B.Sc. (Hons.) in Technical Design and Technology
Design and Manufacture Project Guidelines

TET3004

Department of Technology and Entrepreneurship Education
Faculty of Education
University of Malta

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Nomenclature

BoE	Board of Examiners
FoE	Faculty of Education
FREC	Faculty Research Ethics Committee
FYP	Final year project
FYPB	Final year project board
DTEE	Department of Technology and Entrepreneurship Education
UM	University of Malta
UREC	University Research Ethics Committee
URECA	University Research Ethics Committee Application

1.0 Introduction

This document has been prepared to serve as guidance for students who are undertaking the Design and Manufacture Project (TET3004) during the third year of the B.Sc. in Technical Design and Technology.   The study unit carries a weighting of 12ECTS and spans over two semesters. It should be underlined that the study unit should be undertaken by each student individually. This means that each student is expected to propose, develop and deliver the project outcomes as disclosed in this document. In consequence, the study unit cannot be undertaken as a group project. Each student will be assessed and graded individually for the quality of work carried out.

The issue 00 revision 00 of the Design and Manufacture project guidelines has been approved by the Board of Studies for the B.Sc. (Hons.) in Technical Design and Technology.

2.0 Objective and Rationale of the Project

This project presents an opportunity for each student to ideate, design and develop a technological solution to a well-defined problem. The student is encouraged to exploit the knowledge and practical skills gained throughout the various study-units which constitute the undergraduate programme. The study unit, therefore, requires the student to conduct research, make use of technology, design thinking and experience in entrepreneurship in order to effectively transform the identified problem into a solution. In addition, the student should identify and document the new knowledge acquired throughout the project and effectively communicate this learning experience to others.

Objectives

The project has two key objectives:

1. **Undertake the Design and Development of a Technological Solution to a Problem**
   The project requires the student to make use of the knowledge and technical skills which were honed throughout the three (3) years of the undergraduate programme. The student is therefore required to demonstrate how to conduct research, analyse data, systematically exploit design methods, make use of practical skills, techniques, and technology in order to transform an identified problem into a solution. The student should also demonstrate awareness of the impact which decisions made throughout the project have on functional, social, environmental, economic and business aspects of the evolving solution.

2. **Translate the Design Experience into Valuable Knowledge**
   The second equally important objective of the project is to demonstrate how the design process generates new knowledge. The student should therefore identify, capture and translate the challenges, pitfalls, and successes inherent to the design process into valuable knowledge. The student should demonstrate how the knowledge generated through the design process can be used to provide a unique learning experience to pupils in an educational context.

2.1 Responsibilities

Students should play a major role in all phases of the project including proposing a project brief, conducting research to better understand the design problem, developing a solution, documenting the lessons learned throughout the design process and how these lessons can be translated into valuable knowledge. In this sense, students are expected to show a high degree of initiative, creativity, self-discipline, and commitment. A project advisor(s) is appointed to each individual project and serves to provide guidance to the student. The advisor(s) for each project is nominated by the DTEE.

2.2 Deliverables

1. **Final Year Project Report** is a document reflecting the progress, decisions, and rationale pertaining to various phases of the project. The report should be submitted in both soft copy (*.pdf) and hard copy. The soft copy of the report should be submitted through Turnitin on the virtual learning environment (VLE) platform.
2. **Logbook** which serves as evidence that the student was meeting with the supervisor/co-supervisor. This document also reflects the actions agreed during meetings with the supervisor/co-supervisor as well as timelines.
3. **Product/Solution** is a physical or digital product that has been created exclusively by the student. The product should serve two purposes: (i) as a means to address the design problem identified and (ii) as a means to transfer knowledge to others. Students are strongly encouraged to build physical prototypes of their solutions if this is possible.
4. **Presentation** outlining various aspects of the project and presented by the student during the oral examination in front of the Board of Examiners (BoE).

2.3 Project Milestones

Milestone
Submission of three (3) distinct proposals
Notification of proposal acceptance (full or partial) or rejection to student
Submission of Deliverables (1), (2) and (3) in Section 1.4
Oral Presentation
Final Submission

* a specific date will be communicated at a later stage.

