

COURSE DETAIL

GENERAL, MOLECULAR AND METABOLIC BIOCHEMISTRY

Country

Italy

Host Institution

University of Bologna

Program(s)

University of Bologna

UCEAP Course Level

Upper Division

UCEAP Subject Area(s)

Biochemistry

UCEAP Course Number

180

UCEAP Course Suffix**UCEAP Official Title**

GENERAL, MOLECULAR AND METABOLIC BIOCHEMISTRY

UCEAP Transcript Title

GEN MOL&MTA BIOCHEM

UCEAP Quarter Units

6.00

UCEAP Semester Units

4.00

Course Description

This course is part of the Laurea Magistrale degree program and is intended for advanced level students. Enrollment is by permission of the instructor. The student acquires knowledge of general and molecular biochemistry. In particular, the student is able to: understand the structure and function of the main molecules of biological interest; understand the molecular mechanisms underlying metabolic activities and signaling and their regulation, with particular regard to the biochemical basis of drug action, useful for understanding topics covered in subsequent courses; and understand the biochemical basis of diseases characterized by metabolic alterations.

The course includes the following topics: Classification of amino acids; Structure of myoglobin and hemoglobin, heme structure; Carbohydrates; Structure of biological membranes, fluid mosaic model, asymmetry, fluidity and role of cholesterol; Structure and function of nucleotides, triphosphate nucleosides; Role of weak interactions in macromolecules; Enzymes; Enzyme kinetics; Signal transduction; Metabolism; Glycolysis and its regulation; Catabolism of sugars; The pentose phosphate pathway and its regulation; Glycogenolysis and glycogen synthesis and their regulation; Gluconeogenesis and its regulation; The citric acid cycle and its regulation; The electron transport chain and oxidative phosphorylation; Oxidative degradation of fatty acids: beta-oxidation; Fatty acid synthesis and aspects of its regulation in relation to energy demands and glucose availability; Outline of cholesterol synthesis and its functions; Protein catabolism; General structure of nucleic acids; DNA; RNA; Human genome; DNA replication in *E. coli*; DNA damage in eukaryotes; Transcription in *E. coli*; Aminoacylation; Genetic codon; Codon/anticodon pairing; Protein synthesis (translation) in *E. coli*; Regulation of gene expression in eukaryotes; Recombinant DNA.

Language(s) of Instruction

Italian

Host Institution Course Number

B2818

Host Institution Course Title

BIOCHIMICA GENERALE, MOLECOLARE E METABOLICA

Host Institution Course Details

<https://www.unibo.it/it/studiare/insegnamenti-competenze-trasversali-moocs/inse...>

Host Institution Campus

BOLOGNA

Host Institution Faculty**Host Institution Degree**

LM in PHARMACY

Host Institution Department

PHARMACY AND BIOTECHNOLOGY

Course Last Reviewed

2025-2026

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