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 Campus
University of Edinburgh

Host Institution Faculty
School of Chemistry

Host Institution Degree
Host Institution Department

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