NCEA Level 2

DIGITAL TECHNOLOGIES & HANGARAU MATIHIKO

Teaching and learning programme

Get ready. Get agile.

MINISTRY OF EDUCATION
TE TĀHUHU O TE MĀTAURANGA

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Summary of the teaching and learning programme

A modern digital technologies development process should be both cyclical and agile.

This programme provides teachers and kaiako with an agile framework that can be used to help guide students from an initial design idea, through a development process, to a finished outcome.

It has deliberately been left open for digital technologies teachers and kaiako to fit around their classroom-based practice and contextualised skills that they deliver.

The intention is to present and consider real-world development best practices suitable to the needs of NCEA level 2, in design, project management, project development and testing. Appropriate processes are applied across a potential range of implementation outcomes, allowing teachers and kaiako to deliver to their own specialised knowledge.

By the end of this teaching and learning programme, students will be able to:

- apply conventions to develop a design for a digital technologies outcome
- develop a digital technologies outcome using a process of planning, design development, testing, trialling and implementation.

Duration

1½–2 terms' work. The entire course should take between 70 and approximately 90 hours of teaching, learning and assessment.

It is anticipated that students may also complete a number of hours of learning in specialist skills-based lessons at a level suitable to DDDO progress outcome 5.

The big ideas

Students design and develop a digital outcome using processes framed by Agile methodology, which gather evidence from testing and modelling to inform their practice. The considerations of design conventions, project management tools and techniques, and relevant implications are considered.

Alignment to the New Zealand Curriculum

DDDO – Designing and Developing Digital Outcomes: Progress outcome 5

Students will:

> independently apply … [a] process to design, develop, store and test digital outcomes that enable their solutions, identifying, evaluating, prioritising and responding to relevant social, ethical and end-user considerations.

They will:

> use information from testing and, with increasing confidence, optimise tools, techniques, procedures and protocols to improve the quality of the outcomes. They apply evaluative processes to ensure the outcomes are fit-for-purpose and meet end-user requirements.

Links to other learning areas

This programme involves developing an authentic solution as a digital outcome. It could therefore be integrated with any course that requires such an outcome, for example, a small business solution, such as a web, information management, electronics, video or print outcome, as part of a commerce or business studies course or a youth enterprise solution. Web design solutions may also link with art, design, or other courses requiring a website to showcase course content.

Teaching and learning pedagogy

This programme uses a blended learning pedagogy, combining online educational materials, resources and interactions, with traditional place-based classroom methods.

Students are provided with in-class activities to learn the design and development conventions and tools available for them to use. Then, with teacher or kaiako support, students combine both online and offline activities to enable them to design and ultimately develop their media outcome.

It is expected that learning and assessment occur naturally and continuously through the project, as students are given some control over time, place, path, and/or pace. Students are encouraged to collaborate on small-group outcomes, where appropriate, as this may allow them to work in a way more conducive to an agile team model.

Resources required

- An agile teacher and kaiako resource book Get ready. Get Agile is supplied.
- Teacher/kaiako-directed, contextualised prior learning for digital technology skills
- Internet access for research and further student-directed skills development
- A student LMS or similar platform (Microsoft 365, Google Classroom, etc.), and/or access to collaborative online tools (Github, Trello, Slack, etc.) depending on the context
- A range of hardware, and software tools (appropriate to the context) may be necessary, eg,
  - a range of appropriate software development tools (IDEs) for programming, web, electronics, or other media design applications, etc. or
  - appropriate publishing software (proprietary or open source), as appropriate, and an ability to proof outcomes for print.
- UC Field Guide UX.

Prior knowledge and place in the learning journey

The technical skills necessary to complete this project are not included in this resource.

It is expected that a teacher or kaiako will have provided prior learning for students (relevant to the digital technologies specialisation of the teacher or kaiako) or a contextual theme prior to the project, suitable for NCEA Level 2.

No prior knowledge of design processes, design methodologies or development methodologies is assumed.

How might you adapt this in your classroom?

This resource is intended as a framework to wrap around a teacher's or kaiako's specific contextualised outcome delivery (that is, video, audio, web media, illustration, animation, print media, programming, electronics, etc.).