3.0 Project Phases

The project is divided into six (6) phases. These phases are described chronologically, however, they may also take place concurrently. The flowchart in Figure 1 outlines the various phases of the final year project.
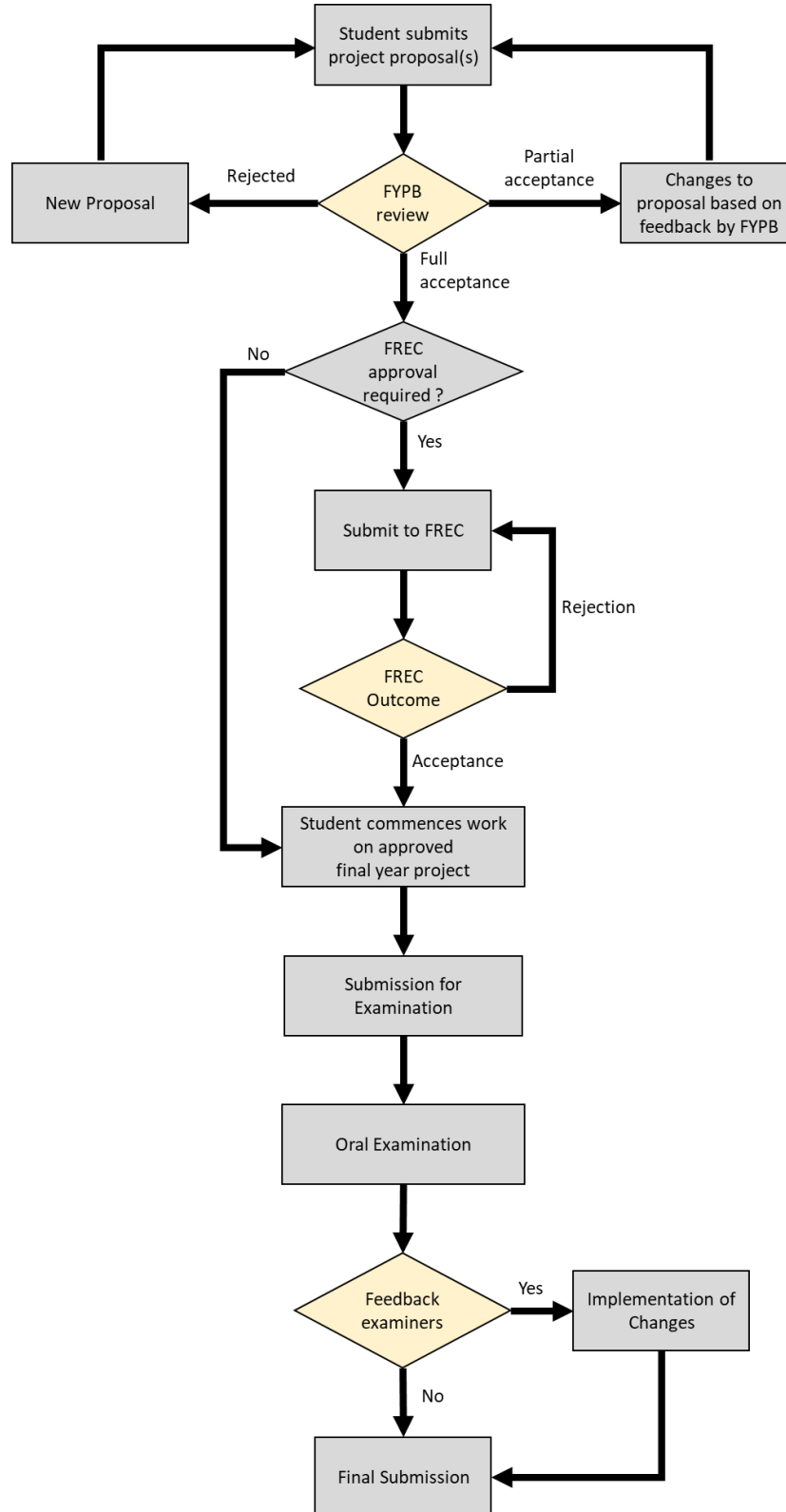

Figure 1: Outline of final year project

Phase 01: Proposal

Prior to the commencement of the project, students are required to submit in writing three (3) alternative proposals for their project. Each proposal should be submitted via the **Project Proposal Form F-01** and should vary in scope and purpose. A copy of this form can be referred to in Appendix A.

The student is required to provide a unique ranking to each proposal which indicates their order of preference. The proposal should therefore include:

1. **Project Title**
2. **Project Description** which outlines the design problem being addressed as well as the expected deliverables of the project (e.g. building a physical model, developing a digital prototype of a product, etc.)
3. **Project ranking** which indicates the degree to which the student prefers one title over another.

The student may seek the help of an advisor in order to review versions of the proposals before these are submitted to the final year project board (FYPB). The student is required to submit the proposals by a deadline which is set by the DTEE.

The role of the FYPB is to:

1. Ensure that the project being proposed is feasible in terms of the content, approach as well as time-frame and resources available;
2. Confirm that the project proposed is not a replica of previous dissertations or published material both in and outside the faculty. This excludes cases in which, for research purposes, it may be legitimate to replicate a study that has already been carried out in the past.
3. Approve/reject/request changes to the proposals which have been submitted by the student.

The proposal which has been approved by the FYPB is communicated in writing to the student.

3.1.1 Identifying Project Ideas – Where do I start?

In order to come up with new project ideas, students are encouraged to conduct research and investigate sources that extend beyond the environment of the University. The following are some of the sources which could serve as an inspiration:

- **Existing products** – look for opportunities to improve existing products or adapt their functions and features to other purposes. Look around on websites and go shopping. *How can existing products be put to a different use? How can the functionality of a product be improved?*
- Consider how **new technologies** can be implemented into existing products. *How can existing or older products be refreshed by integrating new technologies? How can materials influence product durability to environmental factors?*
- Look for instances where design and technology can provide solutions to address challenges and provide support to **humanitarian aid**. On a global level design and technology can provide solutions that can be deployed during rescue efforts following natural disasters (e.g. floods, earthquakes) and humanitarian crises (e.g. migrant rescue in the Mediterranean region). On a local level design can also serve as a driver to help local communities or segments of society such as elderly people. *How can a design solution help improve the quality of life of elderly people? How can a product help humanitarian action and relief efforts?*

- Review **past University projects** from other faculties. Of course, the aim is not to reproduce these projects however, these projects can be improved, reinterpreted or addressed using newer and different technologies.
- **Shop around.** If you already have an idea related to a particular product or technology go to shops where you can come in contact with the physical product itself. This activity may in itself present new design opportunities. This might be one of the best sources of inspiration if the student has no idea where to start.

3.1.2 How do I write a good project proposal?
The following are some key points that need to be taken into account when choosing which project to propose.

- Keep in mind the objectives of this project. Be careful not to be carried away from what is the intent of this project
- Although the project is intended to holistically assess your competencies, the selected project should reflect your capabilities and talent. Try to avoid instances where you need to learn a completely new set of skills if you can make use of current skills.
- Choose something which interests you. Keep in mind that the duration of the project is around one (1) academic year.
- Make sure to choose a project which can be realized within the time frame allocated. On the other hand, do not propose projects which are too simple. Students should keep in mind that the project carries 12 ECTS.
- Consider whether the project requires specific resources such as particular fabrication equipment, instruments, or software. Please make sure to mention the resources which may be required in your project proposal.

Once the proposal has been submitted, the FYPB will establish whether to accept or reject the proposal. There are instances where the project proposal may be partially accepted, which means that the student will be required to make changes before the proposal is fully accepted. Once a project proposal is accepted by the FYPB the student can proceed to subsequent phases.

Phase 02: Research and Planning
The purpose of this phase is to enable the student to gain a better understanding of:

- Conduct research in order to gain a better understanding of the problem being addressed;
- Identify potential candidate solutions and technological principles which could be exploited/adapted/adopted to develop a solution.

