UC H Course
Introduction to
Information Technology

BSSS
AUSTRALIAN CAPITAL TERRITORY

UNIVERSITY OF CANBERRA

Written under the Technologies Framework

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Picture by University of Canberra

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H Courses

H classification is given to a year 11 and 12 course which is designed and accredited by the Board of Senior Secondary Studies (BSSS) and an Australian university, and where successful completion of the course will be recognised both towards the ACT Senior Secondary Certificate and an undergraduate degree with that university.

The BSSS considers H courses as complementary to studies in the home college. These extension courses allow students to pursue depth of study in an area of interest, while also gaining experience in a tertiary context to prepare for future studies.

The ACT Senior Secondary System

The ACT senior secondary system recognises a range of university, vocational or life skills pathways.

The system is based on the premise that teachers are experts in their area: they know their students and community and are thus best placed to develop curriculum and assess students according to their needs and interests. Students have ownership of their learning and are respected as young adults who have a voice.

A defining feature of the system is school-based curriculum and continuous assessment. School-based curriculum provides flexibility for teachers to address students' needs and interests. College teachers have an opportunity to develop courses for implementation across ACT schools. Based on the courses that have been accredited by the BSSS, college teachers are responsible for developing programs of learning. A program of learning is developed by individual colleges to implement the courses and units they are delivering.

Teachers must deliver all content descriptions; however, they do have flexibility to emphasise some content descriptions over others. It is at the discretion of the teacher to select the texts or materials to demonstrate the content descriptions. Teachers can choose to deliver course units in any order and teach additional (not listed) content provided it meets the specific unit goals.

School-based continuous assessment means that students are continually assessed throughout years 11 and 12, with both years contributing equally to senior secondary certification. Teachers and students are positioned to have ownership of senior secondary assessment. The system allows teachers to learn from each other and to refine their judgement and develop expertise.

Senior secondary teachers have the flexibility to assess students in a variety of ways. For example: multimedia presentation, inquiry-based project, test, essay, performance and/or practical demonstration may all have their place. College teachers are responsible for developing assessment instruments with task specific rubrics and providing feedback to students.

The integrity of the ACT Senior Secondary Certificate is upheld by a robust, collaborative, and rigorous structured consensus-based peer reviewed moderation process. System moderation involves all year 11 and 12 teachers from public, non-government and international colleges delivering the ACT Senior Secondary Certificate.

Only students who desire a pathway to university are required to sit a general aptitude test, referred to as the ACT Scaling Test (AST), which moderates student scores across courses and colleges. Students are required to use critical and creative thinking skills across a range of disciplines to solve problems. They are also required to interpret a stimulus and write an extended response.

Senior secondary curriculum makes provision for student-centred teaching approaches, integrated and project-based learning inquiry, formative assessment, and teacher autonomy. ACT Senior Secondary Curriculum makes provision for diverse learners and students with mild to moderate intellectual disabilities, so that all students can achieve an ACT Senior Secondary Certificate.

The ACT Board of Senior Secondary Studies (BSSS) leads senior secondary education. It is responsible for quality assurance in senior secondary curriculum, assessment, and certification. The Board consists of nominees from colleges, professional bodies, universities, industry, parent/carer organisations and unions. The Office of the Board of Senior Secondary Studies (OBSSS) consists of professional and administrative staff who support the Board in achieving its objectives and functions.

ACT Senior Secondary Certificate

Courses of study for the ACT Senior Secondary Certificate:

- provide a variety of pathways, to meet different learning needs and encourage students to complete their secondary education

- enable students to develop the essential capabilities for twenty-first century learners

- empower students as active participants in their own learning

- engage students in contemporary issues relevant to their lives

- foster students' intellectual, social, and ethical development

- nurture students' wellbeing, and physical and spiritual development

- enable effective and respectful participation in a diverse society.

Each course of study:

- comprises an integrated and interconnected set of knowledge, skills, behaviours, and dispositions that students develop and use in their learning across the curriculum

- is based on a model of learning that integrates intended student outcomes, pedagogy, and assessment

- outlines teaching strategies which are grounded in learning principles and encompass quality teaching

- promotes intellectual quality, establishes a rich learning environment, and generates relevant connections between learning and life experiences

- provides formal assessment and certification of students' achievements.

Underpinning beliefs

- All students are able to learn.

- Learning is a partnership between students and teachers.

- Teachers are responsible for advancing student learning.
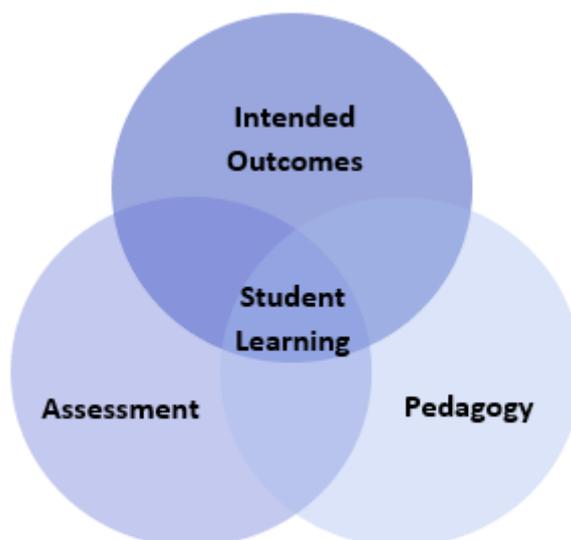
Learning Principles