It could be used to develop a design to meet a design proposal previously developed with AS91890 (Conduct an inquiry to propose a digital technologies outcome) or be used as the development phase leading to a specific summative digital outcome (such as a web-moving image or a print-based outcome assessed using AS91893 Use advanced techniques to develop a digital media outcome).

This resource could also be used to help develop digital outcomes to support the course delivery of other learning areas. The tasks in the support files should be modified to suit the specific context or class and suit being wrapped around a context that could be supplied by the teacher or kaiako. Whatever the context, it is important that it be approved by the teacher or kaiako prior to beginning development.

The intention is that the design process will merge with a development process and so provide students with the necessary learning to use advanced processes to develop a digital technologies outcome.

Assessment

The default assessment task has been written from the point of view of several possible outcomes. This can and should be altered to create a specifically contextualised outcome suitable to the class, teams, or individuals within the class.

AS91891 Apply conventions to develop a design for a digital technologies outcome, and

AS91897 Use advanced processes to develop a digital technologies outcome.

TERM OUTLINE

Specific learning or assessment activity	Duration (hours)	Learning activities	Resources provided
Prior learning	Up to 20	Teachers present lessons in a skill-based context of their choosing, suitable for NCEA Level 2. Alternatively, students use online tutorial sites for self-directed learning. Teachers suggest specific tools that students can evaluate as they explore design conventions. Either teacher tools are used or allow students to complete 'How to use' tutorials provided by a supplier or available as tutorials on sites such as YouTube. For example: • planning (eg, Gantt chart) • project management (eg, GitHub, or simple versioning tools in a spreadsheet) • mindmaping, wireframing, or modelling tools (eg, Adobe Photoshop, Illustrator or equivalent, or live prototyping tools such as Adobe XD) • integrated development environments (IDE) or other programming tools (eg, repl.it).	Could use material already available such as the free W3Schools W3Schools How To or W3Schools CSS3 Flexbox, through to the cost and semi-cost models such as Codecademy, Code Avengers, or Khan Academy.

Specific learning or assessment activity	Duration (hours)	Learning activities	Resources provided
Design sprint (refer to Teacher guide)	Up to 20	The following activities are explained in detail in the Teachers' Guide provided with this programme. Students – with teacher direction – begin learning an agile development process. Students use documents in a shared online environment (eg, Microsoft 365 OneNote, Google Docs, or other school Intranet environment) to share their thinking with the teacher, who can serve to provide feedback on ideas and progress.	The following activities are explained in detail in the Teachers' Guide provided with this programme. This guide is a series of Powerpoint slides that teachers can use and adapt to suit their own context. The slides include: Part 1 - Project management Part 2 - Design thinking Part 3 - Agile methodology Part 4 - Agile processes Part 5 - Kanban workflow Part 6 - User stories Part 7 - Minimum viable product Part 8 - Collaborative tools Part 9 - Setting up a Kanban board Part 10 - Developing a class Kanban board Students – with teacher direction – begin learning an agile development process. Students use documents in a shared online environment (eg, Microsoft 365 OneNote, Google Docs, or other school Intranet environment) to share their thinking with the teacher, who can provide feedback on ideas and progress.
Pre-sprint	2–3	Investigate relevant conventions suitable to the context. Include any research sources used when making your draft designs	Internet, teacher- supplied resources, printed materials

Specific learning or assessment activity	Duration (hours)	Learning activities	Resources provided
Part 1: Understand	2–3 (This step may already exist if students have completed AS91890 inquiry.)	Understand the need. Create the team. Consider the people needed to share goals, technological capability, and deliver on user need. Define the problem – select from: • mindmaps, brainstorms, brain-dump • PMIs • annotated screen captures • collaborative software (eg, OneNote)	Project log, blog or vlog
Part 2: Diverge	2–3	Ideate • Identify conventions to be applied. • Develop lots of solutions. All possible solutions to the problems are explored – anything is possible! • Sketch and/or make simple paper mock-ups using materials. • Pencil and paper developments are appropriate. • Notes, jottings – you may develop some simple models in materials. • Use digital tools where they help and are appropriate to the context.	Sketching tools Basic wireframe tool Paper and pencil
Part 3: Decide	2–3	Review ideas and choose or vote on the best options as a team. Discuss relevant implications as a class: • What do we mean by this? • What do we mean by annotations? Explain relevant implications as annotations on design ideas. Choose a design through a group discussion. (It may be helpful to record discussion audio.) Annotate or record design choices.	Relevant Implications resource Note-taking Audio recording facility

