**Advanced Automation**

Saigon South International School

[Syllabus Advanced Automation](https://docs.google.com/document/d/1SoB9E0Qwnm6u1blHZbhu6sXVv_sWYpGpHfoYx4xrsNg/edit?usp=sharing) [Advanced Automation standard rubrics](https://docs.google.com/document/d/1laWABUCYRGIPuR4WeZO6ptOvPkeB8V0jmE9iMOAosr4/edit)

# Assessments

**Unit 1 - Functions and Modular Code (9)** [unit plan](https://docs.google.com/document/d/1uZqm6r7i1UFMrxCvj3OOjlHA2FY8b6QUo2-F0WtzcTY/edit?usp=sharing) (doc, 2022, web)

W3-2 [Module Maker](https://docs.google.com/document/d/1gcF-INFA0RMyfwlA02MbkJl-CQ1TfVutXSBKkncSpqA/edit) [1](https://docs.google.com/document/d/1LneHczLJQm4K49Kazo0LLXJbFXoixr6piB-qZqVF-y0/edit?usp=share_link), [3](https://docs.google.com/document/d/1CryXsIdIMd1IUGVfJ7yWiKYRoCEVQmvNsvvs0eG0BsQ/edit?usp=share_link) 2022/08/26

W4-2 [Drink Machine](https://docs.google.com/document/d/164hLZgbn-AGFGD7qI61FHI-yzYAJ24LLE2aYpoHkzXk/edit?usp=sharing) [4](https://docs.google.com/document/d/1bdlC3m8Xrf_BWKEmmXJ_ChLi0LBV8waml5FxIHaUqaA/edit?usp=share_link) 2022/09/06

**Unit 2 - Managing State (16)** [unit plan](https://docs.google.com/document/d/1bIXxR3MnsjZD9kA0YX6-U3U1bu0LTMweyAHE12kvBFE/edit?usp=sharing) (doc, 2022, web)

W7-5 [Iterative design for Quarter 1](https://docs.google.com/document/d/17-7AeBOVLuP6Pc5_ZXSRFckmNEbG78uRpZe52yFq9nk/edit) [2](https://docs.google.com/document/d/1L0x8VwarxXUas4ssq7QVoIPm63eFGvGV7idMlub4piA/edit?usp=share_link) 2022/10/31

W10-5 [Standard 5 Document](https://docs.google.com/document/u/0/d/1PUJeVOyaNBHFWqAXpa-GA8UAEXLa5GHJPF4qF47hU1o/edit) (state machine) [5](https://docs.google.com/document/d/1qhEnVhJ14Sf9SQuJQGPfl2kp0RJAteK_qca9uNYG8PY/edit?usp=share_link) 2022/10/31

W11-2 [Standard 6 Assignment](https://docs.google.com/document/u/0/d/1hctGkNz4vInlG6yGVWBCQoZ_InYtcUjUHMza6RSQWy0/edit) [6](https://docs.google.com/document/d/1FP_8B-b16SfjV7nVBie7BFoJCDXLRpZUP1xU5jtLpo8/edit?usp=share_link) 2022/11/04

**Unit 3 - Collaborative Code and Generative Art (16)** [unit plan](https://docs.google.com/document/d/1dLE8M5qCUOfc5XOYvF183pRl4u1OwICYruQ9AI0YXwA/edit?usp=sharing) (doc, 2022, web)

W15-2 [Collaboration Project - p5js Art Generator](https://docs.google.com/document/d/1ns8a1j-zVQC6QSGicFpFPabo5txCT4SsCZ95GGPESOc/edit?usp=sharing) 7, [8](https://docs.google.com/document/d/1tpcQ1cS737low2DFhf_z0secJnc_3A4DNNQ2nwX7Xtw/edit?usp=share_link) 2022/11/21

**Unit 4 - Control Algorithms and APIs (15)** [unit plan](https://docs.google.com/document/d/1gAGJbixJZLhuuf2DUzcsarF4wIlcI18-YtmVxtHvoME/edit?usp=sharing) (doc, 2022, web)