1. Learning builds on existing knowledge, understandings, and skills.
   (Prior knowledge)

2. When learning is organised around major concepts, principles, and significant real world issues, within and across disciplines, it helps students make connections and build knowledge structures.
   (Deep knowledge and connectedness)

3. Learning is facilitated when students actively monitor their own learning and consciously develop ways of organising and applying knowledge within and across contexts.
   (Metacognition)

4. Learners' sense of self and motivation to learn affects learning.
   (Self-concept)

5. Learning needs to take place in a context of high expectations.
   (High expectations)

6. Learners learn in different ways and at different rates.
   (Individual differences)

7. Different cultural environments, including the use of language, shape learners' understandings and the way they learn.
   (Socio-cultural effects)

8. Learning is a social and collaborative function as well as an individual one.
   (Collaborative learning)

9. Learning is strengthened when learning outcomes and criteria for judging learning are made explicit and when students receive frequent feedback on their progress.
   (Explicit expectations and feedback)

General Capabilities

All courses of study for the ACT Senior Secondary Certificate should enable students to develop essential capabilities for twenty-first century learners. These 'capabilities' comprise an integrated and interconnected set of knowledge, skills, behaviours and dispositions that students develop and use in their learning across the curriculum.

The capabilities include:

- literacy
- numeracy
- information and communication technology (ICT)
- critical and creative thinking
- personal and social
- ethical understanding
- intercultural understanding

Courses of study for the ACT Senior Secondary Certificate should be both relevant to the lives of students and incorporate the contemporary issues they face. Hence, courses address the following three priorities. These priorities are:

- Aboriginal and Torres Strait Islander histories and cultures
- Asia and Australia's engagement with Asia
- Sustainability

Elaboration of these General Capabilities and priorities is available on the ACARA website at www.australiancurriculum.edu.au.

Literacy

Students become literate as they develop the knowledge, skills, and dispositions to interpret and use language confidently for learning and communicating in and out of school and in order to participate effectively in society. Literacy involves students in listening to, reading, viewing, speaking, writing, and creating oral, print, visual and digital texts, and using and modifying language for different purposes in a range of contexts

Introduction to Information Technology assists in the development of literacy by introducing specific terminology used in Networking and Security, statistics, and other digital technologies contexts. Students will understand the specific language used to describe data, processes, products, information, and services. They will develop skills that empower them to be critical consumers of data and be able to access, interpret, analyse, challenge, and critically evaluate the ever-expanding and changing knowledge base and influences in the field of Introduction to Information Technology.

Students will learn to comprehend and compose texts related to Information Technology. This includes learning to communicate effectively for a variety of purposes to different audiences, express their own ideas and opinions and evaluate the viewpoints of others.

Numeracy

Introduction to Information Technology provides students with opportunities to develop deeper understanding of the Mathematics that is implicit in the domain of Introduction to Information Technology. As students engage with Introduction to Information Technology, students will realise the critical importance of numeracy, be able to select relevant numeracy knowledge and skills, and apply these skills in a range of contexts. Teachers will introduce new concepts as required for the target student group, depending upon their prior studies in Mathematics.

Information and Communication Technology (ICT) Capability

ICT capability is deeply embedded in the Introduction to Information Technology course, which builds directly from the 9-10 bands of the Australian Curriculum in Digital Technologies. Students will further develop their ICT capability across all aspects of the Digital Technologies curriculum. Students of Introduction to Information Technology will learn to effectively and safely access online resources for researching, analysing and interpreting data which will help develop understandings of safety, security, and ethical use of data. Students will further develop their understanding of the role ICT plays in the lives and relationships of young people. Students will develop an understanding of ethical online behaviour, including protocols and practices for using ICT for respectful communication. Students will use ICT as key tools for communicating, collaborating, creating content, seeking help, accessing information, and analysing performance in a range of disciplines.

Critical and Creative Thinking

Introduction to Information Technology develops students' ability to think logically, critically, and creatively in response to a wide range of ideas and challenges within the field of Information Technology. Students will learn how to critically evaluate evidence related to the learning area and the broad range of associated media messages to creatively generate and explore original alternatives and possibilities. Students' critical and creative thinking skills will be developed through learning experiences that encourage them to pose questions and seek solutions to contemporary issues in Information Technology. They will learn how to design appropriate strategies to promote and advocate ethical and sustainable use of Information Technology.

Personal and Social Capability

Students develop personal and social capability as they engage in Information Technology project management and development in a collaborative workspace in the university context. They direct their own learning, plan, and carry out investigations, and become independent learners who can apply design thinking, technologies understanding and skills when making decisions. Students develop social and employability skills through working cooperatively in teams, sharing, and discussing ideas about problems, progress, and innovative solutions, and listening to and respecting the perspectives of others. There are collaborative opportunities for sharing resources and processes, making group decisions, resolving conflict, and showing leadership.

Ethical Understanding

Students develop the capacity to understand and apply ethical and socially responsible principles when collaborating with others and creating, sharing, and using technologies. When engaged in systems thinking, students evaluate their findings against the criteria of legality, environmental sustainability, economic viability, health, social and emotional responsibility, and social awareness. Students learn about safe and ethical procedures for investigating and working with people, data, and materials. They consider their own roles and responsibilities as discerning citizens and learn to detect bias and inaccuracies. Understanding the protection of data, intellectual property and individual privacy in the school environment helps students to be ethical digital citizens.

