Course Syllabus

Course Identification:
Course Number: CH 4120
Course Name: Pharmaceutical Chemistry II (Drug Design)
Course Location: 215 Chem Sci
Class Times: MWF 11:05am – 11:55am
Prerequisites: CH4110 or CH 4710 or CH 2420

Instructor Information:
Course Instructor: Dr Lanrong Bi
Office Location: 402C Chem Sc
Telephone: Office – (906)-487-1868
E-mail: Lanrong@mtu.edu
Office Hours: MWF (4-5pm) and by appointment

Course Description/Overview:
Focuses on the important concepts in the design and synthesis of drugs. Rational basis for drug design including synthetic, computational and biochemical concepts will be discussed. Topics include structure-activity relationships, synthesis and reaction mechanism, and case studies of drugs.

Student learning goals:
After taking this course you should have an understanding of the methods and strategies involved in the drug discovery process including (1) methods used to identify potential drug targets, (2) approaches to screening for lead molecules, (3) sources of lead molecules, including natural products, synthetic libraries, and in silico structure-based molecules, (4) lead optimization, and (5) the future directions of drug development, including the promise of personalized medicine.

Required Course Text

Course Outline:
• Modern Methods of Drug Discovery: An Introduction.
• Drug Lead Identification: Rational Design, High Throughput Screening, Natural Products, and Synthetic Libraries.
• Lead Optimization: Combinatorial Chemistry and Physiochemical Concepts in Drug Design.
• Target Validation.
- Anti-inflammation Drug Design
- Anti-tumor Drug Design
- Quantitative Structure-Activity Relationships
- Methods to identify Potential Drug Targets
- Drug Lead Identification: *In silico* Structure-Based Molecules.
- The Future of Drug Design; Review.

**Grading System**

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Percentage</th>
<th>Grade points/credit</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90% &amp; above</td>
<td>4.00</td>
<td>Excellent</td>
</tr>
<tr>
<td>AB</td>
<td>85% – 89%</td>
<td>3.50</td>
<td>Very good</td>
</tr>
<tr>
<td>B</td>
<td>80% – 84%</td>
<td>3.00</td>
<td>Good</td>
</tr>
<tr>
<td>BC</td>
<td>75% – 79%</td>
<td>2.50</td>
<td>Above average</td>
</tr>
<tr>
<td>C</td>
<td>70% – 74%</td>
<td>2.00</td>
<td>Average</td>
</tr>
<tr>
<td>CD</td>
<td>65% – 69%</td>
<td>1.50</td>
<td>Below average</td>
</tr>
<tr>
<td>D</td>
<td>60% - 64%</td>
<td>1.00</td>
<td>Inferior</td>
</tr>
<tr>
<td>F</td>
<td>59% and below</td>
<td>0.00</td>
<td>Failure</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete; given only when a student is unable to complete a segment of the course because of circumstances beyond the student’s control. A grade of incomplete may be given only when approved in writing by the department chair or school dean.</td>
<td></td>
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<tr>
<td>X</td>
<td>Conditional, with no grade points per credit; given only when the student is at fault in failing to complete a minor segment of a course, but in the judgment of the instructor does not need to repeat the course. It must be made up within the next semester in residence or the grade becomes a failure (F). A (X) grade is computed into the grade point average as a (F) grade.</td>
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**Requirements and methods of evaluation:**
Your grade will be based on one Midterm Exam (25%), Oral Presentations (25%), Quiz (25%) and a Final Exam (25%).

**University Policies**

Academic regulations and procedures are governed by University policy. Academic dishonesty cases will be handled in accordance the University’s policies.

If you have a disability that could affect your performance in this class or that requires an accommodation under the Americans with Disabilities Act, please see me as soon as possible so that we can make appropriate arrangements. The Affirmative Action Office has asked that you be made aware of the following: *Michigan Tech complies with all federal and state laws and regulations regarding discrimination, including the Americans with Disabilities Act of 1990. If you have a disability and need a reasonable accommodation for equal access to education or services at Michigan Tech, please call the Dean of Students Office, at 487-**
2212. For other concerns about discrimination, you may contact your advisor, department head or the Affirmative Action Office, at 487-3310

Academic Integrity: http://www.studentaffairs.mtu.edu/dean/judicial/policies/academic_integrity.html
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