14.1 [Challenge 2023](https://docs.google.com/document/d/1KnEKkdxULiYSDdhwkx4dmOC6wM73C4KvHKerTj6Gjs4/edit?usp=share_link) Documentation [template](https://docs.google.com/presentation/d/1nabaeg5bUZMWvACBkNoOpjbVPX5U5X9h1EDnu5PsXhc/edit?usp=share_link) [1](https://docs.google.com/presentation/d/1nabaeg5bUZMWvACBkNoOpjbVPX5U5X9h1EDnu5PsXhc/edit?usp=share_link) 2023/03/13

14.2 [Control Systems Challenge](https://docs.google.com/document/u/0/d/1SFTg5NNHNjGIve7CgpLtpryWY08jwrUbiZH--hmGwLs/edit) - [rubric](https://docs.google.com/document/d/1SFTg5NNHNjGIve7CgpLtpryWY08jwrUbiZH--hmGwLs/edit?usp=sharing) [template](https://docs.google.com/presentation/d/1pgdMH8R9t6eiqMlrqAR-32JYwOtcJuG-_EXjk5Qula8/edit?usp=sharing) [9](https://docs.google.com/document/d/1iHQ_J8Facmp9V1irArWm5ehGjz-w-GWz-ncWO0aU0JU/edit?usp=share_link), [10](https://docs.google.com/presentation/d/1kmrAAfg77whTDLexHjBS9EqFDDprqdd-xJNohgM5G0o/edit?usp=share_link) 2023/03/13

**Unit 5 - Machine Learning (12)** [unit plan](https://docs.google.com/document/d/10NM26sKxiH5UqavpRBnBqaLKeZhczQPglutWB7s-BVI/edit?usp=sharing) (doc, 2022, web)

W10-4 Machine Learning Project ([exemplars](https://drive.google.com/drive/folders/1v_chI0ent_Rfc7eGgL2I6DAMyUs659vC?usp=sharing)) 11, 12 five classes

4.2 Iterative Design 2 2023/03/29

8.3 Machine Learning Project ([exemplars](https://drive.google.com/drive/folders/1v_chI0ent_Rfc7eGgL2I6DAMyUs659vC?usp=sharing)) 11, 12 2023/04/16

**Unit 6 - Measurement and Data Processing (12)** [unit plan](https://docs.google.com/document/d/1vISLM3GFQMVjLd98q7GA1IfMohm2m9-DrPD9xa34eEc/edit?usp=sharing) (doc, 2022, web, [daily](https://docs.google.com/document/d/1g5Uatn8Cf1TvWPxhfsq2lmHHv1gTFG0K5lzMo6kn-i4/edit?usp=sharing))

W15-1 [Project Measurement and Data processing](https://docs.google.com/document/d/1_eKSMWPU2f6c8t_TdPsHy4EbfhH4OtRWVCKcy2TAzyo/edit?usp=sharing) 13, 14 ([rubrics](https://docs.google.com/document/d/10GEjf_8v0Em-IeJhMWc1toa7JlLcKA8Z_19uPP9RgFs/edit?usp=sharing)) five classes or

5.3 Collecting data of the physical world [15](https://docs.google.com/document/d/1AFhKAnLZJjdwpx4q7ubdYJMR0eKX2GM99FyM-TyOnZc/edit?usp=share_link), [16](https://docs.google.com/document/d/1iqMsKo7_xlU8iyZwtiZr4mRG1DOtxAj9x5fnr0gCw2M/edit?usp=share_link) (rubrics) 2 weeks

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| standard | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| Unit 1 | x |  | x | x |  |  |  |  |  |  |  |  |  |  |  |  |
| Unit 2 |  | x |  |  | x | x |  |  |  |  |  |  |  |  |  |  |
| Unit 3 |  |  |  |  |  |  | x | x |  |  |  |  |  |  |  |  |
| Unit 4 | x |  |  |  |  |  |  |  | x | x |  |  |  |  |  |  |
| Unit 5 |  | x |  |  |  |  |  |  |  |  | x | x |  |  |  |  |
| Unit 6 |  |  |  |  |  |  |  |  |  |  |  |  | x | x | x | x |

