

Biochemistry 301 - Course Outline/description

BIOC 301 is intended to introduce students to the basics of biochemistry and molecular biology laboratory techniques and protocols. The course consists primarily of 2 sections; an ongoing molecular biology project and a small number of stand-alone experiments in more classical biochemistry.

The ongoing project currently consists of amplification and isolation of a gene encoding an enzyme, the manipulation and cloning of this gene into a suitable plasmid DNA molecule and the selection of this recombinant DNA molecule in bacteria. Further work involves the overexpression of the gene in question, followed by the isolation, identification and characterisation of the recombinant enzyme. The stand alone experiments have recently included ion exchange isolation and subsequent crystallisation of a protein target and a thorough exploration of enzyme kinetics.

In addition, students tour research labs, participate in small group discussions of peer-reviewed articles and present recent research articles in a journal club style.

Some of the protocols used in the course include polymerase chain reaction, restriction digests, plasmid preparation, ligation, preparation of competent bacteria, ion exchange, protein crystallisation, SDS-PAGE, spectroscopy and dot blots.