Intercultural Understanding

Introduction to Information Technology will provide opportunities for students to recognise and respect different ways of thinking about a wide range of personal, social, and global issues across a range of disciplines. They will gain an appreciation that differences in beliefs and perspectives may affect people's engagement with Information Technology.

Students will learn to act in ways that maintain individual and group integrity and respect human rights. They will examine stereotypical representations of various social and cultural groups in relation to a range of issues. In doing so, students will gain an understanding of how culture shapes personal and social perspectives and interactions. They will develop an understanding, within a selected domain of research, the role of values on families, social groups and institutions, and the broader community.

Cross Curriculum Priorities

Aboriginal and Torres Strait Islander Histories and Cultures

The Aboriginal and Torres Strait Islander histories and cultures priority provides the opportunity for all young Australians to gain a deeper understanding and appreciation of Aboriginal and Torres Strait Islander histories and cultures, deep knowledge traditions and holistic world views. This knowledge and understanding will enrich all learners' ability to participate positively in the ongoing development of Australia through a deepening knowledge and connection with the world's oldest continuous living cultures.

Asia and Australia's Engagement with Asia

The Asia and Australia's engagement with Asia priority ensures that students learn about and recognise the diversity within and between the countries of the Asia region. They develop knowledge and understanding of Asian societies, cultures, beliefs and environments, and the connections between the peoples of Asia, Australia, and the rest of the world. Asia literacy provides students with the skills to communicate and engage with the peoples of Asia so they can effectively live, work and learn in the region. Students investigate a range of contexts that draw on Asia and Australia's engagement with Asia.

Sustainability

The sustainability priority provides the opportunity for students to develop the knowledge, skills, values, and world views necessary for them to act in ways that contribute to more sustainable patterns of living. This priority is futures-oriented, focusing on protecting environments and creating a more ecologically and socially just world through informed action. Actions that support more sustainable patterns of living require consideration of environmental, social, cultural, and economic systems and their interdependence. Representations of data are critical to decision making in sustainability issues.

UC H Course

Introduction to Information Technology

Rationale

Students will have the opportunity to study Introduction to Information Technology within a university context. That context will provide rich opportunities for engaging with the latest research and discoveries as well as access to emerging technologies and techniques.

This course provides an introduction and overview to computer systems, information technology and software technology from a technological point of view. The unit covers the mathematical and theoretical foundations of computer science, including Boolean logic, an overview of computer architecture as well as the fundamental concepts of modern programming languages. Students will learn basic web programming and will develop small event-driven applications using a Graphical User Interface. Data structures include arrays. Those parts of the software engineering process, in particular testing and debugging, which are applicable to an introductory subject are incorporated. The subject also includes an introduction to graphics and relational databases. The unit finishes with an introduction to human-computer interaction.

Students will develop social, academic, and work skills as they engage with students, academics, and guest speakers from across the territory. They will acquire skills in face to face and online collaboration in developing and completing projects. They will develop project skills and hone and refine their capacity to investigate and innovate in Information Technology.

H courses provide an enriching means of transitioning from the secondary to the tertiary environment, as students will have opportunities to develop dispositions, work habits and experiences that will create a foundation for tertiary study.

Goals

- analyse problems or challenges to determine needs for solutions or products
- apply the process of design (investigate, design, plan, manage, create, evaluate solutions)
- use critical and creative thinking to design innovative solutions
- produce or create solutions or products to address a need, problem, or challenge
- evaluate and use technologies in a range of contexts
- demonstrate problem solving skills
- communicate to different audiences using a range of methods
- engage confidently with and responsibly select and manipulate appropriate technologies – materials, data, systems, tools, and equipment.

Unit Titles

- Principles of Information Technology
- Applied Information Technology

Organisation of Content

Principles of Information Technology

Students engage in an overview of computer systems, information technology and software technology from a technological point of view by consolidating student learning and extending that to novel situations and complex case studies in the university context. The unit reviews the mathematical and theoretical foundations of computer science, including Boolean logic, an overview of computer architecture as well as the fundamental concepts of modern programming languages to extend learning to new case studies. The course will unify and consolidate previous student learning from a range of courses. Students will engage in web programming and will design, develop, and evaluate small event-driven applications using a Graphical User Interface.

Applied Information Technology

Students consolidate and extend understanding of IT by investigating a range of data structures. Those elements of the software engineering process, including testing, and debugging, which are applicable to an introductory subject are incorporated into the design process to consolidate and extend student understanding through exploring new settings and case studies. The subject also includes a review and consolidation of graphics, relational databases and human computer interaction through examining complex case studies and contemporary research at UC and beyond. Students will demonstrate their knowledge of these topics through the design, creation, and evaluation of a small software application according to the demands of a simulated brief.

Assessment

The identification of criteria within the achievement standards and assessment tasks types and weightings provide a common and agreed basis for the collection of evidence of student achievement.

Assessment Criteria (the dimensions of quality that teachers look for in evaluating student work) provide a common and agreed basis for judgement of performance against unit and course goals, within and across colleges. Over a course, teachers must use all these criteria to assess students' performance but are not required to use all criteria on each task. Assessment criteria are to be used holistically on a given task and in determining the unit grade.

Assessment Tasks elicit responses that demonstrate the degree to which students have achieved the goals of a unit based on the assessment criteria. The Common Curriculum Elements (CCE) is a guide to developing assessment tasks that promote a range of thinking skills (see Appendix C). It is highly desirable that assessment tasks engage students in demonstrating higher order thinking.

