Summary
The goal of this class is an introduction into the organic chemistry of biological pathways. Students will learn the common mechanisms in biological chemistry as they are found in primary and secondary metabolism.

Content
This class discusses the organic chemistry of biological pathways. Students will learn the common mechanisms in biological chemistry as they are found in primary and secondary metabolism. First, basic concepts of enzyme catalysis and the mechanisms of the main biological cofactors will be discussed. Subsequently, specific pathways from the fields of carbohydrate metabolism, lipid metabolism, amino acid metabolism, nucleotide metabolism and the biosynthesis of some natural products will be discussed.

Keywords
biological pathways, metabolism, cofactors, enzyme catalysis, biosynthesis of natural products.

Learning Prerequisites
Required courses
Biochemistry I and introductory classes into organic chemistry.

Learning Outcomes
By the end of the course, the student must be able to:
• Classify the different biological cofactors used by enzymes
• Define the main metabolic pathways
• Sketch a reaction mechanism for a biological transformation
• Hypothesize which cofactors will be used in a given biological transformation
• Propose experiments to investigate reaction mechanisms
• Describe the main features of carbohydrate metabolism
• Explain the main features of polyketide biosynthesis
• Design mechanism-based inhibitors for selected enzymes

Transversal skills
• Access and evaluate appropriate sources of information.

Teaching methods
Ex cathedra. The blackboard will be used as well as power-point presentations.

**Expected student activities**
Students are expected to take detailed notes and work on problems distributed in the class.

**Assessment methods**
Written exam

**Supervision**
Others  Students are welcomed to contact Kai Johnsson via email to fix appointments.

**Resources**

**Bibliography**

**Ressources en bibliothèque**
- Principles of biochemistry / Lehninger

**Notes/Handbook**
Powerpoint slides shown during the class will be made available on the web.