

# TMA and EMA deadlines

- **TMA01** 28.02.2023 ☐
- **TMA02** 25.04.2023 ☐
- **TMA03** 04.07.2023 ☐
- **EMA** 11.09.2023 ☐

## TMA 01 Summary

### Introduction

- Write modules to be used.
- Project elements:
  - Planning and preparation
  - Project work
  - Review and reflection
- Time allocation: 75% project work, 25% writing TMA 01
- After submitting TMA 01, read TMA 02 and continue with project
- Regular backups needed
- File size limit for TMA is 50 MB on eTMA system

### Project activities

- When submitting TMA 01, progress on the following activities is expected:
  - Identifying project goals and content
  - Selecting and evaluating relevant information sources
  - Identifying crucial resources and ensuring availability
  - Evaluating own skills and knowledge, identifying and developing essential skills
  - Choosing project lifecycle model and planning and scheduling work
  - Exploratory work and progress reflection
- Maintain a project journal containing:
  - Record of activities, reading, encountered problems and solutions.

### Preparation and planning

Preparation and planning	Learning outcome
The working title of your project. Description of the problem you will address, indicating its scope.	<b>LO2.</b> Identify and refine the goals and content project which should be within the area of you specialist route, if applicable.

Outline of the major tasks and subtasks within the project at an appropriate level of detail to enable your tutor to assess the viability of your project.	<b>L02.</b> Identify and refine the goals and content project which should be within the area of your specialist route, if applicable.
Choice and justification of a lifecycle model for its management. Within the context of the chosen lifecycle model, a schedule for completing the tasks and subtasks.	<b>L09.</b> Plan and organise your project work appropriately, and keep systematic records of progress and outcomes.
An outline of the resources and skills needed and the methods you are considering using, taking into account the risks and how these will be minimised.	<b>L03.</b> Identify, list and justify the resources, skill activities needed to carry out the project successfully. Identify and address any associated risks.

## What to submit for TMA 01

### Preparation and planning

Table elements:

- Easily identifiable and assessable, even if using a different template

Writing the TMA section:

- Iterate through tasks multiple times
- Refine:
  - Title and description
  - Tasks and subtasks
  - Resources needed
  - Estimate of what can be achieved
  - Availability of resources and dependencies

#### 1. Working title:

- Short and clear
- Similar to published research papers
- Refer to main output of project

#### 2. Description and scope:

- One or two sentence answers to:
  - Problem to be solved or understood
  - Why it is a problem
  - Benefits of solving it
  - Key ICT aspects
  - Existing knowledge of problem
  - Possible solution
  - Delivery of specific project output
- Adapt as necessary
- Clear and simple answer to "What will be delivered as a project output?"
- Strategy for production (iteration, incrementation, etc.)

- Evaluation method.

### Major tasks and subtasks

- Identify major tasks and subtasks that will deliver final project.
- Describe at a level of detail that enables tutor to establish feasibility.

### Lifecycle model and schedule:

- State and justify chosen lifecycle model, giving clear reasons for choice.
- Weigh strengths and weaknesses of alternatives in light of topic.
- Consider using a table to evaluate different models.
- Assess realistic time and success likelihood for each task/subtask.
- Calculate time available for project per week, including holidays and other activities.
- Include time for writing TMAs and EMA.
- Use clear format for schedule that can be inserted in TMA document.
- Include both immediate and future tasks through project end.
- Schedule should align with chosen project lifecycle, including iterations if needed.

### Resources, skills and methods

- List resources needed for project, including specialist equipment or software, data collections, and access to stakeholders or users.
- Explain why each resource is needed and how you will acquire it, including risks and ways to minimize them.
- Specify method or methods for practical work, such as software design approaches, programming languages, and data recording and analysis techniques. Justify choices and describe relative strengths and weaknesses of alternatives.
- Assess own skills needed for project, identify any risks, and plan to develop, extend, or acquire new skills as necessary. Be realistic about time and capabilities.

### Project work completed

Project work	Learning outcome
Document any sources of information you have selected and read.	<b>L04.</b> Gather, analyse and evaluate relevant information to complete the project successfully.
Describe any exploratory work you have completed that begins the work at the heart of the project.	<b>L02.</b> Identify and refine the goals and content of project which should be within the area of your chosen specialist route, if applicable.

### Information sources

- Select a few relevant sources (e.g. academic articles, web sources, developer forums) for the project and list them.
- Explain why they were selected, why they're trustworthy, and how they'll help the project.
- Briefly mention material that was discarded.