Rubrics are constructed for individual tasks, informing the assessment criteria relevant for a particular task, and can be used to assess a continuum that indicates levels of student performance against each criterion.

Assessment Criteria

Students will be assessed on the degree to which they demonstrate:

- knowledge and understanding
- skills.

Assessment Task Type

	Design Process	Design Solution(s)
	Suggested tasks: • design development • design documentation • essay • extended response • oral presentation • podcast • portfolio (design process) • project management • report • research task • return brief • review • seminar • short response • storyboard • web portfolio • workshop	**Suggested tasks:** • digital artefact • digital asset • major project • network • portfolio • product • prototyping • software application • storyboard • website
Weightings	**40 - 60%**	**40 - 60%**

Additional Assessment Information

- For a standard unit (1.0), students must complete a minimum of three assessment tasks and a maximum of five.

- Assessment tasks must be informed by the Achievement Standards.

- Students should experience a variety of task types and different modes of communication to demonstrate the Achievement Standards.

Achievement Standards

A Year 12 student in any unit is assessed using the Year 12 achievement standards. A Year 11 student in any unit is assessed using the Year 11 achievement standards. Year 12 achievement standards reflect higher expectations of student achievement compared to the Year 11 achievement standards. Years 11 and 12 achievement standards are differentiated by cognitive demand, the number of dimensions and the depth of inquiry.

An achievement standard cannot be used as a rubric for an individual assessment task. Assessment is the responsibility of the college. Student tasks may be assessed using rubrics or marking schemes devised by the college. A teacher may use the achievement standards to inform development of rubrics. The verbs used in achievement standards may be reflected in the rubric. In the context of combined Years 11 and 12 classes, it is best practice to have a distinct rubric for Years 11 and 12. These rubrics should be available for students prior to completion of an assessment task so that success criteria are clear.

Achievement Standards Technologies H Course Year 11

	A student who achieves an **A** grade typically	A student who achieves a **B** grade typically	A student who achieves a **C** grade typically	A student who achieves a **D** grade typically	A student who achieves an **E** grade typically
Knowledge and understanding	• critically analyses the design process and evaluates constraints and implications for decision making • synthesises technology theories, concepts and principles and evaluates the properties of materials or data or systems to address a need, problem, or challenge • critically analyses technologies and evaluates ethical and sustainable application of technology • thinks critically and creatively, drawing on data and information to solve complex problems	• analyses the design process and explains constraints and implications for decision making • analyses technology theories, concepts and principles and explains the properties of materials or data or systems to address a need, problem, or challenge • analyses technologies and explains ethical and sustainable application of technology • thinks critically, drawing on data and information to solve complex problems	• explains the design process and describes constraints and implications for decision making • explains technology theories, concepts and principles and describes the properties of materials or data or systems to address a need, problem, or challenge • explains technologies and describes ethical and sustainable application of technology • thinks critically, drawing on data and information to solve problems	• describes the design process with some reference to constraints and implications for decision making • describes technology theories, concepts, and principles with some reference to properties of materials or data or systems to address a need, problem, or challenge • describes technologies with some reference to ethical and sustainable application of technology • draws on data and information to solve problems and describes opportunities	• identifies features of the design process with little or no reference to decision making • identifies technology theories, concepts, and principles with some reference to properties of materials or data or systems to address a need, problem, or challenge • identifies some features of technologies with little or no reference to ethical and sustainable application of technology • applying limited use of information and data
Skills	• applies technology concepts, strategies and methodologies with control and precision demonstrating understanding of the historical and cultural context and its impact • creates innovative and high-quality design solutions/products using techniques and approaches and justifies ideas coherently • critically analyses potential prototypes and solutions evaluating their appropriateness and effectiveness via iterative improvement and review • communicates complex ideas and insights effectively in a range of mediums to a variety of audiences using appropriate evidence, metalanguage, and accurate referencing • reflects with insight on their own thinking and that of others and evaluates inter and intrapersonal skills including planning, time management, use of appropriate techniques and strategies and capacity to work independently and collaboratively	• applies technology concepts, strategies and methodologies with control demonstrating understanding of the historical and cultural context and its impact • creates innovative and quality design solutions/products using techniques and approaches and justifies ideas coherently • analyses potential prototypes and solutions explaining their appropriateness and effectiveness via iterative improvement and review • communicates ideas effectively in a range of mediums to a variety of audiences using appropriate evidence, metalanguage, and accurate referencing • reflects on their own thinking and analyses inter and intrapersonal skills including planning, time management, use of appropriate techniques and strategies and capacity to work independently and collaboratively	• applies technology concepts, strategies and methodologies with some control demonstrating understanding of context and its impact • creates quality design solutions/products using techniques and approaches and justifies ideas coherently • explains potential prototypes and solutions describing their appropriateness and effectiveness via iterative improvement and review • communicates ideas appropriately in a range of mediums to a variety of audiences using appropriate evidence, metalanguage, and accurate referencing • reflects on their own thinking and explains inter and intrapersonal skills including planning, time management, use of appropriate techniques and strategies and capacity to work independently and collaboratively	• applies technology concepts, strategies and methodologies with minimal control demonstrating understanding of its impact • creates design solutions/products using some techniques and approaches and explains ideas • describes potential prototypes and solutions with some reference to their appropriateness and effectiveness via iterative improvement and review • communicates ideas in mediums to a variety of audiences using some evidence, metalanguage, and referencing • reflects on their own thinking with some reference to inter and intrapersonal skills including planning, time management, use of appropriate techniques and strategies and capacity to work independently and collaboratively	• applies technology concepts, strategies and methodologies with limited control demonstrating little evidence of understanding its impact • plans design solutions/products using some techniques and approaches and describes ideas • identifies potential prototypes and solutions with little or no reference to their appropriateness and effectiveness via iterative improvement and review • communicates basic ideas in mediums to a variety of audiences using minimal evidence, metalanguage, and some referencing • reflects on their own thinking with little or no reference to planning, time management, use of appropriate techniques and strategies and capacity to work independently and collaboratively