Based on these objectives, during this phase, the student is expected to gain enough insight and knowledge about the challenge(s) being addressed in order to clearly formulate the design problem. By the end of this phase, the student should be in a position to ideate possible solutions to the challenges identified. Remember that a good solution requires a good understanding of the problem being addressed.

The responsibilities of the student include:

1. Conduct research by reviewing relevant literature and other sources that may be suggested by the supervisor. This will help the student become familiar with the design challenge being addressed;
2. Propose a project timeline which is agreed upon with the advisor(s);

3. Make necessary arrangements to regularly meet with the supervisor(s) while also respecting the proposed project timeline;
4. Become familiar with various aspects of the design problem being addressed;
5. Gain awareness of current solutions that exist on the market and can serve as a basis to evaluate the developed solution.

The role of the advisor at this stage is to:

1. Participate in regular meetings and/or consultations with the student. It is the responsibility of the student to seek expert advice, make appointments and meet deadlines agreed upon.
2. Plan with the student definite time-frames and deadlines for the presentation of draft or part/s of the final year project report and/or product.
3. Recommend relevant literature and other material related to the topic.
4. Recommend to the student to request permission in writing to make major/minor changes in the official title.
5. Inform the FYPB, as a matter of urgency, if a major difficulty occurs which might prejudice the student's presentation of the project according to established procedures.

Phase 03: Design and Development

Following the formulation of the design problem, this phase constitutes a major effort of the project as it represents the actual design and development process. The three stages of the design project include conceptual design, embodiment, and detailed design. It is the responsibility of the student to ensure that at each stage of the design process is well documented and is reflected in the final year project report.

Furthermore, during this phase, the student is also expected to clearly report the rationale of the decision made during the design process and also identity any lessons learned through analysis and testing. Wherever possible students are encouraged to build physical as well as digital prototypes of the evolving design solution.

Students are encouraged to adopt a clearly defined design methodology which serves as a high-level guideline for the overall project. In addition, students are also expected to make use of design methods and tools such as sketching, brainstorming, material selection, etc.

The following list represents an exemplar of questions that may need to be addressed in order to clearly outline the knowledge being generated throughout the design process itself.

- *Why was a particular design concept not chosen?*
- *Why did the design prototype fail during testing?*
- *Why was the particular material not deemed suitable for the component?*
- *What can the component shape be altered in order to facilitate the machining process?*
- *What is the effect of the number of components on the assembly process?*
- *What did user feedback reveal about the functionality of the product?*
- *How does product shape influence the ergonomics of the prototype?*
- *Why did the electronic component not function as expected?*
- *How can the design of the electronic circuit be simplified?*
- *What effect did the electrical current have on the resistor?*

Phase 04: Writing

All of the phases in the project need to be documented in a report which is one of the key deliverables in the project. It is advisable that the student carries out the writing *concurrently* with the other phases of the project. This will also enable the advisor to periodically review draft versions of the report and provide feedback. Furthermore, the direction of the evolving project will become evident throughout the writing process. The total length of the report should not exceed 10,000 words.

Phase 05: Submission and Examination

The student is expected to submit the project deliverable by a deadline that is published and agreed upon by the FYPB. A soft copy in *.pdf format of the report should be submitted using Turnitin on the UM VLE. The deadline for submitting the report and developed solution will be set by the FYPB and communicated to the student.

In addition to the project report, students are also require to submit a copy of the logbook – refer to Appendix D. It is the responsibility of the student to fill in the logbook after each and every meeting with the supervisor /co-supervisor. Student must ensure that logbook is duly filled and no signatures are missing. The purpose of the logbook is to serve as evidence of:

- Meetings between the student and supervisor/co-supervisor;
- Actions agreed and respective timelines for achieving discussed outcomes/actions.

It should be noted that the faculty reserves the right not to examine the student if the logbook is not submitted in time with the project report.

The students are also required to sit for an oral examination where they present their work and answer queries made by members of the board of examiners. The assessment of the student should be based on the deliverables submitted as well as the oral examination.

Furthermore, students are required to include a signed copy of the Declaration of Authenticity. A copy of this form must be included in the dissertation. A copy of the Declaration of Authenticity form can be referred to in Appendix E.

Phase 06: Review of Changes and Final Submission

Upon reviewing the student's work and following the oral examination the board of examiners may request the student to make major/minor changes before the final printout of the project report. The report should be submitted by the deadline stipulated by the FYPB and communicated to the student. The consequences for late submissions vary on a case-by-case basis. The FYPB shall be informed should a student not submit the report in time.

4.0 Ethical Considerations, Forms, and Procedures

Ethical considerations come into play whenever some aspect of the project requires the involvement of participants. The involvement of participants may include: conducting interviews with educators, evaluating design prototypes with students, observing user-product interactions, etc.

4.1 Ethical Considerations

The ethical consideration needs to be made during the write-up of the project proposal. By considering the points listed in this section, the student will ascertain whether or not ethical considerations need to be made, depending on the nature and intent of the project. When conducting research, the student must determine if the involvement of a human subject will:

1. Be harmful (physical, psychologically, emotionally, socially) the individual involved during and after the investigation;
2. Jeopardise any other research currently being conducted by others with the scope of improving the individual's well being;
3. Result in an undue burden on an individual or organisation;
4. Prohibit access to benefits or services for an individual participating in research;
5. Result in undue favour towards and individual or group in the form of tangible items, knowledge, skills, esteem;
6. Not realistically raise an individual's or group's expectation with regards to potential outcomes and gains from research;
7. Have the potential of reaping enough benefits when compared to the 'costs' (human, physical, or monetary resources) involved.

One has also to consider:

1. The availability of human experts within the UM or elsewhere to supervise research;
2. Any conflict of interest or bias which human experts may have when supervising projects owing to their commercial links or other affiliations;
3. If the study can be carried out without jeopardising the safety of any individual or causing damage to equipment.

In order to conduct research with human subjects, one must consider the issue of ***permission***. For example:

- Permission to have access to a group of participants (e.g. teenagers in a school, teachers in a college).
- Permission to make use of premises and/or make use of equipment.

For further information please refer to the webpage of the University of Malta Research Ethics Committee.