## Project work

- Start eliciting/listing software reqs & sketch a diagram/UI/code.
- Tackle a small part of the project's main problem.
- Don't spend time perfecting early work, just make it legible.
- Show evidence of project understanding to receive feedback.

## Review and reflection

Review and reflection	Learning outcome
<p>Review progress of project work outlining what you have done, identifying any obstacles or problems that have emerged and explaining either how you addressed these or propose to address these in the near future.</p> <p>Explain how you have been developing the skills necessary for your project, if you do not already have them.</p>	<p><b>LO8.</b> Learn independently and reflect on what has been done, with a view to improving skills and knowledge.</p>
<p>Indicate to your tutor any issues on which you would like specific feedback.</p> <p>Briefly summarise how your tutor has influenced your thinking in terms of your project choice and how you have agreed to maintain contact with your tutor.</p>	<p><i>This will help your tutor to understand what you need help with, and how you plan to maintain contact.</i></p>
References	
Appendices	

- Reflect on project progress based on journal, describe encountered problems and plans to mitigate significant risks (not risk work or private life related, only project risks).
- Discuss skills development for the project.
- Request feedback/guidance on specific issues.
- Mention how tutor comments were considered and plan for future communication.

## Tips:

- Consider using a table to summarise the resources, skills, methods and risks.
- A brief summary of your project work should suffice, with any key outputs of your work in an appendix.

## Indicative marking scheme

Learning outcome	Grade: Distinction
<p><b>L02.</b> Identify and refine the goals and content of your project which should be within the area of your chosen specialist route, if applicable.</p>	<p>Clear title and description of the project. The nature of the problem is well defined. The boundaries of the project and the solution that will be delivered are clear and within the area of your chosen specialist route, if applicable. The proposal is realistic and achievable.</p>
<p><b>L03.</b> Identify, list and justify the resources, skills and activities needed to carry out the project successfully. Identify and address any associated risks.</p>	<p>Has identified key resources, the timely availability of which are essential to success. Has identified key skills and activities necessary for success. Has justified the risk (likelihood and impact) associated with resources, skills and activities appropriately and proposed appropriate measures to manage the risks.</p>
<p><b>L04.</b> Gather, analyse and evaluate relevant information to complete the project successfully.</p>	<p>Has found and selected relevant and authoritative sources of information. An effective and succinct account of what has been found, clearly identifying how these relate to the work to be done.</p>
<p><b>L07.</b> Communicate information, ideas, problems and solutions clearly.</p>	<p>Clear, concise, structured communication using diagrams or other illustrations where appropriate. Opinions and judgements are always supported by relevant argument or evidence as appropriate. Written in a professional manner for an audience broadly knowledgeable in Computing and IT. Engaging in constructive and insightful project choice discussion with tutor.</p>
<p><b>L08.</b> Learn independently and reflect on what has been done, with a view to improving skills and knowledge.</p>	<p>Has undertaken useful exploratory work that addresses an important aspect of the problem which the eventual solution depends heavily on, which increases confidence that the anticipated deliverable will be achieved. Insightful review and reflection. Is implementing a strategy for developing the skills needed to complete project.</p>
<p><b>L09.</b> Plan and organise your project work appropriately, and keep systematic records of plans, progress and outcomes.</p>	<p>Has selected an appropriate lifecycle for the project having considered all the alternatives in light of the characteristics of their specific project. Has given an appropriate schedule of future work that reflects</p>

lifecycle and the characteristics of their chosen project.

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# TMA Preparations

## Software phase tasks

- Build user interface with React (30 hours)
  - Set up React project and install necessary libraries
  - Build information page component
  - Build booking page component
  - Build contact page component
  - Build account page component
  - Style the pages using SASS
- Set up Firebase database and determine data structures (10 hours)
  - Create Firebase project
  - Determine data structures for appointments, users, resources, and questionnaire responses
  - Create data structures for appointments, users, resources and questionnaire responses
- Implement user authentication with Firebase (10 hours)
  - Set up Firebase authentication
  - Implement user sign up and login functionality
  - Implement admin authentication
- Implement appointment management features (20 hours)
  - Implement add appointment feature for both users and admin
  - Implement edit appointment feature for both users and admin
  - Implement delete appointment feature for both users and admin
  - Implement view appointment feature for both users and admin
- Add pre- and post-training questionnaire features (15 hours)
  - Design pre-training questionnaire
  - Design post-training questionnaire
  - Implement functionality to send questionnaire via email
  - Store questionnaire responses in Firebase database
  - Implement functionality for admin to view questionnaire responses
- Add resource database and email notification features (20 hours)
  - Connect to Firebase real-time database to store resource data
  - Implement functionality for admin to add, edit, delete resources
  - Implement functionality for users to download resources
  - Implement email notification feature for appointment reminders and questionnaire reminders
- Test the application and fix bugs (15 hours)
  - Test all features of the application
  - Fix any bugs found during testing

