VCE Information Technology (Applied Computing) subjects for 2024

At VCE there are several choices of subject related to Information Technology (named **Applied Computing** in the VCE). We also offer the **VCE System Engineering** stream.

There are no formal prerequisites for any of the subjects and either of the Units 3 & 4 subjects is a good choice for students looking at completing a Year 12 subject in Year 11.

In terms of success, many students have gained a perfect score of **50/50** in the Computing subjects. Three students have also achieved **Premier's Awards** for the best score in the State.

There is a short summary of each of the subjects below as well as an abbreviated pathways diagram.

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Units 1&2 Applied Computing

Unit 1 focusses on how data, can be gathered and represented visually to suit the needs of users. The first task involves students collecting data and using spreadsheet or database software to manipulate (process) it. The manipulated data is then converted into a **data visualisation** to make understanding and interpretation easier for users. In the second task students use a **programming language** to create a working software solution. No prior programming experience is expected. Students monitor the progress of this task using **project management** skills and techniques.

In **Unit 2** the focus is developing innovative solutions and reducing security risks in networked environments. The first task requires students to **collaborate** using any software tool studied so far to create an **innovative solution**. We will make Internet connected Arduino based physical computing products. In the second task students will analyse the vulnerabilities of a **network** based scenario and propose strategies to better protect the data.

This course provides excellent preparation for either **Data Analytics** or **Software Development**.

Units 3&4 Data Analytics

In Data Analytics Units 3 and 4 students focus on data, information and visualisations.
In **Unit 3** students identify and extract data through the use of software tools such as database, spreadsheet and data visualisation software (like Tableau) to create **data visualisations** or **infographics**. The first task involves extracting data from large repositories, manipulate and cleansing the data and applying a range of functions to develop software solutions, such as databases, spreadsheets and data visualisation tools, to present the findings. The second task is actually the first half of an extended project (SAT) which is linked with the first task in Unit 4. Students must form a research question, then **gather and analyse data sets** in preparation for the creation of a data visualisation solution.

In **Unit 4** students focus on determining the findings of a research question by developing infographics or dynamic data visualisations based on large complex data sets and on the security strategies used by an organisation to protect data and information from threats. The major assessment task allows students to take the data they acquired in Unit 3, then present the findings in the format of **data visualisation** or **infographics**. In the final assessment task students are asked to **investigate** security practices of an organisation. They examine the threats to data and information, evaluate security strategies and recommend improved strategies for protecting data and information.

Units 3&4 Software Development

In Software development Units 3 and 4 students focus on the application of a problem-solving methodology and underlying skills to create purpose-designed solutions using a programming language.
In **Unit 3** students apply the problem-solving methodology to develop working software modules using a programming language. In the first task students create a set of working modules in a **programming language** of their choice. The second task forms half of an extended project (SAT) which is combined with the first task of Unit 4. Students need to **analyse an information problem** by way of a Software Requirements Specifications (SRS) document, then generate a range of **designs of possible solutions**.

In **Unit 4** students focus on how the information needs of individuals and organisations are met through the creation of software solutions. The first task follows on from the work begun in Unit 3, where students now **create and evaluate the solution** they had designed. They use the same programing language as in Unit 3. In the second task students examine the security practices of an organisation and the risks to software and data during the development and use of the software solutions.

This course fits in extremely well with VCE Algorithmics.

Units 1&2 Systems Engineering

VCE Systems Engineering will be introduced at Trinity from 2024. Units 3 & 4 will be available in 2025. This course is designed for students who are considering tertiary study in the Engineering field or who have a strong aptitude for creating engineering projects. It brings together maths, physics, programming and engineering principles focussed on developing practical solutions related to manufacturing, transportation, automation, control technologies, mechanisms and mechatronics, electrotechnology, robotics, pneumatics, hydraulics, and energy management.
High achieving work is featured at the VCAA Top Designs exhibition in March of each year.

Unit 1 focuses on engineering fundamentals as the basis of understanding concepts, principles and components that operate in mechanical systems. The first task involves students applying the **systems engineering process** to research, design and plan a mechanical system. In the second task students make a **mechanical system** in the form of a model or develop a prototype to test aspects of their design from the first task.
In **Unit 2** the focus is on fundamental **electrotechnological** engineering principles. The term 'electrotechnological' encompasses systems that include electrical/electronic circuitry including **microelectronic circuitry**. The first task requires students to research, design, plan and model an **operational electrotechnological system**. In the second task students produce, test, diagnose and evaluate operational electrotechnological systems.

VCE IT Pathways