Agile Methodology and Design Thinking

AY2025/2026 April Semester

Case Study (80%)

Introduction

This project aligns with the course objectives by giving students hands-on experience in applying Agile methodology and design thinking to a real-world problem. It will assess their practical knowledge and technical skills in design thinking, Agile processes, and project management. The assessment includes three milestones—Define, Ideate, and Prototype.

This is an **individual** project.

Assessment Components:
Case Study (80%)
- Part 1: Define (20%)
- Part 2: Ideate (30%)
- Part 3: Prototype (30%)

You must choose one case study from the provided options. The selected case study will be used for all parts of the assessment as you work on developing a suitable solution.

Case Study Options (*The problem statement serves as a starting point; you can use it as is or adapt it based on your users' specific needs.*):

1. **Canteen Peak Hour Congestion**
Problem Statement: Long queues during lunch hours make it difficult for students to get food quickly, while some stalls have long wait times, and others remain underutilized.

2. **Empty Study Spaces vs. Overcrowded Areas**
Problem Statement: Some study areas in the library and around campus are always full, while other lesser-known spots remain empty.

3. **Lost & Found Efficiency**
Problem Statement: Students often lose items like wallets, student cards, and water bottles, but finding lost items is a hassle as there is no centralized lost & found tracking system.

4. **Event Awareness & Participation**
Problem Statement: Many campus events (e.g., career fairs, CCA activities, guest lectures) go unnoticed due to a lack of visibility, leading to low participation rates.

5. **Limited Power Outlets in Common Areas**

Problem Statement: Students often have trouble finding available power outlets to charge their devices in study areas, canteens, and classrooms.

6. Food Delivery & Pick-up Challenges on Campus

Problem Statement: Food delivery drivers often struggle to locate students on campus, leading to delays and confusion. Some students also find it inconvenient to leave their study or classroom to collect orders.

Project Deliverables:

- **Part 1: Define (20%)**: Present a case study report that will be evaluated based on the clarity of the customer needs analysis, the alignment of product specifications with these needs, and the application of design thinking techniques.

- **Part 2: Ideate (30%)**: Present a comprehensive design proposal for the proposed app, including journey maps and a Product Backlog with corresponding user stories and wireframes.

- **Part 3: Prototype (30%)**: Develop a functional app prototype and organize sprint planning to define sprint backlogs and goals for structured development, and conduct user testing by collecting and analyzing feedback through a Feedback Capture Grid.

All Report templates are in TP LMS under the All About Assessments folder.

Case Study Part 1: Define (100 marks) (20% of overall)

You are required to submit a **case study report** for a problem scenario.

The report must include the following components:

1. **Problem Identification (20 marks)**
   - Identify and list all key problems from the given **scenario**.
   - Clearly define the stakeholder needs and challenges. *(Secondary research)*

2. **Solution Proposal, Key Features & User Interaction (40 marks)**
   Outline the functional and non-functional requirements of your proposed solution.
   - Specify whether it is a Web App or a Mobile App.
   - Define key functionalities and how they address the identified problems.

   Identify your target users and explain how they interact with the solution.

3. **Design Thinking Application (40 marks)**
   Use design thinking techniques to deepen user understanding and validate the solution's feasibility:
   - **User Persona**
     - Develop a persona representing a key segment of your target audience.
     - Include motivations, frustrations, and goals. *(Primary research, insights)*
   - **Context Map**
     - Analyze the broader environment affecting the user experience.
     - Identify external factors influencing user behavior and decision-making.
   - **Empathy Map**
     - Capture user emotions, thoughts, and behaviors.
     - Use insights to refine the product benefits and specifications.

Note: You must be prepared to explain your report and the processes involved when your tutor requests it.

Submission Instructions

Submit your report to LMS under the "**All About Assessment**" folder.
The report must be named with the format ***YourName_StudentID_YourClass_Part1.pptx***
(e.g.: JohnTan_1234567D_P01_Part1.pptx)

Please ensure that you have a backup copy of your deliverables in case there is a problem with the online submission.

