



MEDICINAL CHEMISTRY

THE MOLECULAR BASIS OF DRUG DISCOVERY

Davidson D001x - Medicinal Chemistry - The Molecular Basis of Drug Discovery

Instructor - Erland Stevens - Davidson College

Start Date - March 10, 2014

I. Learning Goals

The overall goal of this course is to teach a student how to relate the chemical structure of a drug to its biological function. An outcome of this goal is that a student who completes this course will be able to attend lectures on drug discovery and reasonably understand the content of the lectures.

II. Prerequisites

Students should be able to identify organic chemistry functional groups and read line-angle chemical structures. Students should also know the parts of a cell and be comfortable working with mathematical expressions containing exponents and logarithms. Students who lack the necessary organic chemistry experience may be able to supplement their knowledge through courses such of those offered by [Khan Academy](#).

III. Required Materials

This course does not have a required textbook. All materials for the course will be provided through the edX platform. Students have access to a spreadsheet application. Examples include Microsoft Excel, Apache OpenOffice (a free, downloadable office suite), and Google Docs Spreadsheet (available free to anyone with a free Google account). The spreadsheet application will allow analysis of data that will be encountered throughout the course.

IV. Course Schedule - course launch March 10, 2014 at 15:00 UTC

Week 1 - release date March 10, 2014 at 15:00 UTC

Chapter 1 – Pre-Regulatory Medicine

Chapter 2 – Drug Discovery: From Concept to Marketplace

All Week 1 graded content to be completed by March 24, 2014 at 15:00 UTC

Week 2 - release date March 17, 2014 at 15:00 UTC

Chapter 3 – Proteins

Chapter 4 – Enzymes

Chapter 5 – Receptors

Examination 1

All Week 2 graded content, including Examination 1, to be completed by March 31, 2014 at 15:00 UTC

Week 3 - release date March 24, 2014 at 15:00 UTC

Chapter 6 – Blood and Drug Transport

Chapter 7 – Pharmacokinetics

All Week 3 graded content to be completed by April 7, 2014 at 15:00 UTC

Week 4 - release date March 31, 2014 at 15:00 UTC

Chapter 7 – Pharmacokinetics (con't)

Chapter 8 – Metabolism

Examination 2

All Week 4 graded content, including Examination 2, to be completed by April 14, 2014 at 15:00 UTC

Week 5 - release date April 7, 2014 at 15:00 UTC

Chapter 9 – Structure and Diversity

Chapter 10 – Lead Discovery

All Week 5 graded content to be completed by April 21, 2014 at 15:00 UTC

Week 6 - release date April 14, 2014 at 15:00 UTC

Chapter 10 – Lead Discovery

All Week 6 graded content to be completed by April 28, 2014 at 15:00 UTC

Week 7 - release date April 21, 2014 at 15:00 UTC

Chapter 11 – Lead Optimization

Examination 3

All Week 7 graded content, including Examination 3, to be completed by May 5, 2014 at 15:00 UTC

V. Grading

The course grade is based on two types of assignments: in-chapter exercises (ICEs) and examinations. ICEs are found in course pages following almost each video. Some videos are followed by two pages with ICE questions. Each question is worth one point, and students can make two attempts at the correct answer. Examinations are found at the end of Weeks 2, 4, and 7. Each exam question is worth two points each, and only one attempt is allowed. Any student who scores 70% of the possible points in the course will have a passing grade. **All graded content must be completed within two weeks of its release date within the course.**

VI. Honor Code

In order to participate in this or any other edX course, a student must agree to abide by the [edX Honor Code Pledge](#). Under the terms of the pledge, students may collaborate on the questions and exercises in each chapter. The examinations, however, must be completed independently by each student.

VII. Discussion Board

The course has a discussion board, or forum, for interaction between students, course teaching assistants, the instructor, and technical support staff. Students are encouraged to participate on the discussion board for assistance with course material and to converse with other students on course topics. Students are expected to follow the guidelines below, which are taken from the [World Wide Web Consortium \(W3C\) web site](#).

- Tone of messages must be maintained at the highest level of professionalism; flaming, sarcasm, or personal attacks will not be tolerated.
- Don't attack a person. Disagree with an idea.
- Respect the right of others to disagree.
- Be polite and show respect. If you have nothing new, positive, informative or helpful to say, refrain from sharing it.
- It's inappropriate to repeat the same argument over and over without adding new information.
- Debate; Don't argue.
- Listen; Don't shout.
- Stay on topic.

Students who fail to adhere to these guidelines will experience one of more of the following consequences.

- Private warning
- Public warning
- Temporary removal from the discussion board
- Permanent removal from the discussion board

Students who demonstrate a consistent willingness and ability to help other students on the discussion board may be elevated to the status of **Community Teaching Assistant** and gain additional privileges on the discussion board.

VIII. Hints and Tips

- Print the materials for the course
Each video clip has an available summary. Print and read the video summaries for additional insight into the course material.

- Take notes on both the video and written content of the course

Record your own notes on the printed materials so that you can make connections between the topics.

- Use the discussion board

There is no reason to be confused or frustrated. Reach out to your fellow students, the course teaching assistants, and instructor through the discussion board.

- Protect your time

When working on the course, minimize your distractions, and be prepared to focus on the material. The more time you put into the course, the more you will receive from it.