4.2 University Research Ethics Committee Application (URECA)

Based on the considerations outlined in the previous section, if a project necessitates the involvement of human subject(s) the student is required to apply for approval of the research to the University Research Ethics Committee (UREC).

To this end, one or more forms need to be attached to the project proposal form. The University Research Application form **has to be completed by all students undertaking research. In addition, the form has to be endorsed by the advisor.**

The URECA form is composed of four (4) parts:

1. Applicant and project details;
2. Self-assessment checklist;
3. Detailed evaluation;
4. Submission details.

The URECA form exists in two formats

1. As **an web-based URECA form** which can be accessed online via the following link :
   https://www.um.edu.mt/research/ethics/redp-form/frontEnd/
   It should be noted that all applications must be submitted through this web portal.
2. As a **downloadable replica in word format** which can be accessed via the FREC website.
   https://www.um.edu.mt/__data/assets/word_doc/0011/481709/URECAReplicaForm.docx
   The purpose of the word document is to be used as a work in progress, since the google form do not allow for incomplete forms to be saved. Ultimately the contents of the word document should be copied into the web based URECA. A copy of the downloadable word document can be referred to in Appendix B.

4.3 Research Ethics Procedure

The Faculty of Education Research Ethics Committee (FREC) has published guidelines (Faculty of Education Research Ethics Committee, 2019) describing the research ethics review process. As already outlined the URECA is composed of four (4) parts. A screenshot of the URECA form is shown in Figure 2 below.
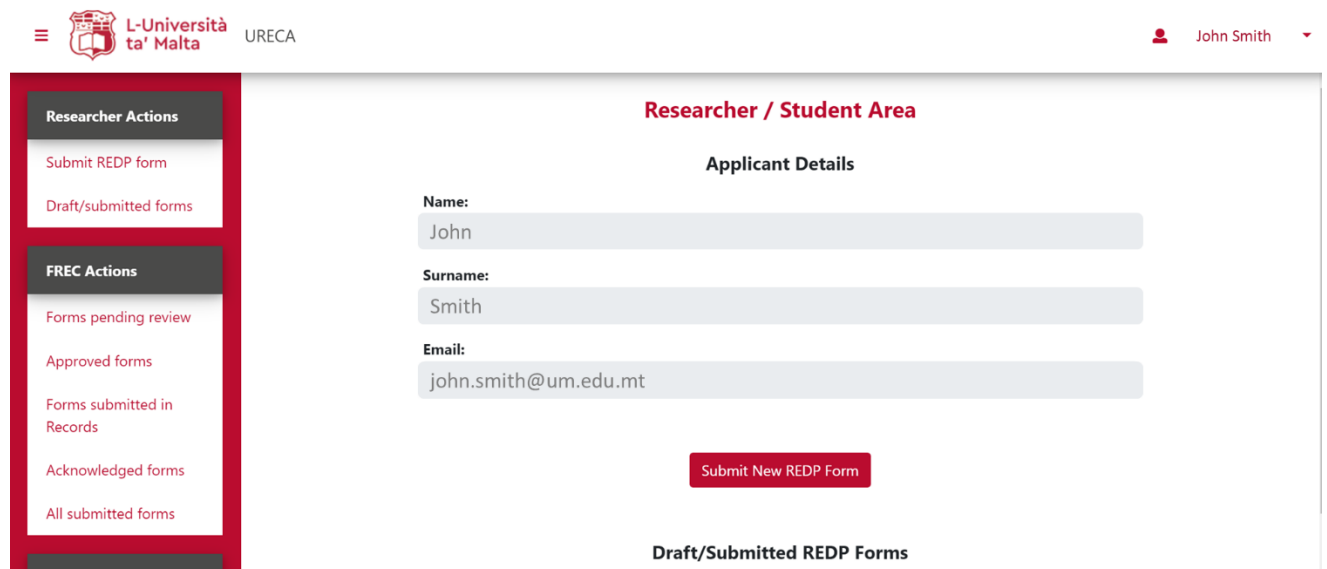

Figure 2: URECA form

Once submitted, the form is processed by the FREC, however before this can take place, the form has to be endorsed by the advisor. The research ethics procedure is illustrated in Figure 3.
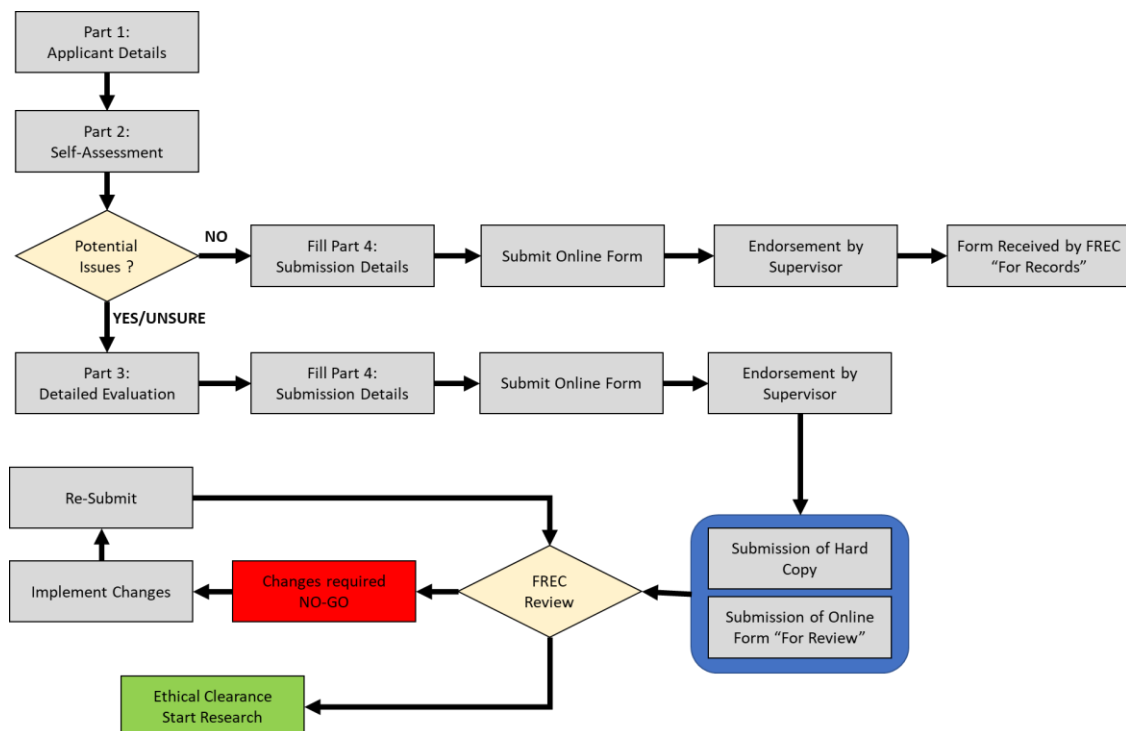

Figure 3: Research Ethics Procedure

4.3.1 Part 1: Applicant Details

This section will ask for details such as title of project, student name, etc. This is a very straight forward section part of the application.