The deadline for the submission of part 1 is on **Week 6, Friday, 30th May 2025 at 10:00 am.**

Penalty for Late Submission

late and <1 day: 10% deduction from the absolute mark given for the assignment
late >=1 and <2 days: 20% deduction from absolute mark
late >=2 days: No marks awarded

Case Study Part 2: Ideate (100 marks) (30% of overall)

You are required to submit a **design report** detailing the ideation process for your proposed problem scenario from Part 1. This project is designed to strengthen your understanding of the design thinking ideation process and Agile methodology in a real-world context. You will first develop journey maps and wireframes to visualize the user experience, identify pain points, and outline key interactions within your proposed solution. These will serve as the foundation for designing your app's wireframe. Finally, using JIRA, you will engage in Product Backlog Refinement within the Scrum Framework to deepen your understanding of Scrum.

The report must include the following components:

1. **Idea Evaluation (50 marks)**
    - Develop a comprehensive design evaluation that includes:
        - **User Journey Map** – Illustrate the end-to-end experience of various users interacting with your proposed system.
        - **Wireframes** – Create clear visual representations of the user interface by designing at least two screens that showcase key functionalities of the proposed system. For each screen, **present alternative design options** and **justify your final design choice.**

Note: You can use Figma/Miro or other tools to design the GUI, capture screenshots of your designs, and include links to the GUI.

2. **JIRA-related activities (50 marks)**
    - Capture a screenshot of your proposed system's Product Backlog in JIRA and explain the reasoning behind the way it's ordered.
    - Submit five user stories with screenshots from JIRA.
    - All User Stories screenshots must include the following:
        - Description
        - Details
        - Attachments
        - Sub-tasks

Note: You must be prepared to explain your report and the processes involved when your tutor requests it.

Submission Instructions

Submit your proposal to LMS under the **"All About Assessment"** folder.
The proposal must be named with the format ***YourName_StudentID_YourClass_Part2.pptx***
(e.g.: JohnTan_1234567D_P01_Part2.pptx)

Please ensure that you have a backup copy of your deliverables in case there is a problem with the online submission.

The deadline for the submission of part 2 is on **Week 12, Friday 11th July 2025 at 10:00 am.**

Penalty for Late Submission

late and <1 day: 10% deduction from the absolute mark given for the assignment
late >=1 and <2 days: 20% deduction from absolute mark
late >=2 days: No marks awarded

Case Study Part 3: Prototype (100 marks) (30% of overall)

You are required to submit a **report** detailing the prototyping process for your proposed solution from Part 2, focusing on design thinking, Agile, and Scrum principles. Using **JIRA**, you will develop a **Low-Fi UI/UX Design**, manage Sprint Planning by creating a **Sprint Backlog and defining goals**, and conduct **user testing** by collecting and analyzing feedback through a Feedback Capture Grid. You are also tasked to summarize the testing results with videos, notes, and ranked feedback, outlining necessary revisions and next steps. This process will provide hands-on experience in iterative development and Agile project management.

The report must include the following components:

1. **Low-Fi Design for the UI/UX of your proposed application (30 marks)**

Note: You can use Figma or other tools to design the prototype, capture screenshots of your designs, and include links to the prototype. **Make sure the link is accessible to your tutor.**

2. **Prototyping Sprint Planning in JIRA for at least two iterations (40 marks)**
    - Sprint Planning – Create a Sprint Backlog **for two iterations**. For each iteration:
        - Select a manageable number of user stories (e.g., 3–5 stories).
        - Keep the total estimated story points within a reasonable range (e.g., 8–13 story points per iteration) to ensure the workload is achievable.
        - Break down each selected user story into subtasks where possible.
    - Each iteration to provide:
        - Screenshot(s) of the Sprint Backlog and Sprint Goal
        - Justification of why these Product Backlog Items (PBIs) are selected and the value of the sprint.

