# Task

What is a Technical Cookbook?

A technical cookbook is a collection of practical solutions to common problems. It offers a series of "recipes" that provide step-by-step instructions for solving specific challenges instead of focusing on theory or in-depth explanations of technical concepts.

Typically, recipes focus on offering straight-to-the-point solutions that readers can directly implement. However, because this is an academic course, we also need to introduce some focus on evaluation or priming learners to use this in their learning.

A recipe typically covers the following:

1. **Specific challenges**: They address specific user cases or challenges engineers face in a particular domain or with a special technology.

2. **Variety of solutions**: Some problems can have multiple solutions, and the Cookbook may present more than one way to address a particular challenge.

3. **Real-world Examples**: Most recipes are grounded in real-world scenarios, making them immediately applicable.

4.**Tool or Framework Specific**: While some cookbooks are language-agnostic, many focus on specific programming languages or frameworks. For example, you might find a "Arduino Cookbook" or a "Fusion360 Cookbook".

### Recipe in a Programming Cookbook:

A "recipe" in a programming cookbook is an individual solution or method to address a specific problem. Each recipe:

1. **Defines the Problem**: It starts with describing the problem or challenge the solution addresses.
2. **Provides a Solution**: The main body of the recipe offers code snippets, steps, or procedures to solve the stated problem.
3. **Includes Explanation**: While focusing on the solution, most recipes also briefly explain how and why the solution works, giving the developer some context and understanding.
4. **May Provide Variations**: Some recipes might present solution variations to cater to different scenarios or requirements.
5. **Often Includes Examples**: To illustrate the application of the solution, many recipes offer example scenarios where the answer can be applied.

Topics:

On-shape:

* Sketch tools (geometric lines, constraints, relationships)
* Making parts with sketches
* Making multipart from parts
* Making an assembly from parts
* Making a diagram from parts
* Creating Joints and Contact parts
* Animations

Arduino:

* Servomotors
* LORA devices
* Arduino to Arduino communication
* D-Pad controllers

Pitch any other ideas that you might have.

### Assessment Guide

* A recipe for one of the topics from above
* A tutorial | video that covers the recipe
* A short reflection on how the skills can be applied for projects, evaluation-related topics or tools, examples of known synthesis

# Technical Cookbook Project: Scrum Sprints Overview (4 Sprints)

## Thursday 31th Sprint 1: Conceptualization Research

### Focus:

Formulating the idea, assembling teams, and preliminary research.

### Activities:

* Brainstorming session for recipe ideas.
* The initial pitch of recipe ideas and getting feedback.
* Researching to ensure the uniqueness of the recipe.

### Deliverable:

A clear concept of the recipe and preliminary research findings.

## Tuesday 4th Sprint 2: Recipe Design & Scripting

### Focus:

Finalising the recipe design and scripting for the tutorial.

### Activities:

* Deciding on tools, platforms, or software needed for the tutorial.
* Testing and finalising the recipe.
* Sketching out the recipe layout.
* Writing a script for the tutorial and designing a storyboard.
* Assigning roles for production (camera person, presenter, editor, etc.).

### Deliverable:

A finalised recipe, video storyboard, and a script for the video tutorial.

## Tuesday 11th Sprint 3: Recipe Production & Peer Review

### Focus:

Initiating peer reviews.

### Activities:

* Setting up and recording the tutorial.
* Initial editing of the video, incorporating feedback from peers and the Scrum Master.
* Peer review: Teams swap recipes to test and provide feedback.

### Deliverable:

A rough cut of the video tutorial and feedback on recipes and videos from peers.

## Thursday 14th Sprint 4: Finalization, Reflection & Submission

### Focus:

Final edits, reflection on the project, and showcasing the work.

### Activities:

* Implementing feedback to finalise the recipe editing.
* Incorporating feedback for final adjustments to the recipe.
* Teams reflect on what they learned, challenges faced, and solutions found.
* Each team presents their recipe tutorial to the class.