Achievement Standards Technologies H Course Year 12

	A student who achieves an **A** grade typically	A student who achieves a **B** grade typically	A student who achieves a **C** grade typically	A student who achieves a **D** grade typically	A student who achieves an **E** grade typically
Knowledge and understanding	• critically analyses the design process and evaluates opportunities, constraints and implications for decision making	• analyses the design process and explains opportunities, constraints and implications for decision making	• explains the design process and describes opportunities, constraints and implications for decision making	• describes the design process with some reference to opportunities, constraints and implications for decision making	• identifies features of the design process with little or no reference to decision making
	• critically analyses strategies, methodologies and procedures and evaluates their validity and reliability	• analyses strategies, methodologies and procedures and explains their validity and reliability	• explains strategies, methodologies and procedures and describes their validity and reliability	• describes strategies, methodologies, and procedures with some reference to validity and reliability	• identifies some strategies, methodologies, and procedures with little reference to validity and reliability
	• synthesises technology theories, concepts and principles and evaluates the properties of material or data or systems to address a need, problem, or challenge	• analyses technology theories, concepts and principles and explains the properties of materials or data or systems to address a need, problem, or challenge	• explains technology theories, concepts and principles and describes the properties of materials or data or systems to address a need, problem, or challenge	• describes technology theories, concepts, and principles with some reference to properties of materials or data or systems to address a need, problem, or challenge	• identifies technology theories, concepts, and principles with some reference to properties of materials or data or systems to address a need, problem, or challenge
	• critically analyses technologies in a range of contexts and evaluates ethical and sustainable application of technology	• analyses technologies in a range of contexts and explains ethical and sustainable application of technology	• explains technologies in a range of contexts and describes ethical and sustainable application of technology	• describes technologies in a range of contexts with some reference to ethical and sustainable application of technology	• identifies some features of technologies in a range of contexts with little or no reference to ethical and sustainable application of technology
	• thinks critically and creatively, drawing on data and information to solve complex problems and evaluates opportunities for application of technology	• thinks critically, drawing on data and information to solve complex problems and analyses opportunities for application of technology	• thinks critically, drawing on data and information at times to solve problems and explains opportunities for application of technology	• draws on data and information at times to solve problems and describes opportunities for application of technology	• identifies some opportunities for application of technology with limited use of information and data
Skills	• applies technology concepts, strategies and methodologies demonstrating an understanding of the historical and cultural context and impact on individuals, groups, communities, and society	• applies technology concepts, strategies and methodologies with control demonstrating understanding of the historical and cultural context and impact on individuals, groups, communities, and society	• applies technology concepts, strategies and methodologies with some control demonstrating understanding of context and the impact on individuals, groups, communities, and society	• applies technology concepts, strategies and methodologies with minimal control demonstrating understanding of the impact on individuals, groups, communities, and society	• applies technology concepts, strategies and methodologies with limited control demonstrating little evidence of understanding of the impact on individuals, groups, communities, and society
	• creates innovative and high quality design solutions/products using techniques and approaches and justifies ideas coherently	• creates innovative and quality design solutions/products using techniques and justifies ideas coherently	• creates quality design solutions/ products using techniques and justifies ideas coherently	• creates design solutions/products using some techniques and explains ideas	• plans design solutions/products using some techniques and describes ideas
	• critically analyses potential prototypes and solutions evaluating their appropriateness and effectiveness via iterative improvement and review	• analyses potential prototypes and solutions explaining their appropriateness and effectiveness via iterative improvement and review	• explains potential prototypes and solutions describing their appropriateness and effectiveness via iterative improvement and review	• describes analyses potential prototypes and solutions with some reference to their appropriateness and effectiveness via iterative improvement and review	• identifies potential prototypes and solutions with little or no reference to their appropriateness and effectiveness via iterative improvement and review
	• communicates complex ideas and insights effectively in a range of mediums to a variety of audiences using appropriate evidence, metalanguage, and accurate referencing	• communicates ideas effectively in a range of mediums to a variety of audiences using appropriate evidence, metalanguage, and accurate referencing	• communicates ideas appropriately in a range of mediums to a variety of audiences using appropriate evidence, metalanguage, and accurate referencing	• communicates ideas in mediums to a variety of audiences using some evidence, metalanguage and referencing	• communicates basic ideas in mediums to a variety of audiences using minimal evidence, metalanguage, and some referencing
	• reflects with insight on their own thinking and that of others and evaluates inter and intrapersonal skills including planning, time management, use of appropriate techniques & strategies and capacity to work independently and collaboratively	• reflects on their own thinking and that of others and analyses inter and intrapersonal skills including planning, time management, use of appropriate techniques and strategies and capacity to work both independently and collaboratively	• reflects on their own thinking and that of others and explains inter and intrapersonal skills including planning, time management, use of appropriate techniques and strategies and capacity to work both independently and collaboratively	• reflects on their own thinking with some reference to inter and intrapersonal skills including planning, time management, use of appropriate techniques and strategies and capacity to work both independently and collaboratively	• reflects on their own thinking with little or no reference to planning, time management, use of appropriate techniques and strategies and capacity to work both independently and collaboratively

Principles of Information Technology   Value: 1.0

Unit Description

Students engage in an overview of computer systems, information technology and software technology from a technological point of view by consolidating student learning and extending that to novel situations and complex case studies in the university context. The unit reviews the mathematical and theoretical foundations of computer science, including Boolean logic, an overview of computer architecture as well as the fundamental concepts of modern programming languages to extend learning to new case studies. The course will unify and consolidate previous student learning from a range of courses. Students will engage in web programming and will design, develop, and evaluate small event-driven applications using a Graphical User Interface.

