

# Applied Computing

## Units 1-2

VCE Applied Computing supports students to participate in a globalised society and economy as they learn how to exploit the capabilities of digital systems and manage risks when communicating and collaborating with others locally and globally. The study provides students with practical opportunities to create digital solutions for real-world problems in a range of settings, developing an essential tool set for current and future learning, work and social endeavours.

VCE Applied Computing provides a pathway to further studies in areas such as computer science, information systems, business, systems engineering, robotics, linguistics, logistics, database management and software development, and to careers in digital-technologies based areas such as information architecture, web design, business analysis and project management.

### UNIT 1

In this unit students focus on how data, information and networked digital systems can be used to meet a range of users' current and future needs.

#### LEARNING ACTIVITIES

In Area of Study 1 students collect primary data when investigating an issue, practice or event and create a digital solution that graphically presents the findings of the investigation. In Area of Study 2 students examine the technical underpinnings of wireless and mobile networks, and security controls to protect stored and transmitted data, to design a network solution that meets an identified need or opportunity. They predict the impact on users if the network solution were implemented. In Area of Study 3 students acquire and apply their knowledge of information architecture and user interfaces, together with web authoring skills, when creating a website to present different viewpoints on a contemporary issue.

#### KEY SKILLS

Students will be able to select and apply appropriate methods and techniques to acquire and reference data and information. They will also select appropriate design tools and represent the appearance and functionality of solutions, taking into account user interactions. Finally, students will evaluate cloud computing as a data storage solution.

#### ASSESSMENT

Visual presentation, oral presentation, written report, mid year exam.

### UNIT 2

In this unit students focus on data and how the application of computational, design and systems thinking skills support the creation of solutions that automate the processing of data.

#### LEARNING ACTIVITIES

In Area of Study 1 students develop their computational thinking skills when using a programming or scripting language to create solutions. They engage in the design and development stages of the problem-solving methodology. In Area of Study 2 students develop a sound understanding of data and how a range of software tools can be used to extract data from large repositories and manipulate it to create visualisations that are clear, usable and attractive, and reduce the complexity of data. In Area of Study 3 students apply all stages of the problem-solving methodology to create a solution using database management software and explain how they are personally affected by their interactions with a database system.

#### KEY SKILLS

Students will be able to interpret solution requirements, select and use appropriate methods for expressing solution designs, including user interfaces apply techniques for manipulating data and information and students will also be able to use a programming or scripting language.

#### ASSESSMENT

Visual presentation, oral presentation, written report, end of year exam.

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## Units 3-4 (Data Analytics)

### UNIT 3

In this unit students apply the problem-solving methodology to identify and extract data through the use of software tools such as database, spreadsheet and data visualisation software to create data visualisations or infographics. Students develop an understanding of the analysis, design and development stages of the problem-solving methodology.

#### LEARNING ACTIVITIES

In Area of Study 1 students respond to teacher-provided solution requirements and designs. Students develop data visualisations and use appropriate software tools to present findings. Appropriate software tools include database, spreadsheet and data visualisation software.

In Area of Study 2 students propose a research question, prepare a project plan, collect and analyse data, and design infographics or dynamic data visualisations. Area of Study 2 forms the first part of the School-assessed Task (SAT) that is completed in Unit 4, Area of Study 1.

#### KEY SKILLS

- interpret solution requirements and designs to develop data visualisations
- identify, select and extract relevant data from large repositories
- use a standard referencing system to acknowledge intellectual property
- organise, manipulate and cleanse data using database and spreadsheet software
- select, justify and apply functions, formats and conventions to create effective data visualisations
- develop and apply suitable validation and testing techniques to software tools used

### UNIT 4

In this unit 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.

#### LEARNING ACTIVITIES

In Area of Study 1 students apply the problem-solving stages of development and evaluation to develop their preferred design prepared in Unit 3, Area of Study 2, into infographics or dynamic data visualisations, and evaluate the solutions and project plan. Area of Study 1 forms the second part of the School-assessed Task (SAT). In Area of Study 2 students 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.

#### KEY SKILLS

- monitor, modify and annotate project plans as necessary
- propose and implement procedures for managing files
- select and apply software functions, conventions, formats, methods and techniques to develop infographics or dynamic data visualisations
- select and apply data validation and testing techniques, making any necessary modifications
- apply evaluation criteria to evaluate the efficiency and effectiveness of infographics or dynamic data visualisation solutions
- assess the effectiveness of the project plan in managing the project

#### VCAA ASSESSMENT - the overall study score will consist of:

Unit 3 school assessed coursework (SACs) 10%, Unit 3 & 4 School Assessed Task (SAT) (30%), unit 4 school assessed coursework (SACs) 10%, Final written examination - 50%.