4.3.2 Part 2: Self-Assessment

In this section the respondent is presented with a series of questions. There are two possibilities:

1. The respondent answers '**NO' to all of the questions in this part**.
   This means that there are *no potential issues* hence the form is submitted to FREC "for records". In this case the student will submit the Google Form and will immediately receive an acknowledgement from FREC that the e-mail has been received. The supervisor will endorse the form by sending a "Reply All" e-mail. Note in this case you are cleared to conduct the research work. Student can proceed to **Part 4** of the form.

2. The respondent answers '**YES' or 'UNSURE' to one or more questions in this part.**
   The individual will be asked to fill-in and elaborate further in Part 3 of the form.
   This means that **there are potential ethical issues** and the form will be submitted "for review by FREC". Once again the applicant will receive an acknowledgement upon sending the google form and the supervisor must endorse the form by sending a "Reply All" e-mail.

   In this case the FREC will review the application and may request some amendments to be made. Note that before receiving approval from FREC the student **cannot commence the research work and any research work at this stage amounts to a breach of UM ethics code of Practice.**

4.3.3 Part 3: Detailed Evaluation

This part should only be answered if potential ethical issues were identified in the previous part. In essence this section serves to elaborate in more detail on the research approach. This will help the members of the FREC to evaluate the application.

4.3.4 Part 4: Submission

The part is to be filled by **all applicants** as it contains details pertaining to the faculty, attachments such as questionnaires and declarations. As part of the application the respondent may be required to include documents such as consent forms, copies of the questionnaire etc.

As part of their proposal in the URECA form, students may also required to attach documents one of which is the *Consent Form*. The consent form is required for research on any of the categories indicated by UREC as well as research with:

- Minors who will be involved in audio or video recordings
- Parents/guardians of minors who will be involved in audio or video recordings;
- Minors involved in any therapy or 'special' programme;
- Parents/guardians of minors involved in any therapy or 'special' programme;
- Other, according to the nature of the study.

5.0 Intellectual Honesty

The student is expected to achieve good scholarly standards while being intellectually honest. Students are acting in an intellectually dishonest way when they:

- Do not credit individuals/organisations for their design solutions and/or academic work;
- Do not correctly cite reference material;
- Do not acknowledge individuals who have contributed to the research;
- Do not report information honestly through the unjustified misrepresentation and/or manipulation of data.

Advisors will seek to detect any such intellectual honesty and take immediate action. This behaviour is not tolerated by the FoE and DTEE.

5.1 Referencing of Sources

Students are always expected to acknowledge their sources of information. This also enables the reader to distinguish between the student's work from contributions made by other individuals. The term 'plagiarism' describes the act of copying other people's work and presenting it as one's own, in essence, this is a theft of intellectual property (Neville, 2007). This act is condemned in the strongest possible manner and students caught plagiarising other people's work will be severely penalized which in turn may lead to failure of the study unit.

Some examples of plagiarism include:

- Copying word for word other people's work without citing the source;
- Using an existing idea and presenting it as one's own;
- Summarising (paraphrasing) another's work using own words;
- Fail to make use of quotation marks " ", when more than a single phrase from another's work is used.
- Buying the services of a commercial research corporation or a third party e.g. engaging a third party to conduct research and claim ownership of such research.

5.2 Reporting of Data and Information

The data points and responses which emerge from quantitative (e.g. measurements taken in a laboratory) or qualitative (e.g. user evaluation feedback) studies should be reported honestly. In other words, students should avoid reporting the results or interpreting the qualitative response in a manner that is dishonest and/or misleading. In order to demonstrate honesty in the reporting of data/responses, students should:

- Disclose a clear account of the method used to gather data/responses in the report;
- Correctly cite any reference material used;
- Disclose the raw data that was collected;
- The analysis and discussion of the information emerging from the data which is collected should be objective and not biased towards desirable objectives.

6.0 Citing and References

As outlined in the previous section, students are required to clearly credit author(s) of sources which they make use by making use of references.

6.1 Reference Styles

There are several systems that are used to correctly provide a reference to scholarly articles or sources used. However, students are encouraged to make use of the *American Psychological Associate (APA)* reference style (American Psychological Association, 2010). It should be noted the APA reference style should be used throughout the entire project report.

- Any source which has been used as a reference should be cited. Sources include books, journal papers, conference proceedings, dissertations, newspaper articles, websites, etc.
- Citing is the process of quoting a source and attributing the source in the text.
- Reference listing is the process of giving the full details for each of the documents cited in the text. This list is typically organized in numerical or alphabetical order.

6.2 Referencing Methods

In-text referencing
A study by Farrugia (2011) showed that role-play can help children learn techniques for coping.

Off-text reference – citation not part of the text
Role-play can help children learn techniques for coping with bullying (Farrugia, 2011).

Two or more references of the same year by different authors
The research carried out by Farrugia (2017) and Borg (2017) showed that customer emotions are influenced by their concerns.

Two or more references of the same year by different authors
Several studies (Farrugia 2017, Borg 2017) have demonstrated that customer emotions are influenced by their concerns.

Two or more references given off text presented in alphabetical order
Studies have shown the causality of user emotions on shopping behaviour (Agius,2016; Borg and Said 2007; Farrugia, 2006a; 2006b; Pule' and Navarro, 2019).