Specific Unit Goals

This unit should enable students to:

- demonstrate an understanding of the theoretical foundations of information technology including binary numbers and Boolean logic

- design and write HTML webpages, including CSS

- understand graphical user interfaces

- develop project management skills individually and collaboratively

- consolidate and extend capacity to apply IT concepts and methods

- communicate and participate according to graduate attributes and IT professional standards

Content Descriptions

All knowledge, understanding and skills below must be delivered:

Design Process

- use the design process to design and create HTML webpages, including CSS and user experiences

Strategies, Methodologies and Procedures

- evaluates and adopts new technology knowledge and skills, such as concepts, strategies, and methodologies, from contemporary research at UC and beyond and applies that to their own designs, implementations, and evaluations

Theories, Concepts and Materials

- critically analyses theories, concepts and principles and evaluates the properties of graphical user interfaces and to solve user experience design problems

- critically analyses the theoretical foundations of information technology, including Boolean logic, and a range of data representation formats, including binary, octal and hexadecimal representation.

Contexts

- evaluate approaches to graphical user interfaces and creates their own and evaluates the user experience, according to the demands of place and purpose

- understand professional skills such as initiative, adaptability, drive, integrity, organisational and planning skills and apply to the design process and project management

Communication

- communicate accurately and effectively with others using correct terms in an appropriate format, both orally and in writing

- communicate effectively in diverse cultural and social settings to enable collaboration and teamwork

- justify ideas coherently using appropriate evidence and accurate referencing

Reflection

- reflect on own learning style and performance, including planning and time management, to develop strategies to improve own learning and updating knowledge and skills

A guide to reading and implementing content descriptions

Content descriptions specify the knowledge, understanding and skills that students are expected to learn and that teachers are expected to teach. Teachers are required to develop a program of learning that allows students to demonstrate all the content descriptions. The lens which the teacher uses to demonstrate the content descriptions may be either guided through provision of electives within each unit or determined by the teacher when developing their program of learning.

A program of learning is what a college provides to implement the course for a subject. It is at the discretion of the teacher to emphasise some content descriptions over others. The teacher may teach additional (not listed) content provided it meets the specific unit goals. This will be informed by the student needs and interests.

Assessment

Refer to pages 8 - 10.

Applied Information Technology   Value: 1.0

Unit Description

Students consolidate and extend understanding of IT through investigating a range of data structures. Those elements of the software engineering process, including testing, and debugging, which are applicable to an introductory subject are incorporated into the design process to consolidate and extend student understanding through exploring new settings and case studies. The subject also includes a review and consolidation of graphics, relational databases and human computer interaction through examining complex case studies and contemporary research at UC and beyond. Students will demonstrate their knowledge of these topics through the design, creation, and evaluation of a small software application according to the demands of a simulated brief.

Specific Unit Goals

This unit should enable students to:

- apply fundamental programming concepts to create small software applications

- understand and apply data structures, including arrays

- apply the software engineering process, including testing, and debugging

- understand foundational concepts related to graphics and relational databases and human-computer interaction

- develop project management skills individually and collaboratively

- consolidate and extend capacity to apply IT concepts and methods

- communicate and participate according to graduate attributes and IT professional standards

Content Descriptions

All knowledge, understanding and skills below must be delivered:

Design Process

- critically analyse case studies in the design of data structures, including arrays, and of the human-computer interaction experience

- apply the design process to designing software applications, data structures and databases and human-computer interaction experiences, e.g. apps and cloud-hosted nosql databases

- creates solutions to theoretical, real-world problems and according to briefs

Strategies, Methodologies and Procedures

- evaluates and adopts new technology knowledge and skills, such as concepts, strategies, and methodologies, from contemporary research at UC and beyond and applies that to their own designs, implementations, and evaluations

- evaluate the software engineering process, and apply in particular to testing and debugging

Theories, Concepts and Materials

- critically analyses theories, concepts and principles and evaluates the properties of programming software applications, using appropriate data structures, to theoretical and real-world problems

- critically analyse concepts related to graphics and relational databases and human-computer interaction, e.g. lists, tuples, and big data structures

Contexts

- evaluate contexts to design appropriate solutions and test prototypes for problems and challenges

- understand and apply professional skills such as initiative, adaptability, drive, integrity, organisational and planning skills

Communication

- communicate accurately and effectively with others using correct terms in an appropriate format, both orally and in writing

- communicate effectively in diverse cultural and social settings to enable collaboration and teamwork

- justify ideas coherently using appropriate evidence and accurate referencing

Reflection

- reflect on own learning style and performance, including planning and time management, to develop strategies to improve own learning and updating knowledge and skills

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Assessment

Refer to pages 8 - 10.