Specific learning or assessment activity	Duration (hours)	Learning activities	Resources provided
Part 5: Validate	2–3	Share prototypes with end-users and others outside the team to discover what doesn't work. Listen to other's points-of-view. Research further existing outcomes. Refine and make improvements to models.	Collaborative online applications
Post-sprint	2–3	Group and individual retrospective: • What happened? • What did I contribute? • Where were the blockages? Produce a written transcript, recording of group meetings, annotated notes, interview with assessor, written summary.	Audio recorder Assessor
Development process	Up to 60 hours	Students develop ideas and designs in a development process that integrates short bursts of development, testing and deployment ('continuous shipping'). End-users' feedback is gathered almost continually, as end-users are seeing and testing the outcomes continually and provide genuine feedback. Process proceeds for three or more cycles of development, using a concept of continuous flow and continuous delivery, rather than fixed-length 'sprints' (ie, 2 weeks) and testing with a version release only at the end of each sprint. The team works on until all tasks are complete from the plan. Usually, team members select tasks based on their specialised area knowledge or expertise, although care should be taken not to become ineffective through too much specialisation.	

Specific learning or assessment activity	Duration (hours)	Learning activities	Resources provided
Development phase 1 10 hours or approx. 2 weeks			
Part 1: Plan	1	Requirements analysis and team discussion Review progress to date to determine the next steps. Team members and appropriate end-users meet to identify requirements that are quantifiable, relevant and detailed.	Project log
Part 2: Design	1–3	Refine designs. Begin modelling and trialling new ideas (eg, new fonts, colours, etc.). Components are developed and tested against each other for appropriateness. Team discussion or stand-ups A design is developed from the identified requirements, and the team considers what the product or solution might look like, deciding on a test strategy or plan to proceed.	Project log Mood boards
Part 3: Develop	4–5	Develop refinements of design (eg, clickable mock-ups or interactive prototypes, schematics, scripts, system block diagrams, storyboards, flowcharts, models, scale drawings, circuit schematics). Features are developed, and/or scheduled for further deployment.	Wireframe tool Paper prototypes Online prototype, eg, Adobe XD.
Part 4: Test	1–2	Design outcome components are tested against the requirements to ensure that the outcome is solving the end-user needs.	Project log
Part 5: Deploy		Product designs are delivered to the developers and/or end-user as often as possible. End-users begin using the outcome (design). End-users may experience problems with the designs. The team receives feedback to be addressed in ongoing development.	Collaborative tools User logs

Specific learning or assessment activity	Duration (hours)	Learning activities	Resources provided
Development Phase 2	10 hours or approx. 2 weeks		
Part 1: Plan	1	End-users' and other feedback is considered. Team discussion Equivalent components are identified from the plan (by comparing to find most appropriate for outcome) • prioritise features • assign components to a development phase.	Kanban board Project log
Part 2: Design	1–2	Sketch new designs, Update and/or improve existing features. Trial or model new ideas (eg, new fonts). Team discussion to define minimum viable product (MVP).	Kanban board Project log
Part 4: Test	1–2	Testing may include unit testing, integration testing, system testing, and acceptance testing (eg, HTML validator, different browsers, different devices and visual impairment simulators). Seek and record feedback on outcome to date.	Testing software Validators Browsers Simulators
Part 5: Deploy	1–2	Product components are delivered to the developers and/or end-user as often as possible. Testers and/or end-users begin using the outcome. Problems may be experienced with the outcome. The team receives feedback to be addressed in ongoing development phases.	Collaborative tools User logs
Development Phase 3	10 hours or approx. 2 weeks *The development process proceeds for three or more development phases until the outcome is complete, at least to the state of a minimal viable product (MVP).*		

ASSESSMENT TASK : GET READY. GET AGILE.

