Summary
The molecular and chemical basis of diseases and therapies are discussed.

Content
Lectures 1-5: The following five major disease areas as well as small molecule therapeutics applied to treat the diseases are discussed:

- cancer
- cardiovascular diseases
- neurologic disorders
- infectious diseases
- inherited diseases

Lectures 6-13: The following therapeutic formats being mostly biologics are discussed:

- blood and blood components
- enzymes
- hormones
- cytokines
- monoclonal antibodies
- antibody fragments and mimics
- macrocycles
- peptides and peptidomimetics

Keywords
pharmacological chemistry, drug discovery, therapeutics, biologics

Learning Prerequisites
Important concepts to start the course
Basic knowledge in chemistry and biochemistry

Learning Outcomes
By the end of the course, the student must be able to:
• Describe The molecular basis of diseases
• Describe Therapeutics and their mechanism of action
• Recall Drug development strategies that are discussed as case studies

Teaching methods
Each week, one of the above described topics is presented in a lecture (45 minutes) and a research paper is discussed (45 minutes).

Expected student activities
The students read each week a research paper and answer questions that are provided (at home). The students participate in the discussion of the paper in the lecture.

Assessment methods
Oral exam

Resources
Notes/Handbook
The following materials are provided on Moodle:
- Handout for each lecture
- PPT presentation of the lectures and the case studies
- Research papers
- Questions about research papers
- Test exam

Websites
• http://scgc.epfl.ch/telechargement_cours_chimie

Moodle Link
• http://moodle.epfl.ch/enrol/index.php?id=7631