Two or more references given off text presented in chronological order
Studies have shown the causality of user emotions on shopping behaviour (Farrugia, 2006a; 2006b; Borg and Said 2007; Agius, 2016; Pule' and Navarro, 2019).

Use of *et al.* in citations
When a publication as more than two authors, the first citation in the text should refer to all the authors and date (e.g. Pule', Farrugia, Navarro and Busuttil 2019). In subsequent citation in the text, write the name of the first author followed by *et al.* and the date.

An author with more than one work in the same year
A recent study (Farrugia, 2019a) showed that the customers' behaviour is influenced by their emotional experience. Such an emotional experience is in itself influenced by users' concerns and beliefs (Farrugia, 2019b).

7.0 Project Assessment Criteria

Table 2 provides a list of the assessment criteria and weighting associated with each deliverable. The relative weighting for each deliverable is summarised in

Table 1: Absolute weighting of deliverables

Deliverable	Relative Weighting
Final year report	60 %
Product (Physical or digital prototype)	25 %
Oral Presentation	15 %

Table 2: Breakdown of assessment criteria and their weighting

Criterion	Final Year Report	100
C1	• The relevance and innovativeness of the problem identified.	10
C2	• The quality of the research work that was carried out. Depth and spectrum of sources utilized during the research phase. • The clarity with which the design problem was formulated as a reflection of the research that was carried out.	15
C3	• The extent to which the student presents a clear design methodology. • The extent to which the proposed design methodology was adopted in the project report.	20
C4	• The ability of the student to make use of a wide range of design tools and methods. • The degree to which the student carries out design taking into consideration multiple viewpoints (e.g. aesthetics, economics, environment, usability, manufacturability, etc.)	20
C5	• Assessment of the extent to which the student was able to capture and document failures as well as provide a rationale for the decision made throughout the design process. • The degree to which the student was able to provide a rationale for the failures or decisions made based on scientific/mathematical/engineering principles.	15
C6	• The extent to which the student was able to present a set of key learning outcomes derived directly from the design process. • The ability of the student to communicate effectively these learning outcomes and transform them into design guidelines.	10
C7	• Report presentation (structure, grammar and readability)	10

Criterion	Product (Physical or Digital Prototype)	100
C8	• The overall quality and standard to which the design solution (digital and/or physical) was created.	100

Criterion	Oral Presentation	100
C9	• The ability of the candidate to clearly present the work carried out. This criterion assesses the quality of the presentation and also the candidate's presentation skills. • The extent to which the candidate was able to effectively address queries raised by the examiners during the oral examination.	100

8.0 Grading of Projects

The section discloses guidelines for grading student projects. These guidelines were based on the Education Act (CAP.327), General Regulations for University Undergraduate Awards 2019.

Grade: [80% - 100%]

Criterion	Description
C1	The project report presents a very clear design solution, derived from a well-founded problem, which is creative, worthwhile and very innovative.
C2	The project report demonstrates that the student carried out a thorough research by critically analysing relevant literature. Furthermore, the student excelled at understanding the design problem analysing and interacting with existing products, through user observation and/or by means of case studies. Collectively the thorough research work enabled the student to articulate a well-framed design problem.
C3	The student proposes a very clear design methodology which was in fact reflected throughout the project report. The design approach that was adopted was reflected in the report which in itself outlines how the design process serves to gradually transform a design problem into a solution.
C4	The student was able to make use of a very wide range of design tools and methods. These design tools and methods were consistently used throughout all stages of the design process. In addition, these tools/methods were used to take into consideration several different aspects of the evolving design solution (e.g. cost, environmental impact, ease of assembly, etc.). The student excelled as presenting a rationale for choosing each method.
C5	The student was able to capture and document failures/issues that emerged throughout all stages of the design process. The report demonstrates that the student was able to understand and provide reasons for the challenges encountered throughout the design process. The student was able to explain phenomena in the design process by using scientific, mathematical and/or engineering principles.
C6	The project report presents a set of key knowledge elements/lessons learned which were derived directly from the design process. This knowledge was presented in a manner that can be understood by a non-technical person. The student excelled not only at deriving knowledge from the design process but also at generating proactive guidelines to avoid the pitfalls encountered. These guidelines were based on a thorough analysis and testing of the evolving design solution.
C7	The report is presented in a structured manner which flow logically provided a detailed overview of the work carried out. The report is excellent in terms of readability.
C8	The prototype solution was created to the highest possible standard. The developed solution excels with respect to multiple concurrent performance indices such as aesthetic appeal, functionality, ease of use, cost, etc.

Grade: [70% - 79%]

Criterion	Description
C1	The project report presents a very clear design solution, derived from a well-founded problem, which has the potential of being creative, worthwhile and very innovative.
C2	The project report demonstrates that the student carried out thorough research by reviewing a number of relevant sources. These include existing products and user observations. Overall the research problem was well-founded.
C3	The student proposes a design methodology which was most of the time is adhered to in the project report. Most of the time the report reflected the adopted design approach.
C4	The student was able to make use of a number of design tools and methods. These design tools and methods were consistently used throughout most stages of the design process. In addition, these tools/methods were used to take into consideration several different aspects of the evolving design solution (e.g. cost, environmental impact, ease of assembly, etc.). Most of the time the student provided reasons for selecting a particular design method or tool.
C5	The student was able to capture and document failures/issues that emerged throughout most stages of the design process. The report demonstrates that the student was able to understand and provide reasons for the challenges encountered throughout the design process. Most of the time the student was able to explain phenomena in the design process by using scientific, mathematical and/or engineering principles.
C6	The project report presents a set of key knowledge elements/lessons learned which were derived directly from the design process. This knowledge was presented in a manner that can be understood by a non-technical person.
C7	Overall the report is well presented albeit some minor issues (e.g. missing figures, minor spelling mistakes etc.)
C8	The prototype solution was created to a very high standard. The developed solution excels with respect to a few concurrent performance indices such as aesthetic appeal, functionality, ease of use, cost, etc. A few reasonable compromises had to be made.