Curriculum key concepts	**DTHM – Designing and Developing Digital Outcomes: PO5** Students will independently apply a development process to design, develop, store and test digital outcomes that enable their solutions, identifying, evaluating, prioritising and responding to relevant social, ethical and end-user considerations.
Achievement standard(s)	91891 Apply conventions to develop a design for a digital technologies outcome 91897 Use advanced processes to develop a digital technologies outcome
NCEA Level	2
Credits	9
Learning time guidance	Approximately 15 weeks of in and out of class time
Length guidance if appropriate	Students compile a concise portfolio of key evidence. This may be in the form of presentation posters, a report, log books, a blog, or audio and video evidence (but should be no more than a 10 A4-page equivalent for each standard).
Due date	***Teacher to insert***

Achievement criteria

Achieved	Merit	Excellence
Apply conventions to develop a design for a digital technologies outcome.	Apply conventions to develop an informed design for a digital technologies outcome.	Apply conventions to develop a refined design for a digital technologies outcome.
Use advanced processes to develop a digital technologies outcome.	Use advanced processes to develop an informed digital technologies outcome.	Use advanced processes to develop a refined digital technologies outcome.

ASSESSMENT TASK : GET READY. GET AGILE.

Introduction

How will you be assessed?

You will be assessed on how successfully you follow a design and development process and how successfully you describe, explain or justify your design and development choices.

What you will hand in?

You will need to provide the equivalent of two complimentary portfolios of evidence: one for each standard. Each portfolio will consist of a concise collection of key evidence and no longer than 10 pages for each standard.

The evidence will highlight your ongoing development logs, sketches, models, prototypes and digital outcome, as well as any other evidence that highlights your use of design conventions, project management, testing, project development, versioning control and other advanced practices.

The evidence may be presented in different ways (in prior consultation with your teacher), such as presentation posters, a printed report, log-books, a blog or audio and/or video evidence.

You may work with others to help you to generate ideas and to develop those ideas. However, you will be expected to demonstrate your own thinking and to provide evidence for how you contributed to the discussion and developed or combined ideas before submitting your own design evidence.

Your task:

Develop a design (for example: a website, a game, a 3Dmodel, electronics outcome, or a design for print) and through a process, develop a digital technologies outcome.

You will be assessed on how effectively you develop the design for your digital outcome, and the advanced processes you use to develop the final outcome.

You may have chosen this topic yourself, been given it by your teacher, visited an actual client or local business or set up your own business (eg, as part of a Young Enterprise scheme).

What you need to think about before you begin this assessment

You will complete two project stages that will include overlapping design and development phases. Each is assessed against different standards. In class, your teacher will have introduced you to a development process called agile and presented you with several tools to help you use the process.

You will not be penalised for beginning development early to help you manage the production of your outcome, nor for including relevant elements of the design outcome overlapping within a phase of outcome development. You may reorder the steps of the agile process you follow that best suit you, as long as you can demonstrate that you have continued to work in an appropriate manner as you design, redesign, develop or redevelop your outcome.

In the process detailed below you will be guided through the steps. There are opportunities for you to make independent decisions about the processes, tools and techniques you use.

ASSESSMENT TASK : GET READY. GET AGILE.

Phase 1: Design

Key steps in your design process

1. Before beginning your design (such as layout, action plan, storyboard), investigate relevant design conventions for your context (eg, web, video). Collect information you would like to use to develop your initial designs. You may wish to investigate examples from existing relevant outcomes and log any visual or functional elements you would like to use. Keep a record of this for your development evidence.
2. Develop three or more draft designs based on your research. The designs will show ideas for layout and some functionality. Consider why you made the design choices you have and link them to the conventions you investigated.
3. Select a design for the purpose of the outcome and explain the appropriateness of the design.
4. Model your design. The model will confirm functional and asthetic requirements. (It may not be fully functional).
5. Work on your design to improve your outcome. Ensure that you use feedback from modelling often as your design proceeds and make changes as necessary.

   Each time you gather feedback, save a copy of the current design in your evidence so that you can demonstrate any improvements made.

What you need to do (collecting design evidence)

1. Begin by describing the purpose of your task, what it is you are designing and the requirements of whom you are designing it for.
2. Identify and explain what the relevant implication is and how that impacts on the design.
3. Investigate any design conventions relevant to your context (and include the sources for your research). Show examples of how you applied the relevant conventions you uncovered in your research.

