Software Engineering Stage 6 (Year 12) – sample scope and sequence

Contents

[About this resource 2](#_Toc160777982)

[Purpose of resource 2](#_Toc160777983)

[Target audience 2](#_Toc160777984)

[When and how to use 2](#_Toc160777985)

[Rationale 3](#_Toc160777986)

[Software Engineering Stage 6 (Year 12) – scope and sequence 4](#_Toc160777987)

[Support and alignment 8](#_Toc160777988)

[Evidence base 9](#_Toc160777989)

# About this resource

## Purpose of resource

This resource has been designed to support teachers by providing a sample scope and sequence with a range of tasks based on syllabus content. This can be modified to suit individual school contexts and procedures as required.

## Target audience

This resource can be used by school leaders to support teachers with effective syllabus implementation.

## When and how to use

Use the sample scope and sequence to plan the curriculum for Year 12 students. The scope and sequence maps out the content, outcomes, knowledge and skills that will be covered each term. The scope and sequence also indicates assessment tasks that will be undertaken by students.

This sample aligns with the assessment schedule and teacher support resource and proposes a parallel delivery of the major project as each focus area is addressed.

# Rationale

All NSW public schools need to plan curriculum and develop teaching programs consistent with the Education Act 1990 (NSW) and the NSW Education Standards Authority (NESA) syllabuses and credentialing requirements.

Scope and sequences form part of the ongoing documentation or evidence schools maintain to comply with the department’s policy, policy standards and registration requirements.

Developing a robust scope and sequence has many benefits and may help teachers and schools to:

* promote high expectations for student learning
* identify opportunities for explicit teaching
* create opportunities for students to receive feedback on their learning
* systematically plan for and undertake assessment
* collect and use data to monitor achievements and identify gaps in learning
* differentiate curriculum delivery to meet the needs of students at different levels of achievement
* collaborate with other teachers to plan for quality teaching and learning.

This resource has been developed to assist teachers in NSW Department of Education schools to create learning that is contextualised to their classroom. It can be used as a basis for the teacher’s own program, assessment, or scope and sequence, or be used as an example of how the new curriculum could be implemented. The resource has suggested timeframes that may need to be adjusted by the teacher to meet the needs of their students.

# Software Engineering Stage 6 (Year 12) – scope and sequence

Table 1 – Software Engineering Stage 6 (Year 12) scope and sequence

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Term and duration | Learning overview | Outcomes | Skills | Assessment |
| ****Term 4**** | **Programming for the web** Students design, develop and implement a progressive web app (PWA).  They learn about the software engineering principles that guide the development of software used to control hardware responsible for the transmission of data in web environments.  **Software engineering project**  Students are introduced to and engage in a software engineering project that addresses an identified real-world problem. | **SE-12-02, SE-12-03, SE-12-04, SE-12-05, SE-12-06, SE-12-07, SE-12-08** | * Students extend their knowledge of how algorithms support the development of efficient and accurate computer programs. * Students develop computational and systems thinking as they apply software engineering principles to design and develop web-based applications. | Programming for the web project  Formative assessment on the Software engineering project |
| ****Term 1**** | **Secure software architecture**  Students design, develop and implement secure code They evaluate the social, ethical, and legal issues that affect people and enterprises resulting from the development and implementation of safe and secure software.  **Software engineering project**  Students apply project-management skills as they develop their project solution. | **SE-12-02, SE-12-03, SE-12-04, SE-12-05, SE-12-06, SE-12-07, SE-12-08** | * Students develop knowledge, understanding and skills associated with developing secure software. * Students investigate and practise industry-recognised techniques for developing secure programming code and apply these to their projects. | Secure software architecture applied to the Programming for the web project  Formative assessment of the Software engineering project |
| ****Term 2**** | **Software automation**  Students investigate machine learning (ML) in programming for automation.  Students extend their knowledge and understanding of programming and its diverse applications.  **Software engineering project**  Students use project-management and software development approaches, explore the tools used by software designers and engineers and explore the concept of delivering solutions for a client. | **SE-12-01, SE-12-02, SE-12-03, SE-12-04, SE-12-05, SE-12-06, SE-12-07, SE-12-08, SE-12-09** | * Students learn some of the fundamental skills required to program for emerging technologies, including the significance and impact of ML and artificial intelligence (AI). * Students apply object-oriented programming knowledge and design thinking to solve problems. * Students apply highly valued industry skills, including collaboration and communication with clients, stakeholders and peers. | Software engineering project submitted at the end of Term 2  Formative assessment of Software automation task |
| ****Term 3**** | **Secure software architecture**  **Programming for the web**  **Software automation** | **SE-12-01, SE-12-02, SE-12-03, SE-12-04, SE-12-05, SE-12-06, SE-12-07, SE-12-08, SE-12-09** | * Students revise and recap on content from 3 focus areas. * Students practise digital examination techniques, including interfacing with applications and platforms to apply functions and respond to stimulus material. | HSC trial examination |

[Software Engineering11–12 Syllabus](https://curriculum.nsw.edu.au/learning-areas/tas/software-engineering-11-12-2022/overview) © NSW Education Standards Authority (NESA) for and on behalf of the Crown in right of the State of New South Wales, 2022.