Grade: [55% - 69%]

Criterion	Description
C1	The project report presents a good design solution derived from some basic comprehension of the design problem. The developed solution has the potential of being creative and innovative however its feasibility is questionable.
C2	The project report shows that the student was able to review a limited number of sources in literature. It should be noted that these sources were not always analyzed critically. Furthermore, the student did conduct any practical research.
C3	The student proposes a design methodology. However, the report exhibits clear gaps in the design process. This indicates that the design process was not a reflection of the adopted methodology.
C4	The student was able to make use of a limited number of design tools and methods. These design tools and methods were used throughout some later stages of the design process. In addition, these tools/methods were used to take into consideration limited aspects pertaining to the evolving design solution (e.g. cost, environmental impact, ease of assembly, etc.). The use of particular design methods was not justified.
C5	The student was able to capture and document a limited number of failures/issues that emerged throughout the later stages of the design process. The report demonstrates that the student was able to understand and provide reasons for some of the failures/challenges encountered throughout the design process. The report demonstrates that the student did not understand/think about the causes of the failures/issues.
C6	The project report presents some lessons which were acquired throughout the design process. Yet these lessons are not well presented and require some effort for a non-technical person to comprehend.
C7	The quality of the report is of average quality, with some parts of the report being unclear in terms of grammar, structure and/or presentation. Average readability.
C8	The prototype solution was created to an average standard. Several compromises in key areas had to be done.

Grade: [45% - 54%]

Criterion	Description
C1	The project report presents a design solution which exhibits very limited creativity and innovation.
C2	The project report shows that the student was able to review few sources in literature. It should be noted that the literature review was limited to a reporting process instead of a critical analysis. To this end, the validity of the design problem that was formulated remains unclear or is in itself unclear.
C3	The student proposes a very crude design methodology which at most times was not reflected in the report of the design process.
C4	The student exploited a few design tools and methods. These design tools and methods were used throughout a very specific stage of the design process. In addition, these tools/methods were used to take into consideration an extremely limited number of aspects pertaining to the evolving design solution (e.g. cost, environmental impact, ease of assembly, etc.).
C5	The student was able to capture and document a limited number of failures/issues that emerged throughout the later stages of the design process. The report demonstrates that the student was unable to understand the root causes of the failures experienced during testing/prototyping. To this end, the design approach seems to be sporadic.
C6	The project report presents very few lessons that were acquired throughout the design process. This knowledge was not presented in a well-structured manner.
C7	Considerable errors in the presentation of the report such as no references used, missing captions and considerable grammatical errors.
C8	The prototype solution was created to an acceptable standard with a lot of compromises being made.

Grade: [0% - 44%]

Criterion	Description
C1	The project report presents a design solution which is an identical replica of existing platforms/solutions.
C2	The project report demonstrates that the student did not carry out any research. Hence the design problem is formulated on a very loose foundation.
C3	The student does not adopt any design methodology. This is evident from the random approach to designing.
C4	The student did not make any use of the design method and tools available. In addition, the student did not take into account the consequences (e.g. cost, environmental impact) of design decisions being made.
C5	The student was not able to capture/document failures experienced during the design process.
C6	The project report does not present any lessons learned.
C7	The report presentation is very poor and practically unreadable.
C8	The prototype solution was created to a very poor standard.

9.0 Project Report Structure and Formatting Style

It is imperative for students to refer to this section when they are preparing to start writing the report. This will ensure that the format of the report is readable and easy to assess.

9.1 Project Report Structure

The section discloses guidelines concerning the formatting and structure of the FYP project report. The section pertaining to the structure of the project report is intended as guidance, and students may in agreement with their advisor remove or include additional sections as they deem necessary, depending on the nature of the project.

9.1.1 Title Page

The title page contains from top to bottom and centered between the left and right margins:

- The title of the project as approved;
- The full name of the author;
- The statement: "A project report presented to the Faculty of Education in part fulfilment of the requirements for the degree of Bachelor of Science (Honours) in Technical Design and Technology
- The month and year of the presentation.

A sample of the title page can be referred to in Appendix C.

9.1.2 Abstract [250 words]

The abstract should be as a single paragraph of no more than 250 words. The abstract should provide a brief description of the project including the scope, design problem, developed solution and lessons learned.

9.1.3 Author's Declaration

The author's declaration is a signed declaration by the student regarding the originality of the work.

9.1.4 Dedications and Acknowledgement

It is customary to acknowledge those who helped in various aspects of the design project.

9.1.5 Table of Contents

The Table of Contents must, as a minimum, include all chapter headings and subheadings up to three (3) levels and Appendices. Where applicable the Table of Contents should also include a List of Tables, List of Figures and List of Accompanying Material as well as a List of Abbreviations and Symbols. It is imperative that students draw up a hyperlinked Table of Contents, thus enabling examiners to easily navigate the digital version of the document.

9.1.6 Main Text [Maximum 10,000 words]

The following list provides an outline of the main chapters which may be included in the main text.

1. Introduction
2. Research and Problem Analysis
3. Design Methodology
4. Solution Synthesis
5. Solution Embodiment
6. Solution Testing and Analysis
7. Design Considerations
8. Detailed Design Solution
9. Evaluation of the Design Solution
10. Discussion of Lessons Learned
11. Conclusions

This list of chapters is intended to serve as a guideline. In agreement with their supervisor and depending on the nature of the project being undertaken, students may opt to adopt some elements of this structure while including/excluding other chapters.

9.1.7 References

All the sources cited in the text must be listed in the Reference section and vice versa. In-text references should be hyperlinked and using the APA reference style.

9.1.8 Appendices

Supporting material such as questionnaires, technical drawings, renderings, material selection charts, sketches and any other material which is not practical to include in the main text without breaking up the continuity of the report should be placed and organized in one or several appendices.

9.2 Project Report Formatting Style

9.2.1 Pagination

The Title page, Abstract, Author's Declaration, and Acknowledgement and dedication pages are counted but should not be numbered. Numbering starts with the Table of Contents (usually page v) in lower case Roman numerals. The rest of the dissertation should be numbered in a single sequence in Arabic numerals (1, 2, 3, 4, etc.) starting again with 1 on the first page of the main text. Illustrations, charts, diagrams and other graphics placed on a separate page within the text of the dissertation should be paginated as if they were pages of text.