3. **User Testing Effectiveness and Impact (30 marks)**
    - Conduct prototype testing and use a **Feedback Capture Grid** to gather user feedback.
    - Summarize the results of your prototype testing (videos and notes), including any necessary revisions or improvements. (Rank feedback comments and next steps).

Note: You must be prepared to explain your report and the processes involved when your tutor requests it.

Submission Instructions

Submit the report to LMS under the "**All About Assessment**" folder.
The report must be named with the format ***YourName_StudentID_YourClass_Part3.pptx***
(e.g.: JohnTan_1234567D_P01_Part3.pptx)

Please ensure that you have a backup copy of your deliverables in case there is a problem with the online submission.

The deadline for the submission of part 3 is on **Week 16, Friday 8th August 2025 at 10:00 am.**

Penalty for Late Submission

late and <1 day: 10% deduction from the absolute mark given for the assignment
late >=1 and <2 days: 20% deduction from absolute mark
late >=2 days: No marks awarded

Project Grading Criteria – Case Study – Define (20%)

Criteria	In Context	Performance Level				
		A	B	C	D	F
Problem Identification (20 marks)	**Clarity** **Accuracy** **Depth of Analysis**	Identifies and lists all major problems from the scenario with well-articulated details. Provides thorough analysis and demonstrates a profound understanding of the underlying issues. Provides a thorough and well-researched analysis of stakeholder needs and challenges.	Identifies most key problems from the scenario with reasonable detail. Presents analysis supported by evidence demonstrating a good understanding of the underlying issues. Identifies key stakeholder needs and challenges with reasonable explanations but lacks depth in some areas.	Identifies some problems but may miss critical aspects or lack clarity. Presents analysis but may lack depth or thoroughness in some areas. Mention some stakeholder needs and challenges but lack detailed analysis or connections to the problem.	Lists a few problems, but they are vague, incomplete, or not well-explained. Provides minimal or unclear information about stakeholder needs and challenges, showing little research.	Missing/minimal effort made on the component. Non-submission or clear evidence of plagiarism detected. (disciplinable offense)
Solution, Key Features, and User Interaction (40 marks)	**Comprehensiveness** **Justification**	Clearly defines a well-structured and innovative solution that directly addresses the identified problems. Provides a strong rationale for the approach. Provides a comprehensive and well-detailed list of key functionalities, ensuring they effectively address the identified problems. Clearly outlines both functional and non-functional requirements with well-supported explanations. Clearly defines user interactions with the solution, including detailed user flows or diagrams, ensuring an intuitive experience.	Defines a structured solution that addresses most identified problems with reasonable justification. Lists key functionalities that address most identified problems but lack depth in explanation. Identifies both functional and non-functional requirements, but with minor gaps in explanation or alignment. Describes user interactions with a reasonable level of detail but lacks depth in user flow or experience design.	Proposes a solution with some connection to the identified problems but lacks strong justification or clarity. Includes some key functionalities but with minimal connection to problem-solving. Provides some functional and non-functional requirements, but they lack detail or clarity. Provides some details on user interactions but lacks clarity on how the solution enhances the user experience.	The solution is vague, with little connection to the identified problems, or lacks sufficient detail. Mentions a few functionalities but does not connect them to the problems identified. Mentions a few requirements with little explanation or does not differentiate functional and non-functional aspects. Mentions user interactions vaguely, without a clear structure or understanding of user experience.	Missing/minimal effort made on the component. Non-submission or clear evidence of plagiarism detected. (disciplinable offense)

Project Grading Criteria – Case Study – Define (20%)