Appendix A – Implementation Guidelines

Available course patterns

A standard 1.0 value unit is delivered over at least 55 hours. To be awarded a course, students must complete at least the minimum units over the whole minor, major, major/minor, or double major course.

Course	Number of standard units to meet course requirements
Minor	Minimum of 2 units

Units in this course can be delivered in any order.

Co-requisites for the course or units within the course

Students must be studying a major in the home college from the suite of Information Technology T courses to be eligible for this H course.

Duplication of Content Rules

Students cannot be given credit towards the requirements for a Senior Secondary Certificate for a unit that significantly duplicates content in a unit studied in another course. The responsibility for preventing undesirable overlap of content studied by a student rests with the principal and the teacher delivering the course. Students will only be given credit for covering the content once.

Guidelines for Delivery

Program of Learning

A program of learning is what a school provides to implement the course for a subject. This meets the requirements for context, scope and sequence set out in the Board endorsed course. Students follow programs of learning in a college as part of their senior secondary studies. The detail, design, and layout of a program of learning are a college decision.

The program of learning must be documented to show the planned learning activities and experiences that meet the needs of particular groups of students, taking into account their interests, prior knowledge, abilities, and backgrounds. The program of learning is a record of the learning experiences that enable students to achieve the knowledge, understanding and skills of the content descriptions. There is no requirement to submit a program of learning to the OBSSS for approval. The Principal will need to sign off at the end of Year 12 that courses have been delivered as accredited.

Content Descriptions

Are all content descriptions of equal importance? No. It depends on the focus of study. Teachers can customise their program of learning to meet their own students' needs, adding additional content descriptions if desired or emphasising some over others. A teacher must balance student needs with their responsibility to teach all content descriptions. It is mandatory that teachers address all content descriptions and that students engage with all content descriptions.

Moderation

Moderation is a system designed and implemented to:

- provide comparability in the system of school-based assessment

- form the basis for valid and reliable assessment in senior secondary schools

- involve the ACT Board of Senior Secondary Studies and colleges in cooperation and partnership

- maintain the quality of school-based assessment and the credibility, validity, and acceptability of Board certificates.

Moderation commences within individual colleges. Teachers develop assessment programs and instruments, apply assessment criteria, and allocate Unit Grades, according to the relevant Framework. Teachers within course teaching groups conduct consensus discussions to moderate marking or grading of individual assessment instruments and unit grade decisions.

The Moderation Model

Moderation within the ACT encompasses structured, consensus-based peer review of Unit Grades for all accredited courses, as well as statistical moderation of course scores, including small group procedures, for T courses.

Moderation by Structured, Consensus-based Peer Review

Review is a subcategory of moderation, comprising the review of standards and the validation of Unit Grades. In the review process, Unit Grades, determined for Year 11 and Year 12 student assessment portfolios that have been assessed in schools by teachers under accredited courses, are moderated by peer review against system wide criteria and standards. This is done by matching student performance with the criteria and standards outlined in the unit grade descriptors as stated in the Framework. Advice is then given to colleges to assist teachers with, and/or reassure them on, their judgments.

Preparation for Structured, Consensus-based Peer Review

Each year, teachers teaching a Year 11 class are asked to retain originals or copies of student work completed in Semester 2. Similarly, teachers teaching a Year 12 class should retain originals or copies of student work completed in Semester 1. Assessment and other documentation required by the Office of the Board of Senior Secondary Studies should also be kept. Year 11 work from Semester 2 of the previous year is presented for review at Moderation Day 1 in March, and Year 12 work from Semester 1 is presented for review at Moderation Day 2 in August.

In the lead up to Moderation Day, a College Course Presentation (comprised of a document folder and a set of student portfolios) is prepared for each A, T and M course/units offered by the school and is sent into the Office of the Board of Senior Secondary Studies.

The College Course Presentation

The package of materials (College Course Presentation) presented by a college for review on moderation days in each course area will comprise the following:

- a folder containing supporting documentation as requested by the Office of the Board through memoranda to colleges

- a set of student portfolios containing marked and/or graded written and non-written assessment responses and completed criteria and standards feedback forms. Evidence of all assessment responses on which the unit grade decision has been made is to be included in the student review portfolios.

Specific requirements for subject areas and types of evidence to be presented for each Moderation Day will be outlined by the Board Secretariat through memoranda and Information Papers.

Visual evidence for judgements made about practical performances

(also refer to BSSS Website Guidelines)

It is a requirement that schools' judgements of standards to practical performances (A/T/M) be supported by visual evidence (still photos or video).

The photographic evidence submitted must be drawn from practical skills performed as part of the assessment process.

Teachers should consult the BSSS guidelines at:

http://www.bsss.act.edu.au/grade_moderation/moderation_information_for_teachers

for current information regarding all moderation requirements including subject specific and photographic evidence.

Appendix B – Course Developers

Name	Institution
Julio Romero	University of Canberra
Luke Ngyuen-Hoan	University of Canberra

Appendix C – Common Curriculum Elements

Common curriculum elements assist in the development of high-quality assessment tasks by encouraging breadth and depth and discrimination in levels of achievement.

