

COURSE DETAIL

ADVANCED BIOLOGICAL CHEMISTRY

Country

United Kingdom - Scotland

Host Institution

University of Edinburgh

Program(s)

University of Edinburgh

UCEAP Course Level

Upper Division

UCEAP Subject Area(s)

Biochemistry

UCEAP Course Number

112

UCEAP Course Suffix**UCEAP Official Title**

ADVANCED BIOLOGICAL CHEMISTRY

UCEAP Transcript Title

ADVANCED BIO CHEM

UCEAP Quarter Units

8.00

UCEAP Semester Units

5.30

Course Description

Topics include 1. Structural and Molecular Biology: The structures of biomacromolecules (DNA, RNA and proteins), structure determination (NMR, X-ray crystallography and CryoEM), post translational modification of proteins, synthetic gene design, recombinant protein expression, mutagenesis, unnatural amino-acids, methods of purification and characterization including electrophoretic methods and mass spectrometry. 2. In Silico Methods: Sequence analysis, databases, structure prediction and molecular dynamics. Some of the material in this section are delivered as a workshop to foster the development of in silico skills. 3. Biophysical Techniques: The application of spectroscopic and analytical techniques to measure the physical properties of biomolecular systems, including kinetics, coupled assays, biothermodynamic methods (SPR, ITC), fluorescence, vibrational spectroscopy and imaging techniques. 4. Enzymes and Biosynthesis: This section focuses on enzymes, systems and their applications, beginning with an overview of the structures and functions of the different classes of enzyme. Case studies are used to illustrate the application of techniques covered in earlier sections to the study of complex biological systems and processes. Topics covered include specialized catalytic centers, analysis of biosynthetic gene clusters, protein engineering, directed evolution and highlights of recent natural product biosynthesis.

Language(s) of Instruction

English

Host Institution Course Number

CHEM10071

Host Institution Course Title

ADVANCED BIOLOGICAL CHEMISTRY

Host Institution Course Details

<http://www.drps.ed.ac.uk/22-23/dpt/cxchem10071.htm>

Host Institution Campus

University of Edinburgh

Host Institution Faculty

School of Chemistry

Host Institution Degree**Host Institution Department****Course Last Reviewed**

2022-2023

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