Criteria	In Context	Performance Level				
		A	B	C	D	F
Design Thinking Application: Persona (10 marks)	**Relevance Detail & Depth**	Develops a highly detailed and well-researched user persona representing a key target audience segment. Includes motivations, frustrations, and goals based on primary research and insights.	Creates a well-defined user persona with motivations, frustrations, and goals, but lacks depth or primary research.	Provides a basic user persona with some details but may miss key attributes or supporting insights.	The user persona is vague, incomplete, or lacks relevant details.	Missing/minimal effort made on the component. Non-submission or clear evidence of plagiarism detected. (disciplinable offense)
Design Thinking Application: Context Map (15 marks)	**Accuracy Comprehensiveness**	Thoroughly analyzes the broader environment affecting user experience, identifying multiple relevant external factors that influence user behavior and decision-making.	Provides a solid context map with relevant external factors, but lacks depth or clarity in analysis.	Identifies some external factors but with limited explanation or relevance to user behavior.	The context map is incomplete, with minimal or unclear external factors.	Missing/minimal effort made on the component. Non-submission or clear evidence of plagiarism detected. (disciplinable offense)
Design Thinking Application: Empathy Map (15 marks)	**User Understanding Insight Quality**	Creates a detailed empathy map that accurately captures user emotions, thoughts, and behaviors. Effectively uses insights to refine product benefits and specifications.	Develops an empathy map with relevant user insights, but connections to product benefits and specifications are not fully explored.	Includes a basic empathy map with some user insights but lacks depth or direct connections to product design.	The empathy map is vague, incomplete, or does not contribute to refining product benefits.	Missing/minimal effort made on the component. Non-submission or clear evidence of plagiarism detected. (disciplinable offense)

Project Grading Criteria – Case Study – Ideate (30%)

Criteria	In Context	Performance Level				
		A	B	C	D	F
Idea evaluations **- User Journey Map** **- Wireframes** **- Design Justification** **(50 marks)**	**Accuracy** **Completeness** **Justification**	Provides a highly detailed, clear, and logical user journey, covering multiple user types and scenarios. Captures pain points and opportunities for improvement. Wireframes are clear, well-structured, and visually represent key functionalities. Multiple screens provide a detailed view of interactions. Provides strong, well-reasoned justifications for design choices. Compares multiple alternatives and explains why the final design was chosen.	Covers key interactions and user experience but lacks depth in identifying pain points or alternative scenarios. Wireframes illustrate key functionalities but may lack some interaction details or visual consistency. Justifies design choices with some comparison of alternatives but lacks depth in reasoning.	Shows a basic user journey but lacks clarity or depth in interactions. Limited focus on user pain points. Basic wireframes are included but lack detail in representing interactions. Some key functionalities may be unclear. Explains design choices but does not compare alternatives. Justification is somewhat weak.	The user journey is vague, missing key steps, or lacks user-centric insights. Minimal engagement with pain points. Wireframes are incomplete or poorly structured, making it difficult to understand user interactions. Minimal design justification provided lacks clarity or does not compare alternatives effectively.	Missing/minimal effort done on required components. Non-submission or clear evidence of plagiarism detected. (disciplinable offense)
JIRA-related activities **- Product Backlog** **- User Stories** **(50 marks)**	**Accuracy** **Critical Thinking**	Comprehensive product backlog with well-defined items, logically ordered based on priority and dependencies. Clear rationale for ordering. User stories and acceptance criteria are well-crafted and aligned with user needs. The correct type of acceptance criteria is applied to each requirement. Functional, non-functional, and performance requirements are well-differentiated and appropriately categorized. Each user story includes a detailed description, relevant details, attachments, and well-defined sub-tasks.	The Product backlog is well-structured with logical prioritization, but the rationale for ordering could be more detailed. User stories are mostly well-structured but may have minor inconsistencies in clarity or completeness. Mostly correct application of types of acceptance criteria, but some requirements could be better categorized or refined. Most user stories properties are present and correct, but some are missing attachments or sub-tasks.	The product backlog includes key items but lacks clear prioritization or justification for ordering. User stories are reasonably written but lack depth in defining user needs and goals. Basic differentiation of types of acceptance criteria is present, but some misclassifications or omissions exist. Some user stories lack key details, attachments, or sub-tasks.	Incomplete backlog with missing items or unclear prioritization. Minimal explanation of ordering. User stories are poorly written. User stories are incomplete, vague, or do not articulate user needs. Little differentiation between types of acceptance criteria; some requirements are incorrectly categorized. Many user stories are missing details, attachments, or sub-tasks, affecting clarity.	Missing/minimal effort done on required components. Non-submission or clear evidence of plagiarism detected. (disciplinable offense)