# Standards

The **first two standards** are a separate category in PowerSchool with 33% weighting each and the remaining 12 standards fall into the third category:

[CSE Power Standards](https://docs.google.com/spreadsheets/d/1KzmTZv2yaBi4yJTqV8HlxC87Q0aoc1HkaO1I274RQ_g/edit?usp=sharing) and the respective [Advanced Automation standard rubrics](https://docs.google.com/document/d/1laWABUCYRGIPuR4WeZO6ptOvPkeB8V0jmE9iMOAosr4/edit)

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | Documentation | 9 | Prototypes |
| 2 | Iterative Design | 10 | Reusing Code |
| 3 | Decomposition | 11 | Program Modification (ML) |
| 4 | Constructing Solutions | 12 | Artificial Intelligence (ML) |
| 5 | Illustrate ways | 13 | Lists |
| 6 | Levels of Abstraction | 14 | Artifacts and Procedures |
| 7 | Control Structures | 15 | Troubleshooting |
| 8 | Computational Artifacts | 16 | Evaluate and Refine |

1. **Document** design decisions using text, graphics, presentations, and/or demonstrations in the development of complex programs.
2. **Design** and **iteratively develop** computational artifacts for practical intent, personal expression, or to address a societal issue by using events to initiate instructions.
3. Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.
4. Construct solutions to problems using student-created components, such as procedures, modules and/or objects.
5. Illustrate ways computing systems implement logic, input, and output through hardware components.
6. Compare levels of abstraction and interactions between application software, system software, and hardware layers.
7. Justify the selection of specific control structures when tradeoffs involve implementation, readability, and program performance, and explain the benefits and drawbacks of choices made.
8. Design and develop computational artifacts working in team roles using collaborative tools.
9. Create prototypes that use algorithms to solve computational problems by leveraging prior student knowledge and personal interests.
10. Demonstrate code reuse by creating programming solutions using libraries and APIs.
11. Modify an existing program to add additional functionality and discuss intended and unintended implications (e.g., breaking other functionality)
12. Implement an artificial intelligence algorithm to play a game against a human opponent or solve a problem.
13. Use lists to simplify solutions, generalizing computational problems instead of repeatedly using simple variables.
14. Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs. Create procedures with parameters to organize code and make it easier to reuse.
15. Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors.
16. Evaluate and refine computational artifacts to make them more usable and accessible.

|  |  |  |  |
| --- | --- | --- | --- |
| **Components of learning** | **How will this be graded?** | **When will this be graded?** | **What will this look like in PowerSchool?** |
| **Project design reports**  (Standard 1 - Documentation) | Summative grades will be based on a rubric for standard 1. | Graded at the end of each project. | This will be a grade from C to A+  These will be labeled as using a number to indicate the standard and sub-letter to differentiate each assignment e.g. 1A, 1B etc. |
| **Portfolio assignment**  (Standard 2 - Iterative Design) | Summative grades will be based on a rubric for standard 2. | Graded once per quarter. |
| **Computer science skills**  (Standards 3 - 14) | Summative grades will be awarded using the most current progress made within the mastery checks for the specific skills we are working on. | Updated every two weeks. | This will be a grade from C to A+  The CS skills will be labeled as whole numbers e.g. 1,2,3 etc. |
|  | **Mastery checks**  These are short assignments which check for understanding and application of the CS standards.  This will be graded formatively. Rubrics for the standards will be provided. | Feedback is updated regularly within Schoology and submitted work. This will be provided using rubrics for each standard. | Check marks which indicate that these mastery checks have been completed.  Mastery checks will be labeled using decimal numbers e.g. 1.1, 1.2 etc.  Feedback on these assignments will not be in Powerschool, but will be provided for students to review using the rubrics. |