## **Time estimation: 120 hours**

### **Design phase tasks**

- Create rough sketches (5 hours)
  - Sketch rough wireframes of the user interface and key features
  - Consult wireframe with stakeholder
- Create a low-fidelity prototype (10 hours)
  - Use a design tool (Sketch, Figma, Balsamiq or other) to create a low-fidelity prototype
  - Focus on the overall layout, user flow, and basic functionality
  - Test the prototype with stakeholder
- Refine the design: (5 hours)
  - Use feedback from the prototype testing to refine the design
  - Make changes to improve the user experience and meet project requirements

## **Time estimation: 20 hours**

### **Research phase tasks**

- Define project scope (5 hours)
  - Identify features of application
  - Identify user requirements
  - Define project goals
  - Create title for Booking System
- Conduct market research (10 hours)
  - Analyze booking system for similar services
  - Identify strength and weaknesses of other booking systems
  - Gather feedback from stakeholder
- Define project resources (4 hours)
  - Identify required software and infrastructure
  - Install required software and infrastructure
- Choose lifecycle model (4 hours)
  - Review different lifecycle models
  - Assess project risks
  - Think carefully what to choose
- Conduct literature research (20 hours)
  - Read module literature
  - Define research questions
  - Complete Open University Library crash course
  - Identify relevant sources
  - Evaluate the quality of sources
  - Extract key information
  - Refine the project plan
- Finish learning React and Firebase (25 hours)

- Finish learning React and official documentation
- Read official documentation of Firebase
- Experiment with Firebase

**Time estimation: 68 hours**

### **Evaluation phase tasks**

- Define evaluation criteria (5 hours)
  - Identify evaluation goals
  - Create evaluation criteria (user satisfaction, system performance, usability)
- Plan evaluation activities (10 hours)
  - Identify potential evaluation methods
  - Determine which methods are appropriate
  - Develop plan for conducting evaluation method
- Conduct user testing (10 hours)
  - Prepare test material
  - Conduct user testing with stakeholder
  - Analyze and document results of the testing
- Analyze evaluation results (10 hours)
  - Organise data from evaluation activities
  - Evaluate results against evaluation criteria
  - Identify strengths and weaknesses
- Report evaluation findings (5 hours)
  - Summarize the results of the evaluation
  - Present finding in clear way
  - Create recommendation for improvement

**Time estimation: 40 hours**

### **Report writing phase tasks**

- Analyze previous TMAs (5 hours)
- Write about problem description and context (5 hours)
- Write about related literature (5 hours)
- Write about analysis, synthesis and evaluation (5 hours)
- Write about review of current stage of project work (5 hours)
- Write about review of project management (5 hours)
- Write review of personal development (5 hours)
- Create Epilogue, References and Appendices (5 hours)

**Time estimation: 40 hours**

### **TMA writing phase tasks**

- Write TMA01 (15 hours)



- Write TMA02 (15 hours)
- Write TMA03 (15 hours)

**Time estimation: 45 hours**

**Total hours for project: 333**

**Total number of available hours, if I spent at least 10 hours per week: 320**

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### **Important things to do for TMA**

- Identifying project goals and content
  - Selecting and evaluating relevant information sources
  - Identifying crucial resources and ensuring availability
  - Evaluating own skills and knowledge, identifying and developing essential skills
  - Choosing project lifecycle model and planning and scheduling work
  - Exploratory work and progress reflection
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## **Planning and Organizing a Project**

### **General thoughts**

- Project management consists of planning & tracking.
- Key activities: organizing, scheduling, managing tasks.
- Define project goals, restrictions, assumptions before starting.
- Divide project into phases & tasks, estimate task duration.

### **Scheduling, phases and tasks**

- Purpose of undergraduate project: gain project management experience.
- Adapt commercial concepts (scheduling, phases, tasks) to smaller scale.

### **Scheduling**

- Key element of schedule: time.
- Choose unit of time (e.g. week or hour) for each task.
- Map out dates on calendar - for my tasks.
- Identify key dates (for TMA etc), allocate average 10 hours/week.