Project Grading Criteria – Case Study – Prototype (30%)

Criteria	In Context	Performance Level				
		A	B	C	D	F
Low-Fi Design for the UI/UX of your proposed application (30 marks)	**Accuracy Completeness Usability**	The low-fi design is fully complete, showcasing all relevant screens and the full layout. It represents the user interface and navigation flow. The design effectively showcases an intuitive user flow, allowing for easy and logical navigation through the app.	The low-fi design includes most of the key screens and navigation but may be missing some details or elements. The design is mostly intuitive but could use some adjustments for smoother navigation or more straightforward user flow.	The low-fi design includes basic screens and navigation but lacks important details or some parts of the user journey. The user flow is somewhat clear, but there may be areas of confusion or unnecessary complexity.	The design is incomplete or lacks clarity in the user journey or navigation. The user flow is unclear or difficult to follow, causing potential usability issues.	Missing/minimal effort made on the component. Non-submission or clear evidence of plagiarism detected. (disciplinable offense)
Prototyping Sprint Planning in JIRA for at least 2 iterations (40 marks)	**Accuracy Completeness Critical Thinking**	The Sprint backlog was strategically formulated, and all required details were present and correct. Sprint Backlog demonstrates strong planning and critical thinking. Tasks are well-detailed, logically ordered, and clearly aligned with the Sprint Goal. Estimations are consistent and thoughtfully discussed, with clear rationale including effort, complexity, and dependencies. Solid reasons for PBI selection and demonstrates a good understanding of the increment's value.	Sprint backlog formulated and all required details present and correct. Sprint Backlog is mostly well-structured. Tasks are clearly defined and connected to the Sprint Goal. Estimations are present and mostly justified. The reasons for PBI selection and the increment's value are well written.	Sprint backlog formulated, and all required details present with minor mistakes. Some signs of planning are present. Sprint Backlog includes a few defined tasks but may lack clarity, completeness, or alignment with the Sprint Goal. The estimation is inconsistent or lacks justification. The reasons for PBI selection and the increment's value are fairly written.	Sprint backlog formulated but with some missing/wrong details. Sprint Backlog shows little or no evidence of planning. Tasks are vague, missing, or unrelated to the Sprint Goal. Estimation and prioritization are not evident. The reasons for PBI selection and the increment's value are poorly written.	Missing/minimal effort made on the component. Non-submission or clear evidence of plagiarism detected. (disciplinable offense)
User Testing Effectiveness and Impact (30 marks)	**Completeness Insights**	The Feedback Capture Grid is comprehensive, well-organized, and accurately captures detailed user feedback from a diverse range of participants. Results are clearly documented	The Feedback Capture Grid is mostly complete with relevant feedback but may lack some details or represent a narrow user sample.	The Feedback Capture Grid is somewhat organized but lacks key details or represents limited feedback from users. Test results are	The Feedback Capture Grid is incomplete or disorganized, lacking important user feedback or not representative of the full user experience.	Missing/minimal effort made on the component. Non-submission or clear evidence of plagiarism detected. (disciplinable

		with well-organized videos, detailed notes, and clear summaries that highlight key findings from user testing. A thorough and detailed analysis of user feedback is provided. Key insights and actionable recommendations are drawn from the feedback to improve the prototype.	Results are documented clearly, but some key details may be missing from videos or notes, or the documentation could be more concise. The analysis of feedback is good but may miss some important insights or leave out significant recommendations for improvements.	documented but lack clarity or are incomplete. Videos or notes are not organized effectively. The analysis of feedback covers basic insights but lacks depth or detailed actionable recommendations.	Test results are poorly documented, with missing key information or unclear notes and videos. The analysis is superficial, with few actionable insights or recommendations.	offense)

*****End Of Project Specification*****