   For example, relevant conventions for web may include:

   wireframe designs, flow diagrams, navigation schematics, accessibility and colours, responsive design ideas, or libraries (eg, jQuery).

   Place a summary of what you learned from your research in your evidence portfolio.

4. Include screenshots of at least three of your draft designs and explain which one you chose and why you chose it.
   - Generate a range of potential design ideas, using the conventions you selected.
   - Work-up at least three of your design ideas. Your designs should communicate the design materials and components required and how the materials or components will be constructed (eg, models, mock-ups). Present your ideas using any appropriate method.
   - Select one design to proceed with and explain its appropriateness.
   - Pencil and paper or digital developments are equally appropriate: sketches, diagrams, wireframes, paper prototypes, and notes. Consider digital tools where appropriate to your context, for example, showing fonts, layout, colours, character developments, navigation ideas or qualities.
5. Annotate the images. Annotations should include:
   - the feedback you received from others, and/or from your modelling,
   - examples of improvements you made to your design as a result of any feedback from modelling,
   - explaining how the design conventions you implemented are appropriate for your design outcome,
   - how your chosen design and its features meet the needs of your end-user(s) and addresses the relevant implication.

   Your ideas need to be presented clearly and concisely to allow for feedback from users, team members, and/or your teacher or kaiako. Consider questions such as: *What needs to change? Why? How do you know? How could the change be made?*

ASSESSMENT TASK : GET READY. GET AGILE.

6. Show how the relevant implications were addressed.

   Give examples of how these were implemented into the design, for example:

   - how have you addressed privacy, ethical and/or intellectual property issues?
   - how have you ensured that your outcome is usable, accessible or functional for your end users?
   - how have you ensured your outcome is socially or culturally appropriate?
   - how have you ensured that your aesthetic elements are appropriate for your target audience?

7. Finish your evidence with further annotations, or a round-up justifying the ways in which your chosen design addresses your relevant implications and end-user considerations and uses appropriate conventions.

   - Justifying requires you to link your reasons back to your design and feedback findings. You need to justify how the developed functions and features of the outcome address relevant implications, meet the requirements of the end user and the conventions used.

Phase 2: Advanced processes

Key steps in your development process

1. Before beginning the actual development, choose a range of appropriate project management tools and techniques. Record any evidence that demonstrates your use of your selected tools or techniques.
2. Plan your development by breaking it down into small components or steps. Use your chosen project management tools and techniques to organise your development. Explain in your evidence why you selected this model.
3. Trial each component as it is developed.

   Plan for and trial alternative components for possible inclusion. As you trial each component, consider whether it meets quality expectations and requirements of your outcome to select the most suitable components.

4. Test that your digital technologies outcome functions as intended. The information you get from testing multiple components is used to improve the outcome.
5. With each phase of testing or trialling, save a copy of your outcome for your evidence to demonstrate any improvements made.

What you need to do (collecting development evidence)

1. Use appropriate project management tools or techniques to plan the development of your digital technologies outcome.

   - Record any evidence (for example, with screenshots) that demonstrates your use of your selected tools or techniques.
   - Explain the difference between ‘appropriate’ and ‘effective’ tools and techniques.

   For example, project management and version control tools and techniques may include: saving back-up copies with a logical file-naming system, using collaboration tools, using simple version control software applications, using tools or systems to plan tasks and milestones, or adjusting key actions and tasks where appropriate.

2. Plan your development by breaking it down the outcome into small steps.

   - Use your chosen project management tools and techniques to organise your development.
   - Include version numbers with each of your outcomes to document the progress of your project.

ASSESSMENT TASK : GET READY. GET AGILE.

3. Explain any relevant implications you considered during the design process.

   Give examples of how these were implemented into the design.

   For example:

   - how have you addressed privacy, ethical and/or intellectual property issues?
   - how have you ensured that your outcome is usable, accessible or functional for your end-users?
   - how have you ensured your outcome is socially or culturally appropriate?
   - how have you ensured that your aesthetic elements are appropriate for your target audience?

