Enzymes as drug targets
Week 3	Receptors as drug targets
Week 4-5	Oligonucleotides as drug targets
Week 6-7	Metabolism
Week 8-9	Determining target structure
Week 10-11	Lead discovery
Week 12	Lead optimization
Week 13	Lead optimization: Hansh Analysis
Week 14	Aspects in Pharmaceutical synthesis
Week 15	Student Presentations

Presentation

Every student will present a current paper of his or her choice that focuses on medicinal chemistry. Papers will be suggested but not limited to these suggestions. Each presentation will be roughly 25 minutes. Every presenter needs to prepare at least three questions to start in class discussion after the presentation. The presenter will be graded on the quality of these questions as well as the ability to address them. The peers will be graded based on the ability to answer my and the presenter's questions. The presentations should be turned in at least one week in advance. Presentations will be 15-20 min with 5 min for questions. These presentations will be graded based on content, clarity, slide quality, knowledge of the materials, and proper use of the presentation time and the performance during Q&A sessions.