### Deliverable:

A finalised recipe tutorial, any final recipe adjustments, class presentations, and written reflections.

# Assessment Submission Task List

* **Conceptualization & Research**
  + Submit a clear recipe concept document.
  + Provide a list of team members and assigned roles.
  + Submit preliminary research findings on the uniqueness of the recipe.
  + Provide any initial sketches or notes related to the recipe idea.
* **Recipe Design & recipe Scripting**
  + Submit the finalised recipe with all necessary instructions, ingredients, and diagrams.
  + Submit the recipe tutorial storyboard showcasing the flow and key scenes.
  + Submit the recipe script detailing the spoken content, visual cues, and any additional notes.
* **recipe Production & Peer Review**
  + Submit the rough cut of the recipe tutorial.
  + Provide feedback forms used during the peer review process.
  + Submit the compiled feedback received from peers on your team's recipe and tutorial.
* **Finalisation, Reflection & Presentation**
  + Submit the finalised recipe tutorial after all edits.
  + Submit the finalised recipe, including any adjustments made after feedback.
  + Provide a written reflection from the team detailing learnings, challenges, and solutions found during the project.
  + (Optional) If recorded, submit the video or presentation slides of the class presentation.
* **Reflection Document**
  + **Analysis & Interpretation**: Reflect on how your preliminary research influenced and refined the initial concept of your recipe. Were there any unexpected findings?
  + **Application & Problem Solving**: Discuss challenges faced during the recipe scripting and design phase. How did you adjust your approach to ensure effective communication through your recipe tutorial?
  + **Evaluation & Decision Making**: Reflect on the feedback received during the peer review. How did you prioritise and decide on your recipe and recipe tutorial changes?
  + **Synthesis & Creation**: Propose potential expansions or reimagination of this project. How would you take your recipe or tutorial to the next level in a follow-up project?

## Rubric

|  | **Knowledge, Comprehension & Application** |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CRITERIA** | **EXPECTATIONS** | **POSS** | **STUDENT** | **GIVEN** | **MULTI** | **TOTAL** |
| **Evidence of concept and research** | You have submitted snapshot | evidence of your concept and initial research material. | 2 | \_\_/2 | \_\_/2 | - | \_\_ / 2 |
| **Recipe design and initial scripting** | You have submitted snapshot | evidence of your recipe design and any initial scripting for your tutorial | 2 | \_\_/2 | \_\_/2 | - | \_\_ / 2 |
| **The recipe itself** | You have submitted a final recipe | 2 | \_\_/2 | \_\_/2 | - | \_\_ / 2 |
| **Tutorial submission** | You have submitted a tutorial. | 2 | \_\_/2 | \_\_/2 | - | \_\_ / 2 |
| **Evidence of peer review** | You have submitted evidence of reviewing your peers. | 2  2  2 | \_\_ / 2  \_\_ / 2  \_\_ / 2 | \_\_ / 2  \_\_ / 2  \_\_ / 2 | - | \_\_ / 2  \_\_ / 2  \_\_ / 2 |
| **Reflection document** | You have submitted a reflection document which highlights your analysis and interpretation, application and problem solving, evaluation and decision making, and synthesis and creation | 2 | \_\_/2 | \_\_/2 | - | \_\_ / 2 |
|  | **Analysis, Synthesis & Evaluation** |  | | **SUBTOTAL** | | **\_\_ / 16** |
| **Analysis and interpretation** | Your submission shows evidence of analysis and interpretation. It highlights your initial research and how it influenced your recipe. It also shows how you refined your initial concept of your recipe or unexpected outcomes. | 4 | \_\_/4 | \_\_/4 | Ax2  Tx1 | A \_\_/ 4  T \_\_/ 8 |
| **Application and problem solving** | Your submission highlights challenges that you encountered along the way and how you adjusted to overcome them. | 4 | \_\_/4 | \_\_/4 | Ax2  Tx1 | A \_\_/ 4  T \_\_/ 8 |
| **Evaluation and decision making** | Your submission highlights key areas of improvement that were identified for your recipe and tutorial. It also addresses which feedback you acted upon, what changes you implemented or ignored, and why. | 4 | \_\_/4 | \_\_/4 | Ax2  Tx1 | A \_\_/ 4  T \_\_/ 8 |
| **Synthesis and creation** | Your evidence shows evidence of general reflection, how would you remagine or further expand this project in the future. | 4 | \_\_/4 | \_\_/4 | Ax2  Tx1 | A \_\_/ 4  T \_\_/ 8 |
|  | **Submission Guidelines** |  | | **SUBTOTAL** | | **A \_\_ / 16**  **T \_\_ / 32** |
| **Overall presentation quality** | Overall, the presentation **was well presented**. **Ideas were structured** well and **made sense within their contexts**. Answers were **direct and to the point**. | 4 | \_\_/4 | \_\_/4 | - | \_\_/ 4 |
|  |  |  | | **SUBTOTAL** | | **\_\_ / 4** |
|  | DAYS LATE \_\_\_/7 = \_\_\_% |  |  | **FINAL** | | **A \_\_/36 T \_\_/52** |