4. Trial each component as it is developed.
   - Set up options or methods for individual components to be trialled for possible inclusion.
   - As you trial each component, consider whether it meets the quality expectations and requirements of your outcome to select the most suitable components.
5. Test that your digital technologies outcome functions as intended.
   - Log your finding with evidence that the components meet quality expectations and function as intended
   - With each phase of testing or trialling, save a copy of your outcome for your evidence to demonstrate any improvements made to the functionality.
6. Finish your evidence with further annotations and discuss and justify why your outcome could be regarded as being of high quality: consider how the information from planning, testing and trialling of components assisted you to refine your outcome.

What you will hand in:

- Any design ideas, modelling done, and user feedback provided, along with your final design and justification.
  - eg, wireframes, models and/or mock-ups showing a range of potential design layouts, that may include colours, fonts etc.
- Any feedback from modelling, evidence of refinement of your design, and justifications related to how the design is suitable for the target audience.
- Testing, screenshots, photography, videos, or screencasts showing that testing was carried out, and the outcome was as expected.
- Documented changes to your designs based on usability testing:
  - before and after screenshots or other documentation that demonstrate how any materials have been improved.
- Any work on paper, such as sketchbooks, may be scanned and embed into a digital portfolio. Consider using still images, or short video or audio captures, to demonstrate your modelling being used or tested.

ASSESSMENT SCHEDULE

AS91891 APPLY CONVENTIONS TO DEVELOP A DESIGN FOR A DIGITAL TECHNOLOGIES OUTCOME

Programme 2: Get ready. Get agile
Credits: 3

Final grades will be determined on a holistic judgment of the evidence against the achievement criteria.

CRITERIA	EVIDENCE	JUDGMENTS	COMMENTS
Develop a design for a digital technologies outcome	*The student has:* • described the purpose of the outcome and the requirements of the end-users • investigated and applied relevant conventions • generated and modelled a range of design ideas	*For example (partial evidence):* Student has, in their own words: • clearly described the purpose (ie, provided description gives more detail than simply identifying) • identified end-users and described the requirements of the identified end-users and shows that • they have investigated at least 3 design conventions (evidence provided of research, and/or trialling ideas, group logs of discussion, teacher observations provided, etc) • at least 3 chosen conventions are visible in their evidence • developed at least 3 different context-relevant design solutions. – Incomplete examples of ideation can be included. – Relevant design evidence including modelling: sketches, diagrams, mood-boards, component lists, annotated notes, schematics, scripts, system block diagrams, storyboards, flowcharts, models, wireframes, scale drawings, circuit schematics, etc.	

ASSESSMENT SCHEDULE

AS91891 APPLY CONVENTIONS TO DEVELOP A DESIGN FOR A DIGITAL TECHNOLOGIES OUTCOME

Programme 2: Get ready. Get agile
Credits: 3

CRITERIA	EVIDENCE	JUDGMENTS	COMMENTS
	The student has: • selected a design for the purpose of the outcome and explained the appropriateness of the design	***For example (partial evidence):*** • Student clearly identifies a selected design based on requirements of project. • Reasons are provided that explain the appropriateness (ie, how and why) the design was chosen. For example, in regard to the readability, navigation, accessibility, and other relevant factors in a web designed outcome, or an explanation regarding end-user considerations and how their design meets end-user needs. – Evidence can be provided in student notes, video, audio, or interview transcripts.	
	The student has: • explained relevant implications. • Implications identified	***For example (partial evidence):*** • Student must explain relevant implications; this means identifying the implications and explaining the implication and the impact on the design of the outcome (ie, must give reasons). • The explanation must be linked to student outcome and not abstract or generalised. For example, the student outcome is: – easy to use, – functionally as expected, – aesthetically pleasing – copyright compliant (or other appropriate legal obligation); – and any other identified implications.	

