

STEM

Introduction to Software Development

This course introduces you to fundamental concepts and techniques of programming, software development and project management. You will be introduced to the software development lifecycle. You will analyse a problem and collect information required to ideate, choose and plan a software solution. You will develop and code the solution using a general- purpose programming language. Following validation and testing, you will evaluate and reflect on their success of your solution and your project management skills. Throughout the process you will consider and comment on the risks and legislature associated with the collection, gathering and storage of information.

Physics

Physics is a study of how the physical world works. In this course students are introduced to key Physics principles and their everyday applications in a range of areas including mechanics; waves, particles and light; electric fields, magnetic fields and electromagnetism. Additionally, students develop skills in conducting experimental investigations, collecting and analysing data, and reporting. The emphasis is on improved critical thinking skills, and on developing an ability to approach and solve physics problems.

Psychology

Psychology is the study of the mind and behaviour. It encompasses the biological influences, social pressures, and environmental factors that affect how people think, act, and feel. Gaining a richer and deeper understanding of psychology can help people achieve insights into their own actions as well as a better understanding of other people.

This course is designed to introduce you to psychology as a systematic study of people's thoughts, feelings and behaviour with an emphasis on developing analytical and problem-solving skills in a range of situations involving human and animal behaviour. In this course, you will develop your oral, written and research skills in the context of psychology.

Biology

Biology is the study of living organisms. In this course, students investigate the human organism, focusing on cellular structure and function and control, agents of disease and the immune systems. DNA, gene expression and mutations will be explored together with biotechnology and its applications. Practical activities will develop a firm foundation in analytical processes and scientific methodology.

Chemistry

Chemistry is the study of materials, their properties and structure. In this course, students investigate the major groups of organic compounds. They examine the factors that influence the reaction rates of chemical reactions, and how these can be applied to optimising chemical processes and systems. Students investigate chemical equilibrium and the reversibility of reactions; acid-base equilibrium systems and their applications; the principles of oxidation and reduction reactions; the production of electricity from galvanic cells and fuel cells; and, the ways in which chemistry contributes to

contemporary debate regarding current and future uses of local, regional and international resources. Throughout the course, collaborative experimental work allows students to progressively develop their science inquiry skills.

Statistics and Probability

In this course you will be introduced to the mathematical and statistical knowledge and skills required for further study at tertiary level. You will develop an understanding of descriptive concepts for the presentation and analysis of data. These include measures of central tendency and dispersion. You will build your knowledge of the inferential concepts for the testing of hypotheses on data sets. You will also explore basic probability theory which underpins the study of statistics.

Advanced mathematics

In this skill-based course you will develop the necessary knowledge that you will require for further tertiary-level study in the fields of engineering and applied science. You will develop an understanding of various functions, trigonometry and differential calculus which will provide you with a firm foundation in mathematical analysis and problem solving.

Applied Mathematics: Engineering and Science

In this course you will build on the knowledge you acquired in Advanced Mathematics and you will gain the mathematical skills required for further tertiary-level study in the fields of engineering and applied science. You will develop an understanding of integral calculus, differential equations, numerical methods and complex numbers, which will provide you with a firm foundation in analysis, problem solving and the use of technology.

General Mathematics

In this course you will be introduced to the mathematical skills required for further tertiary study. In this skill-based course you will develop your knowledge of algebra, basic curve sketching, linear programming, matrices and trigonometry. You will gain a firm foundation in analysis, problem solving and the use of technology.

Data Analytics

Today, businesses and organisations rely on information curated from a large range of data sources. In this course, students are introduced to methods, techniques and tools which convert and sort data into meaningful visualisations. Given specific data sets, students will organise, synthesise and analyse data, test the validity of the information produced, whilst respecting the legal and ethical considerations in data collection, storage and communication. Students will produce charts, graphs and infographics which best represent the patterns, trends and relationships between data sets and generate a report which meets the needs of an intended audience.