2024 Semester 1 - Year 9/10 Unit Outline

Digital Technology

Teacher(s): Jackie MacDougall

Faculty: Arts & Technologies **Unit Duration:** Semester

The **Australian Curriculum Achievement Standards in** **Digital Technologies Years 9 & 10**

Australian Curriculum Achievement Standard

Highlight the components of the achievement standard that are the focus for this semester

By the end of Year 10 students develop and modify innovative digital solutions, decompose real-world problems, and critically evaluate alternative solutions against stakeholder elicited user stories. Students acquire, interpret and model complex data with databases and represent documents as content, structure and presentation. They design and validate algorithms and implement them, including in an object-oriented programming language. Students explain how digital systems manage, control and secure access to data; and model cyber security threats and explore a vulnerability. They use advanced features of digital tools to create interactive content, and to plan, collaborate on, and manage agile projects. Students apply privacy principles to manage digital footprints.

Unit Description: This semester-long unit delves into the intricate and fascinating world of digital information representation within computers. Over the semester, students will explore how complex information—ranging from numbers and text to images and sound—is converted into bits. This journey into the digital realm will reveal the technical challenges and raise pertinent questions about digitisation.

The unit begins by examining the fundamental concepts of how basic data types are represented digitally. Students will learn about binary systems and the encoding of various forms of data, understanding the underpinnings of digital storage and retrieval.

As the semester progresses, the focus shifts to the mechanisms and principles of data compression. Students will explore various compression techniques, understanding their importance in efficient data storage and transmission. This unit segment will also address the broader social implications of digitising the world's information, including accessibility, privacy, and the digital divide.

In the latter part of the unit, attention turns to the Internet—arguably the most significant digital innovation of our time. Students will learn about the Internet's design and architecture, understanding how it was engineered to connect billions of devices and people globally. The course will cover the protocols that form the backbone of the Internet, such as TCP/IP, DNS, and HTTP. Students will use the Internet Simulator to reinforce theoretical knowledge with practical skills, allowing hands-on building and experimentation with these protocols. This experiential learning component will give students a deeper grasp of how the Internet functions in real-world scenarios.

Finally, the unit will encourage students to critically analyse the Internet's impacts on modern life. This will involve discussions and research into how the Internet has influenced and transformed various aspects of society, both positively and negatively. Topics such as online communication, cybersecurity, the spread of information, and the ethical implications of internet use will be explored.

Through a combination of lessons, hands-on projects, discussions, and research, this unit aims to equip students with a thorough understanding of digital information representation, the workings of the Internet, and the profound impacts of these technologies on the world.

Essential Learning Outcomes developed from the Achievement Standards of the Australian Curriculum:

1. **AC9TDI10K03** Investigate simple data compression techniques
2. **AC9TDI10K01** Investigate how hardware and software manage, control and secure access to data in networked digital systems
3. **AC9TDI10P13** Develop cyber security threat models, and explore a software, user or software supply chain vulnerability

Materials and Equipment Required: Students are expected to arrive at every class with a class book/folder to write notes for that subject, a writing instrument and a Chromebook or similar, appropriate electronic device. Students may also be required to provide the following additional materials and equipment: Click here to enter text.

Absences from Class: Students who miss classes due to absence or excursions must negotiate with the class teacher to catch up missed work.

Use of IT in Class: A Google Classroom has been set up for this class. Students will be required to log into this Google Classroom regularly to access course material. Students must bring their Chromebook to all lessons, however, the use of these devices in class will be at the discretion of the teacher.

Homework: Any homework will be directly related to instruction and course requirements, will be assessed appropriately and may impact upon student grades. Examples of homework may include; catch up on missed classwork, revision of classwork, study for tests, assignment work, or preparation for a class presentation.

Late Work: Extensions may be negotiated with individual teachers before the due date

Plagiarism: Plagiarism is copying or using another's work and claiming it as your own. This includes copying, cutting and pasting text or using ideas directly from a text, the internet or some other source without appropriate referencing. The use of Generative AI to produce your work, or edit it so that it no longer reflects your work, is a form of plagiarism. If this happens, work may not be graded and students will be asked to discuss the assessment with the classroom teacher and Executive Teacher for that subject. If a teacher suspects a student may have plagiarised their work they may choose to assess the student in an alternative way, such as verbally or under test conditions. Parents may be contacted as part of this process.

Assessment Portfolio: This contains evidence of work from the opportunities the students have been provided to demonstrate elements of the achievement standard.

Portfolio Assessment Tasks for this subject will include:	**Week / Date Due**	**Essential Learning**
1. Classwork Portfolio	**Week 18**	**1, 2, & 3**
2. Journal	**Week 18**	**1, 2, & 3**
3. Projects	**Week 9 and Week 17**	**1, 2,& 3**
4. Tests	**Week 9 and Week 17**	**1, 2, & 3**

A-E Reporting Grade Descriptors These are the grades and grade descriptors for reporting at the end of each Semester.

A	Demonstrating **excellent** achievement of what is expected (Consistently achieving a proficiency level of 4 or above in each of the Essential Learnings)
B	Demonstrating a **high** achievement of what is expected (Consistently achieving a proficiency level of between 3 and 4 in each of the Essential Learnings)
C	Demonstrating **satisfactory** achievement of what is expected (Achieving a proficiency level of 3 across the Essential Learnings)
D	Demonstrating **partial** achievement of what is expected (Achieving a proficiency of between 1 and 3 across the Essential Learnings)
E	Demonstrating **limited** achievement of what is expected (Achieving a proficiency of 1 or less in each of the Essential Learnings)
S	**Status** is awarded where unavoidable circumstances have prevented assessment. Must be negotiated with the Principal.

Grade Descriptors and the "C" grade

In ACT public schools the Australian Curriculum Achievement Standard is aligned with a 'C' grade. The 'C' grade indicates that your child has demonstrated a satisfactory level of knowledge, understanding and skill in relation to the Achievement Standard.

Appeals

A student must initiate an appeal for any grade with their subject teacher. If a student is dissatisfied with that initial process, they must pursue further appeal through the Faculty Executive Teacher for that subject.

Executive Teacher

Michelle Coleman _____ Click here to enter a date. _____