ASSESSMENT SCHEDULE

AS91891 APPLY CONVENTIONS TO DEVELOP A DESIGN FOR A DIGITAL TECHNOLOGIES OUTCOME

Programme 2: Get ready. Get agile
Credits: 3

CRITERIA	EVIDENCE	JUDGMENTS	COMMENTS
Develop an informed design for a digital technologies outcome	***The student has:*** • used feedback gained from modelling to improve the design	***For example (partial evidence):*** Student has provided evidence. At least one piece of feedback has been gathered, and identifies where, why, and how, the feedback helped to improve (modify) the design (ie, pre- and post-feedback design evidenced). • Evidence of feedback may be written, verbal or recorded. If verbal, a verified transcript should be supplied.	
	The student has: • explained how the chosen design uses appropriate conventions	***For example (partial evidence):*** Student can explain with examples how (ie, give reasons) their design meets conventions.	
	The student has: • has addressed relevant implications and end-user considerations	***For example (partial evidence):*** Student's design includes examples where they have or will address relevant implications and any end-user considerations. • For example, including or removing designed features because of an implication or end-user consideration. • May be student-directed examples in evidence (ie, in annotations), gathered from interviews, or from assessor professional judgment.	
	The student has: • justified how the chosen design addresses implications and end-user considerations and has used appropriate conventions. *Compare/contrast, explain and reflect*	***For example (partial evidence):*** The student has justified (with reasons and evidence from their design) how their outcome addresses implications, end user considerations and the conventions they have used. • Evidence may reference research or group discussion, feedback, links to outcomes, evidence from testing and modelling, and can be signalled in annotations, notes, summaries, or through interviews, or holistically judged using teacher professional judgment.	

ASSESSMENT SCHEDULE

AS91891 APPLY CONVENTIONS TO DEVELOP A DESIGN FOR A DIGITAL TECHNOLOGIES OUTCOME

Programme 2: Get ready. Get agile
Credits: 3

CRITERIA	EVIDENCE	JUDGMENTS	COMMENTS
Develop a refined design for a digital technologies outcome	***The student has:*** • justified how the chosen design addresses implications and end-user considerations and has used appropriate conventions. *Compare/contrast, explain and reflect*	***For example (partial evidence):*** The student has justified (with reasons and evidence from their design) how their outcome addresses implications, end user considerations and the conventions they have used. • Evidence may reference research or group discussion, feedback, links to outcomes, evidence from testing and modelling, and can be signalled in annotations, notes, summaries, or through interviews, or holistically judged using teacher professional judgment.	

ASSESSMENT SCHEDULE

AS91897 USE ADVANCED PROCESSES TO DEVELOP A DIGITAL TECHNOLOGIES OUTCOME

Programme 1: Get ready. Get agile
Credits: 6

Final grades will be determined on a holistic judgment of the evidence against the achievement criteria.

ACHIEVED CRITERIA	EVIDENCE	JUDGMENTS	COMMENTS
Use advanced processes to develop a digital technologies outcome	*The student has:* • used appropriate project management tools and techniques to plan the development of a digital technologies outcome • decomposed the outcome into smaller components	*For example (partial evidence):* The student has demonstrated the use of appropriate project management tools and techniques to plan a digital technologies outcome, such as: • saving backup copies with a logical file naming system, evidenced in their file management folders • using collaboration tools, eg, Trello, Google classroom, Microsoft Teams, GitHub (or equivalent), Kanban boards • using simple version control software applications, eg, ranging from GitHub (or equivalent), to a student-created spreadsheet or a simple database solution • using tools or systems to plan tasks and milestones, and using the tools or systems to adjust key actions and tasks where appropriate • trialling and testing components. – Planning tools have been used to break the project into smaller steps (eg, visible in the use of previous evidence points above, for example on a Kanban board, a to-do list or other planning tool.	

ASSESSMENT SCHEDULE

AS91897 USE ADVANCED PROCESSES TO DEVELOP A DIGITAL TECHNOLOGIES OUTCOME

Programme 1: Get ready. Get agile
Credits: 6

ACHIEVED CRITERIA	EVIDENCE	JUDGMENTS	COMMENTS
Use advanced processes to develop a digital technologies outcome	***The student has:*** • trialled the components of the digital technologies outcome	***For example (partial evidence):*** The student has provided or demonstrated to the assessor, in naturally occurring events, evidence of trialling multiple components of their outcome to gather information that informed their decision making. For example: • using CSS to layout a website • developing functions for a computer program • querying a database • trialling sub-systems in an electronics circuit • trialling systems or parts in a network development.	
	The student has: • tested that the digital technologies outcome functions as intended	***For example (partial evidence):*** The student has provided evidence of testing the outcome to ensure that it functions as intended. Testing may be missing some finished details, but as a result of the testing ,the student confirms the outcome functions as intended. For example: • a website displays and functions as intended for the purpose and end-user requirements, eg, buttons work and navigation links are all active and accurate • a computer program performs the specified task may not work as intended for unexpected data but works for intended input • a database functions as intended, with queries returning the expected output • electronics outcome performs to specification • a network outcome is functional and has no errors.	

