# Software Engineering 11–12 (2022): Sample scope and sequence (Year 12) (120 hours)

## Term 4

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| Weeks 1–6 | Weeks 7–10 |
| **Unit:** Designing software to protect  **Focus area(s):** Secure Software Architecture  This unit examines the threats and vulnerabilities that insecure software can pose to an individual or an enterprise. Students learn about and implement the concept of safety by design, develop an understanding of the steps involved to design and develop secure code, apply security features, evaluate strategies to ensure data protection, security and privacy. Students investigate the impact of developing safe and secure software and evaluate the social, ethical and legal ramifications. | **Unit:** Website analysis and development project  **Focus area(s):** Programming for the Web  This unit allows students to learn and implement the design, constraints and mechanisms of creating websites and web-based applications. Activities include analysing a range of website case studies to investigate how good website design practice, including accessibility requirements is implemented in the real world. Students create a series of webpages that incorporate the application of user experience elements and server-side applications using an appropriate back-end development language such as JavaScript, PHP and implement SQL. |
| Outcomes: **SE-12-01, SE-12-02, SE-12-03, SE-12-04, SE-12-05, SE-12-06, SE-12-07, SE-12-08** | Outcomes: **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** |

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| Weeks 1–6 | Weeks 7–10 |
| **Unit:** Website analysis and development project  **Focus area(s):** Programming for the Web (continued)  Students investigate scripting languages and both front-end and back-end web development. This includes development of HTML, CSS and scripts for web data display and manipulation. | **Unit**: The computer takeover  **Focus area(s):** Software Automation  In this unit students will be investigating algorithms associated with machine learning (ML) and compare it to artificial intelligence (AI). Through the use of mathematical equations, students will apply neural network models to make future predictions. As part of their investigations, students will assess the impact of software automation of society, including improving access and participation. |
| Outcomes: **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** | Outcomes: **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** |

## Term 1

## Term 2

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| Weeks 1–6 | Weeks 7–10 |
| **Unit:** The computer takeover  **Focus area(s):** Software Automation (continued)  In this unit students will be investigating algorithms associated with machine learning (ML) and compare it to artificial intelligence (AI). Using mathematical equations, students will apply neural network models to make future predictions. As part of their investigations, students will assess the impact of software automation of society, including improving access and participation. | **Unit:** Putting it all together  **Focus area(s):** Software Engineering Project  In this unit students will design, develop, test and evaluate their own software engineering project. The final assessment task is embedded in this unit. Students implement and use one of the software development approaches to define the requirements of a problem, use project management software and produce, implement, test and evaluate their software engineering project. |
| Outcomes: **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** | Outcomes: **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** |

## Term 3

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| Weeks 1–6 | Weeks 7–10 |
| **Unit:** Putting it all together  **Focus area(s):** Software Engineering Project(continued)  In this unit students will design, develop, test and evaluate their own software engineering project. Students use their knowledge and skills learnt over the Year 11 and Year 12 course work. The final assessment task is embedded in this unit. Students implement and use one of the software development approaches to define the requirements of a problem, apply project management software to produce, implement, test and evaluate their software engineering project. | **Unit:** Putting it all together (continued)  **Focus area(s):** Secure Software Architecture, Programming for the Web, Software Automation, Software Engineering Project  This unit provides an opportunity for students to link knowledge, understanding and skills in the Year 12 course. Peer reviews, peer use and showcasing of projects may also occur. |
| Outcomes: **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** | Outcomes: **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** |