



Faculty of Science

KEMM20, Chemistry: Medicinal Chemistry, 7.5 credits

Kemi: Läkemedelskemi, 7,5 högskolepoäng

Second Cycle / Avancerad nivå

Details of approval

The syllabus is an old version, approved by Study programmes board, Faculty of Science on 2015-03-13 and was last revised on 2015-03-13. . The revised syllabus applied from 2015-07-01. , autumn semester 2015.

General Information

The course is included in the main field of Chemistry at the Faculty of Science

The course is an optional second-cycle course for a degree of Master of Science, main field of subject Chemistry.

Language of instruction: Swedish

When necessary, the course in full is given in English.

Main field of studies

Chemistry

Depth of study relative to the degree requirements

A1N, Second cycle, has only first-cycle course/s as entry requirements

Learning outcomes

The aim of the course is to give basic knowledge and broad understanding of medicinal chemistry and pharmacological principles from a molecular perspective.

Knowledge and understanding

For a passing grade the student must

- be able to describe the most common strategies for drug discovery and development
- be able to describe common target molecules for drug development
- be able to describe basic pharmacodynamic and pharmacokinetic concepts from a molecular perspective

- be able to explain relationships between chemical structure and biological activity
- be able to describe chemical principles for design and development of drug molecules
- be able to name some of the most common drug compounds and their areas of use

Competence and skills

For a passing grade the student must

- be able to discuss orally and in writing chemical, physical, and pharmacokinetic properties of given drug molecules
- be able to describe and discuss drug action mechanisms from a molecular perspective based on conformational analysis, stereochemistry, acid-base chemistry and ligand-macromolecule interactions
- be able to analyse a given molecular structure as a potential drug candidate

Judgement and approach

For a passing grade the student must

- be able to analyse value and judge a given molecular structure as a potential drug candidate
- be able to analyse his/hers views and arguments for the judgement of a molecular structure as a potential drug candidate

Course content

The course discusses common target biomolecules for drug development, general pharmacokinetic/pharmacodynamic principles and strategies for drug discovery and development.

The course integrates organic, physical, theoretical, and biochemistry to describe how a given drug molecule can interact with a disease-relevant target biomolecule, as well as how drug molecules can be chemically optimized with respect to pharmacokinetic and pharmacodynamics properties.

Relationships between chemical structure and biological activity are central in the course. These are exemplified in the course with antiviral drugs, antibiotics, cancer drugs, drugs acting on the nerve system (adrenergic, cholinergic, and opiate receptors), and ulcer drugs. Biological pharmaceuticals are presented, discussed, and compared with small organic molecules from a drug perspective.

Course design

Teaching comprises lectures and exercises.

Assessment

The course is assessed with a written examination at the end of the course.

A re-sit examination is offered to students who do not pass.

Subcourses that are part of this course can be found in an appendix at the end of this document.

Grades

Marking scale: Fail, Pass, Pass with distinction.

To be awarded Pass on the whole course, students must pass the examination.

The examination grades are: Pass with Distinction, Pass or Fail.

The final grade for the course is determined by the grade on the final examination.

Entry requirements

To be eligible for this course students must have basic eligibility, English 6/English B and 90 higher education credits in completed Science courses, including passes in courses equivalent to:

- KEMA10 General Chemistry 7.5 credits, KEMA01 Organic Chemistry – Basic Course 7.5 credits, KEMA12 Inorganic Chemistry – Basic Course 7,5 credits and KEMA03 Biochemistry – Basic Course 7.5 credits

and

- KEMB09 Physical Chemistry – Basic Course 15 credits

Equivalent knowledge that has been gained in another way also provides eligibility for the course.

Further information

The course cannot be fully credited as part of a degree programme that also includes KEMC10 Pharmaceutical Chemistry 7.5 credits or KEMM10 Medicinal Chemistry 30 credits.

Subcourses in KEMM20, Chemistry: Medicinal Chemistry

Applies from H15

1501 Medicinal Chemistry, 7,5 hp
Grading scale: Fail, Pass, Pass with distinction