ASSESSMENT SCHEDULE

AS91897 USE ADVANCED PROCESSES TO DEVELOP A DIGITAL TECHNOLOGIES OUTCOME

Programme 2: Get ready. Get agile
Credits: 6

ACHIEVED CRITERIA	EVIDENCE	JUDGMENTS	COMMENTS
Use advanced processes to develop a digital technologies outcome	***The student has:*** • explained relevant implications. *Implications identified*	***For example (partial evidence):*** Student must explain relevant implications; this means identifying the implications and explaining the impact of the implications on the development of their outcome (ie, they must give reasons). • The explanation must be linked to the student outcome and not abstract or generalised. For example: • easy to use • functionally as expected • aesthetically pleasing • copyright compliant (or other appropriate legal obligation); • and any other student identified implications	

ASSESSMENT SCHEDULE

AS91897 USE ADVANCED PROCESSES TO DEVELOP A DIGITAL TECHNOLOGIES OUTCOME

Programme 2: Get ready. Get agile
Credits: 6

MERIT CRITERIA	EVIDENCE	JUDGMENTS	COMMENTS
Use advanced processes to develop an informed digital technologies outcome	***The student has:*** • effectively used project management and version control tools and techniques to manage the development of a digital technologies outcome • trialled multiple components and/or techniques and selected those which are most suitable *Project management tools used.*	***For example (partial evidence):*** The student provides evidence of effectively using project management and version control tools and techniques: • file structures use depth to divide sections (folders in folders) with logical file naming that follows a recognised convention. ie, keeps file names short, but meaningful, avoid unnecessary repetition or redundancy, and use capital letters to delimit words, not spaces or underscores • versioning the outcome development where later versions have improved functionality • documents and/or data is shared, and feedback from trialling is managed eg, by using Google Drive or Microsoft OneNote is used to share versions. • student work-flow is managed where key actions or tasks are adjusted for timing or duration eg, illustrated with annotations of screen captures of a project Trello board, Kanban board or any other valid planning tool. • evidence to show multiple components of the outcome have been trialled and implemented. Evidence is seen in project management tools (eg project logs) annotations of multiple trialled components and/or techniques, with indications of the components selected.	

ASSESSMENT SCHEDULE

AS91897 USE ADVANCED PROCESSES TO DEVELOP A DIGITAL TECHNOLOGIES OUTCOME

Programme 2: Get ready. Get agile
Credits: 6

MERIT CRITERIA	EVIDENCE	JUDGMENTS	COMMENTS
Use advanced processes to develop an informed digital technologies outcome	***The student has:*** • used information appropriately from testing and trialling to improve the functionality of the digital technologies outcome	***For example (partial evidence):*** The student provides evidence of gathering evidence from organised testing (eg, does it work?) and trialling (is it suitable?) during development, and has indicated how the outcome's functionality has improved as a result. Evidence is seen in project management tools, production logs, annotations, or other methods. • Includes evidence of changes made to improve functionality.	
	The student has: • addressed relevant implications *Implications identified*	***For example (partial evidence):*** Student evidence includes examples where they have addressed relevant implications and any end-user considerations in the development of their outcome: • for example, changing the functionality of a component because of an implication or end-user consideration. • may be student-directed examples in evidence (ie, in annotations), gathered from interviews, or from assessor professional judgment.	
EXCELLENCE CRITERIA	**EVIDENCE**	**JUDGMENTS**	**COMMENTS**
Use advanced processes to develop a refined digital technologies outcome	***The student has:*** • discussed how the information from planning, testing and trialling of components assisted in the development of a high-quality digital technologies outcome *Compare/contrast, explain and reflect* *High-quality outcome is required*	***For example (partial evidence):*** The student discusses why their outcome is of high quality, linking evidence from their planning, trialling of components, and testing.	