## Rubric sections

##### Section 1: Knowledge Comprehension and Application

This section of the rubric consists of the required elements of the assignment. Students should take special care to include ALL these elements as they are often extended in the following sections

##### Section 2: Analysis, Synthesis, and Evaluation.

This section will evaluate your ability to include critical thinking and justification elements into your work. Often the requirements for extension are not explicitly given, so it will be up to you to decide how best to demonstrate what you have learned beyond the required unit goals and curriculum. Items such as 3D models, pictures, drawings, diagrammatic responses, notes, evidence of problem-solving, advanced programming concepts, elegant responses, media, etc., are all available options.

##### Section 3: Submission Guidelines

Students are expected to provide a submission that fulfils the requirements listed in style guides while also submitting at an appropriate quality. Be aware that points in this section could be 2- or 4-point items. Treat them accordingly.

## Submission

All submission items should be stored in an appropriate format. For example, code must be stored in a programmatical format so it can be evaluated (**images of code or code copied and pasted into a document may not be marked**)

Evidence of working material must be recorded where appropriate. For example, to show how your robot meets a requirement, you must submit a recording of it completing that requirement. Similarly, if you need to show how your program can download a file from the internet and crack a password, you must submit a recording of it doing that.

Ask the teacher if you are unsure if an element needs to be recorded**.**

All materials must be submitted to Google Classroom.

Students are responsible for keeping backups/master copies.

## **Scoring Notes**

Formatting for all typed/written assessments should be as follows:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Google Doc** | 11-12 Pt | 1.15-1.5 Line Spacing | 1 Space between paragraphs | Spelling and Grammar “Soft Limit” | In-Text Citations with footnotes | Title Page/Slide:   * Name * Date * Class * Aim * Assessment title |
| **Slides** | 10-12 pt. font text  14-24 pt. font titles | 1.0 1.15 Line Spacing | Bullet Points Preferred | Word Count per slide >100-110 “Soft Limit.” | Approved Templates and Themes |
| **Python** | We apply the following style guide to Python files. However, in general, most programs follow this overall layout.    [PEP 8: The Style Guide for Python Code](https://pep8.org/) | | | | | |
| **Arduino**  **C/C++** | We apply the following style guide to C/C++ files. However, in general most programs follow this broad layout.    I accept both K&R and K&R alternative bracing format. As long as it is consistent in your file.  [Arduino Style Guide for Creating Libraries | Arduino Documentation | Arduino Documentation](https://docs.arduino.cc/learn/contributions/arduino-library-style-guide) | | | | | |
| **Markdown** | We apply the following style guide to markdown documents. However, in general, most documents follow some variation of the following layout:    <https://github.com/google/styleguide/blob/gh-pages/docguide/style.md> | | | | | |

“Soft Limits” are not rigidly defined limits and will be assessed on a case-by-case basis. Ask for clarification on specific tasks