### **Phases**

- Key phases: concept, planning, research, design, development, testing, evaluation, implementation, report writing.
- Not all phases required for every project, but stages like planning, research, evaluation, report writing must be included.
- Plan can be single route or incremental. repeated several times.

- Incremental approach: knowledge gained feeds into planning of next cycle, builds balanced project for final report.

## Tasks

- Have a detailed plan for each project, dividing phases into tasks
- Break down high-level tasks into subtasks if necessary
- Write schedule for each task, determining start and finish dates
- Account for non-work periods such as holidays or business trips
- Use a "work breakdown structure" (WBS) technique, using the project's aims to define phases and tasks
- Make the task list exhaustive
- Estimate the time needed for each task and phase
- Map the phases onto the schedule and check the logic of the phases
- Use sticky notes or project management software to help with planning
- Focus on the planning stage and put effort into it.

### Step 1

- Define a unit of time for the majority of the tasks. You may need other time units that you can apply to special tasks. For this project, the basic time unit is a week.

### Step 2

- Define the deadlines. You will have the cut-off dates for the TMAs and the EMA, but these deadlines are only a small part of your work. You need to specify deadlines for other tasks, too.

### Step 3

- Put in any dates you know you will not be able to work on the project such as family commitments, holidays, business trips or upcoming periods of intense activity in your employment.

### Step 4

- Break the project down into a set of phases. These do not have to be detailed, so you could write 'read module literature', 'literature search', and so on.

### Step 5

- Divide phases into tasks, such as dividing the literature search into tasks.

## Recommended technique: work breakdown structure

- Divide aims into phases, each made up of tasks.
- Identify and estimate time for each task.
- Map phases onto schedule and check logic.
- List phases (lit. search, background reading, report writing) and expand into tasks.
- Determine project logic.
- Use WBS for time management.
- A WBS helps manage time effectively in short projects
- Limited number of hours available per week to work on the project
- Tasks may take longer to complete due to limited availability of time in a week
- Duration of tasks may be longer than expected.

## Key events and milestones

**Key events and milestones**

- Monitoring progress requires identification of key events and milestones
- Key events defined as interface between tasks, when one task has finished so another can begin.
- Delays in key events can cause delays to overall project, resulting in critical path
- Milestones are evenly spread key events that measure progress
- Regular project reviews important to identify delays and potential problems
- Better to address delays and problems than to wait for correction.

**Monitoring progress and revising the plan**

- Conduct a review after a milestone for focused attention on future tasks
- Reviews should involve external scrutiny by partner, colleague, or tutor
- Have a clear agenda for the review with manageable headings
- Focus on: tasks completed, progress measurements, setbacks, and project aims
- Use schedule as a guide, be prepared to revise plan
- Be selective in choosing project tasks, eliminate non-essential items.

**Recovering from delays**

- Delay has impact on subsequent activities, not always beneficial
- Phases must be reviewed
- Identify tasks and phases that can have shortened duration, assess risks
- Consider deleting tasks, bolster remaining tasks to ensure completion
- Project management evaluated by handling dynamic events during project
- Common pitfalls:
  - Over-ambition in planning
  - Overloading hours in a week
  - Underestimating time
  - Believing easy to catch up if missing milestones
  - Insufficient division of phases
  - Failing to keep project plan updated
  - Delaying tasks that can run concurrently
  - Expecting full attention, availability and time from helpers.

**Keeping a project log**

Benefits of Keeping a Project Log:

- Provides a record of project development
- Helps in discussions with tutor
- Helps keep to schedule and suggest changes

Typical Log Sheet Layout:

- Top: Project phase, TMA, date, time spent
- Middle: Work done, problems encountered, reflections, comments
- Bottom: Progress, next work planned

Example :

- Session 1, 1.5 hours
- Work: Logging on to module website, reading guides
- Problems: Longer than expected, initial reading to digest
- Comments: A lot of interesting aspects, sorted ideas into tasks
- Next Work: Review online resources, postponed serious read through

Plan and log should help with questions such as:

- What did I do?
- What worked well and what did not work out too well?
- What would I do differently next time?
- How would I do it?

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## Software used

- yEd Graph Editor - flowchart, diagrams, free
- Libre Office Writer - writing assignments, free
- Figma - design, prototyping, free and £14 per month
- Trello - project management tool for Scrum, £10 per month
- Git - version control, free
- Evernote - project journal and general ideas applying to project as a whole, free and £7.50

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## Firebase features needed

- Use **Firebase Authentication** to create login and sign-in
- Use **Cloud Firestore** to keep every data
- Use **Firebase Security Rules**