Organisers	Elements	Examples
create, compose, and apply	apply	ideas and procedures in unfamiliar situations, content, and processes in non-routine settings
	compose	oral, written, and multimodal texts, music, visual images, responses to complex topics, new outcomes
	represent	images, symbols, or signs
	create	creative thinking to identify areas for change, growth, and innovation, recognise opportunities, experiment to achieve innovative solutions, construct objects, imagine alternatives
	manipulate	images, text, data, points of view
analyse, synthesise, and evaluate	justify	arguments, points of view, phenomena, choices
	hypothesise	statement/theory that can be tested by data
	extrapolate	trends, cause/effect, impact of a decision
	predict	data, trends, inferences
	evaluate	text, images, points of view, solutions, phenomenon, graphics
	test	validity of assumptions, ideas, procedures, strategies
	argue	trends, cause/effect, strengths, and weaknesses
	reflect	on strengths and weaknesses
	synthesise	data and knowledge, points of view from several sources
	analyse	text, images, graphs, data, points of view
	examine	data, visual images, arguments, points of view
	investigate	issues, problems
organise, sequence, and explain	sequence	text, data, relationships, arguments, patterns
	visualise	trends, futures, patterns, cause, and effect
	compare/contrast	data, visual images, arguments, points of view
	discuss	issues, data, relationships, choices/options
	interpret	symbols, text, images, graphs
	explain	explicit/implicit assumptions, bias, themes/arguments, cause/effect, strengths/weaknesses
	translate	data, visual images, arguments, points of view
	assess	probabilities, choices/options
	select	main points, words, ideas in text
identify, summarise and plan	reproduce	information, data, words, images, graphics
	respond	data, visual images, arguments, points of view
	relate	events, processes, situations
	demonstrate	probabilities, choices/options
	describe	data, visual images, arguments, points of view
	plan	strategies, ideas in text, arguments
	classify	information, data, words, images
	identify	spatial relationships, patterns, interrelationships
	summarise	main points, words, ideas in text, review, draft and edit

Appendix D – Glossary of Verbs

Verbs	Definition
Analyse	Consider in detail for the purpose of finding meaning or relationships, and identifying patterns, similarities and differences
Apply	Use, utilise or employ in a particular situation
Argue	Give reasons for or against something
Assess	Make a Judgement about the value of
Classify	Arrange into named categories in order to sort, group or identify
Compare	Estimate, measure or note how things are similar or dissimilar
Compose	The activity that occurs when students produce written, spoken, or visual texts
Contrast	Compare in such a way as to emphasise differences
Create	Bring into existence, to originate
Demonstrate	Give a practical exhibition an explanation
Describe	Give an account of characteristics or features
Discuss	Talk or write about a topic, taking into account different issues or ideas
Evaluate	Examine and judge the merit or significance of something
Examine	Determine the nature or condition of
Explain	Provide additional information that demonstrates understanding of reasoning and /or application
Extrapolate	Infer from what is known
Hypothesise	Put forward a supposition or conjecture to account for certain facts and used as a basis for further investigation by which it may be proved or disproved
Identify	Recognise and name
Interpret	Draw meaning from
Investigate	Planning, inquiry into and drawing conclusions about
Justify	Show how argument or conclusion is right or reasonable
Manipulate	Adapt or change
Plan	Strategize, develop a series of steps, processes
Predict	Suggest what might happen in the future or as a consequence of something
Reflect	The thought process by which students develop an understanding and appreciation of their own learning. This process draws on both cognitive and affective experience
Relate	Tell or report about happenings, events, or circumstances
Represent	Use words, images, symbols, or signs to convey meaning
Reproduce	Copy or make close imitation
Respond	React to a person or text
Select	Choose in preference to another or others
Sequence	Arrange in order
Summarise	Give a brief statement of the main points
Synthesise	Combine elements (information/ideas/components) into a coherent whole
Test	Examine qualities or abilities
Translate	Express in another language or form, or in simpler terms
Visualise	The ability to decode, interpret, create, question, challenge and evaluate texts that communicate with visual images as well as, or rather than, words

Appendix E – Glossary for ACT Senior Secondary Curriculum

Courses will detail what teachers are expected to teach and students are expected to learn for year 11 and 12. They will describe the knowledge, understanding and skills that students will be expected to develop for each learning area across the years of schooling.

Learning areas are broad areas of the curriculum, including English, mathematics, science, the arts, languages, health, and physical education.

A **subject** is a discrete area of study that is part of a learning area. There may be one or more subjects in a single learning area.

Frameworks are system documents for Years 11 and 12 which provide the basis for the development and accreditation of any course within a designated learning area. In addition, frameworks provide a common basis for assessment, moderation and reporting of student outcomes in courses based on the framework.

The **course** sets out the requirements for the implementation of a subject. Key elements of a course include the rationale, goals, content descriptions, assessment, and achievement standards as designated by the framework.

BSSS courses will be organised into units. A unit is a distinct focus of study within a course. A standard 1.0 unit is delivered for a minimum of 55 hours generally over one semester.

Core units are foundational units that provide students with the breadth of the subject.

Additional units are avenues of learning that cannot be provided for within the four core 1.0 standard units by an adjustment to the program of learning.

A **negotiated study unit** makes provision for students, classes, groups, or individuals to negotiate the program of learning based on the specific unit goals, content descriptions, assessment, and achievement standards of the course.

An **elective** is a lens for demonstrating the content descriptions within a standard 1.0 or half standard 0.5 unit.

A **lens** is a particular focus or viewpoint within a broader study.

Content descriptions refer to the subject-based knowledge, understanding and skills to be taught and learned.

A **program of learning** is what a college develops to implement the course for a subject and to ensure that the content descriptions are taught and learned.

Achievement standards provide an indication of typical performance at five different levels (corresponding to grades A to E) following completion of study of senior secondary course content for units in a subject.

ACT senior secondary system **curriculum** comprises all BSSS approved courses of study.