## Possible Scoring Groups are out of 2 or 4 Points.

##### 2-Point Criteria - Knowledge and Understanding

Criteria assessed as 2-Points are classified as Knowledge and Understanding criteria. These will examine and evaluate a student’s ability to effectively state facts and define terms and concepts. Analysis and synthesis of the information will not be assessed through these criteria.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **0 Points** | **1 Point** | **2 Points** |
| **2 Point Criteria** | **Not present** or **not able to be assessed** as the required criteria | Item is presented but **does not meet expectations** for quality, rigour, or detail. | Item is presented and **does meet expectations** for quality, rigour, or detail |

##### 4-Point Criteria - Analysis and Synthesis and Expert Review

To show true mastery of your developing skills, students must show that they can go beyond simple repetition of the given tasks or an explanation of processes. Students will demonstrate their ability to show higher-order thinking through analysis, evaluation, or linking multiple fields of learning to solve problems in novel ways.

## Analysis and Synthesis

Analysis and Synthesis components evaluate a student’s ability to effectively review data and understandings and develop these into a coherent and relevant statement. Analysis refers to the generating of thoughts from interpreting the data. In contrast, synthesis combines experience from one area with other pertinent knowledge to develop an original and compelling solution.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **0 Points** | **1 Point** | **2 Points** | **3 Points** | **4 Points** |
| **4 Point Criteria** | **Not present** or **not able to be assessed** as the required criteria | Evidence is presented and explained. However, it **does not show appropriate evidence of higher-order thinking** such as analysis, evaluation, or synthesis. | Evidence is presented and **shows appropriate evidence of higher-order thinking** such as analysis, evaluation, or synthesis. | Evidence is presented and **exceeds expectations for evidence of higher-order thinking** such as analysis, evaluation, or synthesis.  **-or-**  Item is presented and shows appropriate evidence of higher-order thinking such as analysis, evaluation, or synthesis and **exceeds expectations for quality or rigour** of understanding of the selected mastery. | Evidence is presented and **exceeds expectations for evidence of higher-order thinking** such as analysis, evaluation, or synthesis. **Additionally, this item exceeds expectations for quality or rigour** of understanding of the selected mastery. |

##### Expert Review

Expert Reviews evaluate a student’s ability to build solutions using the skills taught during the semester. Criteria assessed as 4-Points are classified as Analysis and Synthesis criteria. These will examine and evaluate a student’s ability to effectively review data and understandings and develop these into a coherent and relevant statement. Analysis refers to the generating of thoughts from interpreting the data. In contrast, synthesis combines experience from one area with other pertinent knowledge to develop an original and compelling solution.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **0 Points** | **1 Point** | **2 Points** | **3 Points** | **4 Points** |
| **4 Point Criteria** | **Not present** or **not able to be assessed** as the required criteria | Evidence is presented and broadly solves the problem. However**, the evidence does not show appropriate mastery** upon review. | Evidence is presented and broadly solves the problem. On review, it **does show appropriate evidence** of mastery. | Evidence is presented and solves the specific problem. On review, the evidence **shows understanding beyond expected mastery**.  **-or-**  Item is presented and broadly solves the problem. On review, it does show appropriate evidence of mastery and is **done so in a well-constructed or design method** that clearly shows higher levels of understanding**.** | Evidence is presented and solves the specific problem. On review, **the evidence shows understanding well beyond expected mastery** and is **done so in a well-constructed or designed method** that clearly indicates higher levels of understanding. |

##### Multiplier

Criteria will be combined with a **Multiplier**. While each criterion will be scored on the 0-1-2-4 scale, the multiplier will attach relevant worth to each criterion. Be aware of these multipliers and dedicate appropriate time to ensure you achieve your best result.

## Achievement Standards:

## Evidence of higher-order learning:

What is it that I mean by “higher-order thinking”?

It means I want you to go beyond replicating what we do in class. I want you to dig into your brain and understand why you did something, what about it was great, and what could be improved.

Why is this important? Reflective thinkers can go beyond what they are taught and can customise their learning to ben

