

Foundation Diploma in Life Sciences

Module Outlines

Biomedical and Environmental Biology

Biomedical and Environmental Biology aims to provide students with the conceptual framework, factual knowledge, and analytical skills necessary to deal critically with the rapidly changing science of biology. It is divided into four general areas: evolution and biological diversity, plant biology, animal biology and ecology. It starts with an overview of developmental and evolutionary processes that lead to the emergence of species diversity. This is followed by a more extensive discussion of the structural organisation and functional regulation of multi-cellular organisms, which is integrated with key biological concepts of homeostasis, signalling and immune defense. Finally, it examines biology at higher levels of organisation involving networks of living organisms. The accompanying extensive laboratory sessions will introduce students to the new tools of modern biology and the process of scientific investigations.

Fundamentals of Chemistry

Fundamentals of Chemistry provides a general overview of the subject area and is designed for students beginning a formal study of chemistry. The unit presents important background information on several related topics in addition to the basic scientific concepts of chemistry. This module associates with interesting and simple approach of central science and provides insights into a variety of different phenomena and serves as a basis for understanding on the physical universe we live in. This module presents fundamental concepts intended to better equip students to be well-prepared for the advanced topics of chemistry – physical and organic chemistry for diploma level. Upon completion of the module, students are more aware of the occupational opportunities in science, engineering and technology and are capable of evaluating the academic requirements for different disciplines and ready for future preparation.

Fundamentals of Mathematics

Fundamentals of Mathematics is developed in view of how numerous applications from many fields of technology often include or indicate where and how mathematical techniques can be used. The module aims to provide students with strong fundamentals in algebra, functions, geometry and trigonometry for further studies with integrated applications in mathematics. Group work will be introduced as a method of transforming students from passive to active learners through application questions where students will be encouraged to discuss with their peers and instructor.

Biological Science

Biological Science aims to provide students with the conceptual framework, factual knowledge, and analytical skills necessary to deal critically with the rapidly changing science of biology. It is divided into three general areas: cellular biochemistry, metabolic and signal transduction pathways, and genetics and genomics. It starts with a general introduction on the scope of life, followed by extensive discussions of biomolecules, cell structure and processes, and their roles in more complex biological functions and organisation. Genetics, cell biology and molecular biology, which are revolutionising medicine and agriculture, will be introduced. The accompanying extensive laboratory sessions will introduce students to the new tools of modern biology and the process of scientific investigations.

Mathematics for Life Science

Mathematics for Life Science seeks to develop students' ability to think clearly, work carefully and communicate mathematical ideas successfully, and heighten their appreciation for mathematical ideas that can be applied in the everyday world. The module aims to provide students with an understanding of linear functions and to appreciate curve sketching approaches to solve mathematical problems in a variety of contexts.

Organic Chemistry

Organic Chemistry provides students with basic principles of organic chemistry and an understanding of the chemical environment. The main emphasis is on the structural approach to organic chemistry and this equips students with basic understanding of the most common and most important synthetic reactions, which include carbon-carbon bond formation, functional groups creation and manipulation. With the role that organic molecules play in the natural and synthetic world, students can apply methods of scientific inquiry and develop problem solving and critical thinking skills that relate to everyday experiences.

Physical Chemistry

Physical Chemistry focuses on the understanding of concepts central to physical chemistry including the periodic table, gasses, the mole, chemical bonding, acid-base concepts, energy and nuclear chemistry. This module is designed to build a scientific literacy which will permit a greater understanding of industrial processes, environmental concerns, household products and how everyday life depends on chemical phenomena. Students will work on quantitative questions related to stoichiometry solutions, gases and acid-base reactions. This module not only provides students with the opportunity to develop, record and maintain evidence of their written and graphic representation through laboratory reports, it also helps to build the knowledge and skills that are necessary for challenges in the 21st century.

Statistics and Applied Mathematics

Statistics and Applied Mathematics aims to develop further students' understanding of mathematics and mathematical processes and develop abilities to comment and appraise datasets. It also seeks to develop students' ability to think clearly, work carefully and formulate mathematical induction and hypothesis testing approaches to solve problems.