# Support and alignment

**Resource evaluation and support**: all curriculum resources are prepared through a rigorous process. Resources are periodically reviewed as part of our ongoing evaluation plan to ensure currency, relevance and effectiveness. For additional support or advice, or to provide feedback, contact the TAS curriculum team by emailing [TAS@det.nsw.edu.au](mailto:TAS@det.nsw.edu.au).

**Differentiation**: further advice to support Aboriginal and Torres Strait Islander students, EALD students, students with a disability and/or additional needs and High Potential and gifted students can be found on the [Planning, programming and assessing 7–12](https://education.nsw.gov.au/teaching-and-learning/curriculum/planning-programming-and-assessing-k-12/planning-programming-and-assessing-7-12) webpage. This includes the [Inclusion and differentiation 7–10 advice](https://education.nsw.gov.au/teaching-and-learning/curriculum/planning-programming-and-assessing-k-12/planning-programming-and-assessing-7-12/inclusion-and-differentiation-advice-7-10) webpage.

**Assessment**: further advice to support formative assessment is available on the [Planning, programming and assessing 7–12](https://education.nsw.gov.au/teaching-and-learning/curriculum/planning-programming-and-assessing-k-12/planning-programming-and-assessing-7-12) webpage.

**Consulted with**: Curriculum and Reform and subject matter experts.

**Alignment to system priorities and/or needs**: [School Excellence Policy](https://education.nsw.gov.au/policy-library/policies/pd-2016-0468).

**Alignment to the School Excellence Framework**: this resource supports the [School Excellence Framework](https://education.nsw.gov.au/policy-library/policies/pd-2016-0468) elements of curriculum (curriculum provision) and effective classroom practice (lesson planning, explicit teaching).

**Alignment to Australian Professional Teaching Standards**: this resource supports teachers to address [Australian Professional Teaching Standards](https://educationstandards.nsw.edu.au/wps/portal/nesa/teacher-accreditation/meeting-requirements/the-standards/proficient-teacher) 1.2.2, 2.2.2, 2.3.2.

**Creation date**: **2024**

# Evidence base

This resource contains NSW Curriculum and syllabus content. The NSW Curriculum is developed by the NSW Education Standards Authority. This content is prepared by NESA for and on behalf of the Crown in right of the State of New South Wales. The material is protected by Crown copyright.

Please refer to the NESA Copyright Disclaimer for more information <https://educationstandards.nsw.edu.au/wps/portal/nesa/mini-footer/copyright>.

NESA holds the only official and up-to-date versions of the NSW Curriculum and syllabus documents. Please visit the NSW Education Standards Authority (NESA) website <https://educationstandards.nsw.edu.au> and the NSW Curriculum website <https://curriculum.nsw.edu.au>.

[Software Engineering11–12 Syllabus](https://curriculum.nsw.edu.au/learning-areas/tas/software-engineering-11-12-2022/overview) © NSW Education Standards Authority (NESA) for and on behalf of the Crown in right of the State of New South Wales, 2022.

NESA (NSW Education Standards Authority) (2021) ‘[Advice of scope and sequences](https://www.educationstandards.nsw.edu.au/wps/portal/nesa/k-10/understanding-the-curriculum/programming/advice-on-scope-and-sequences)’, Programming, NESA website, accessed 7 March 2024.

Wiliam D (2013) ‘[Assessment: The bridge between teaching and learning](https://www.researchgate.net/publication/258423377_Assessment_The_bridge_between_teaching_and_learning)’, Voices from the Middle, 21(2):15–20, accessed 7 March 2024.

**© State of New South Wales (Department of Education), 2024**

The copyright material published in this resource is subject to the Copyright Act 1968 (Cth) and is owned by the NSW Department of Education or, where indicated, by a party other than the NSW Department of Education (third-party material).

Copyright material available in this resource and owned by the NSW Department of Education is licensed under a [Creative Commons Attribution 4.0 International (CC BY 4.0) license](https://creativecommons.org/licenses/by/4.0/).

[](https://creativecommons.org/licenses/by/4.0/)

This license allows you to share and adapt the material for any purpose, even commercially.

Attribution should be given to © State of New South Wales (Department of Education), 2024.

Material in this resource not available under a Creative Commons license:

* the NSW Department of Education logo, other logos and trademark-protected material
* material owned by a third party that has been reproduced with permission. You will need to obtain permission from the third party to reuse its material.

**Links to third-party material and websites**

Please note that the provided (reading/viewing material/list/links/texts) are a suggestion only and implies no endorsement, by the New South Wales Department of Education, of any author, publisher, or book title. School principals and teachers are best placed to assess the suitability of resources that would complement the curriculum and reflect the needs and interests of their students.

If you use the links provided in this document to access a third-party's website, you acknowledge that the terms of use, including licence terms set out on the third-party's website apply to the use which may be made of the materials on that third-party website or where permitted by the Copyright Act 1968 (Cth). The department accepts no responsibility for content on third-party websites.