

BIO-478

**Pharmacology and pharmacokinetics**

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<b>Cursus</b>	<b>Sem.</b>	<b>Type</b>
Bioengineering	MA4	Opt.
Life Sciences Engineering	MA2, MA4	Opt.
Sciences du vivant	MA4	Opt.

Language of teaching	English
Credits	4
Session	Summer
Semester	Spring
Exam	Written
Workload	120h
Weeks	14
<b>Hours</b>	<b>4 weekly</b>
Courses	2 weekly
Exercises	2 weekly
<b>Number of positions</b>	

**Summary**

This course introduces the student to the fundamentals in pharmacology, pharmacokinetics, drug-receptor interactions. Pharmacogenetics and chronopharmacology are presented in a practical context in order to exemplify the current issues in the domain to develop personalized medicine

**Content**

- Introduction to Pharmacology and general topics of pharmacology
- Pharmacodynamics: Drug-target interaction, quantitative description of ligand binding, relationship between ligand binding and functional effect, antagonism; exercises
- Classes of drug targets: functional and structural aspects, strategies of drug targeting; examples
- Pharmacokinetics: principal models and parameters, Drug Absorption, Distribution, Metabolism and Excretion (ADME)
- Chronopharmacology: effect of circadian rhythm on drug action.
- Pharmacogenetics: candidate genes for variable drug response.
- Selected topics related to recent developments in pharmacology.
- Submission of a term paper

**Learning Prerequisites****Required courses**

General human physiology

**Recommended courses**

Cellular and molecular physiology  
 Biochemistry  
 Maths

**Important concepts to start the course**

Bachelor in Life Sciences and Technology or equivalent, i.e. physiology, cell and molecular biology, maths

**Teaching methods**

Ex Cathedra and E-learning

**Assessment methods**

Written exam

### **Supervision**

Office hours	Yes
Assistants	No
Forum	No

### **Resources**

#### **Bibliography**

Handouts will be placed on the moodle site of the course.

Most of the topics are covered in the following reference textbooks:

- "Rang and Dale's pharmacology " by H.P. Rang et al., Elsevier/Churchill Livingstone, 2011
- "Principles of Pharmacology" by DE Golan et al., Lippincott Williams & Wilkins, 2008.