9.2.2 Page Layout

The text and if possible, all appendices should be produced on an ISO A4 size paper which is printed on one side only. In the case of appendices, these can be produced on a paper size of up to ISO A3. It is strongly recommended that the main text is justified. Furthermore, when producing hard copies, the appendices should be folded if an ISO A3 paper is utilized. The page margins should be based according to the Table 3 below.

Table 3: Page margins

Page Margin	Size in cm
Top	2.45
Bottom	2.45
Right	2.45
Left	4.00

When typing the report students are encouraged to make use of:

- Heading styles which are used in the generation of the Table of Contents
- Auto number of headings, lists, figures, and tables
- Use of the 'Cross-Reference' feature in order to include references to tables and/or figures.
- Captions of Figures should be inserted underneath the figure using centre alignment.
- The caption of tables should be inserted above the table using left alignment.

9.2.3 Fonts and Headings

It is important that font styles and headings are used consistently throughout the project report. The following tables illustrate the font styles to be used throughout the various elements of the project report.

Normal Text	This is the main font used in throughout the main text
Font Style: Cambria or Arial (choose either one)	
Font Size: 12pt	
Line Spacing: 1.5	
Alignment: Justified	

Heading 1	This is used for chapter titles
Font Style: Cambria or Arial (choose either one) and Bold	
Font Size: 18pt	
Line Spacing: 2	
Alignment: Left	

Heading 2	This is used for sections
Font Style: Cambria or Arial (choose either one) and Bold	
Font Size: 14pt	
Line Spacing: 1.5	
Alignment: Left	

Heading 3	This is used for subsections
Font Style: Cambria or Arial (choose either one) and Bold	
Font Size: 13pt	
Line Spacing: 1.5	
Alignment: Left	

9.2.4 Line Spacing and Paragraph Formatting

One and a half (1.5) line spacing should be used throughout the text of the project report, with the following exceptions which should be single-line spaced.

- Table of Contents;
- Lists of Figures, List of Tables;
- Long quotations;
- Contents of tables;
- Footnotes and endnotes; and
- References – however, a blank line should be left between each reference.

It should be clear when a new paragraph is starting. This can be achieved via two possible methods:

Method 1: Indent the first line of each paragraph by 10 to 15 mm;

Method 2: Leave extra space between paragraphs, using the paragraph formatting features of Microsoft Word.

Students should choose either method and use it consistently throughout the entire project report.

9.2.5 Numbering and Bulleting

Arabic numerals should normally be used for numbering all sequences within a project report, with the exception of page numbers in the front pages before the main text as indicated in section 9.2.1.

To avoid excessive nesting depth, not more than 3 levels of headings should be used, with chapter headings being at level 1 and numbered sequentially as 1, 2, 3, etc. Level 2 headings (subheadings) should be numbered as 1.1, 1.2, 1.3, etc. while level 3 headings should be numbered as 1.1.1, 1.1.2, 1.1.3, etc. Hence the layout of the project report should look as follows.

1. Chapter A
2. Chapter B
2.1 Section B1
2.2 Section B2
2.2.1   Section B2.1
2.2.2   Section B2.2

If more than one appendix is included, these should be numbered separately and consecutively as Appendix 1, Appendix 2, etc. Tables and Figures within the text should either be numbered consecutively.

10.0 Submission of Deliverables

There are two (2) instances where the student submits the deliverables indicated in Figure 1. The first instance is prior to the oral examination. The second instance is after receiving feedback from the BoE following the oral examination. This second submission is termed as the final submission.

10.1 Submission for Examination

When submitted the project report and design solution for examinations students should present the following:

- Three (3) spiral-bound hard copies of their project report;
- A digital copy of their project report including any supplementary material. The digital copy of the assignment should be submitted via the UM VLE Turnitin.

Whenever possible, students should attempt to produce multiple copies of the developed solution. If this is not realistic due to economic and/or physical constraints, then the students should present the original/prototype to the Chairperson of FYPB. Students should ensure that they present photos, digital models of their original prototype to the other members of the examination board.

Upon submitting the project report and design solutions the BoE members initiate a review of the deliverables submitted. During this review period, the student should make the necessary preparations for the oral examination.

10.2 Oral Examination

During the examination, the student is required to present the project work carried out in front of a panel which is composed of the Board of Examiners. Students are encouraged to deliver the oral presentation by means of a PowerPoint presentation, however, students are encouraged to make use of additional media such as posters, the physical prototype, video clips, etc.

The purpose of the presentation is to outline the process of designing as well as key lessons learned. Following the presentation, the members of the board will ask questions pertaining to the work carried out by the student.

The total duration of the oral examination is 25 minutes. The structure of the oral examination should be as follows.

Oral Examination	Time in minutes
Student Presentation	10 to 15 minutes
Questioning by BoE members	10 to 15 minutes

Following the oral presentation, the BoE may suggest feedback for the student to implement. This feedback should be reflected in the final submission of the project report.

10.3 Final Submission

Following the examination student are to present:

- One (1) hardbound copy of the project report
- Digital copies of the project report which are uploaded via the UM VLE Turnitin facility. These should be presented in a *.pdf format.

10.3.1 Hard Bound Copy

For the hard-bound copy, the title of the project report should be stamped horizontally in clear lettering on the front cover. Beneath this, there should be the full name of the author, and the degree title B.Sc. (Hons.) TDT(Melit.) followed by the year of presentation.

The degree title B.Sc. (Hons.) TDT(Melit.) followed by the year of the presentation should also be stamped on the lower part of the spine.

10.3.2 Digital Copy

Students are also required to provide digital copies of their project report on USB flash drives. In addition, any material which cannot be printed e.g. computer programme, 3D model, etc. can be included on the USB flash drive. It should be underlined that the digital copy of the report should be in *.pdf format.

The project report should be labelled as follows *XXBScTDTYYY* where:

- **XX** is the year in which the project report and design prototype was submitted
- The next six letters are an abbreviation of the name of the course i.e. B.Sc. and Technical Design and Technology.
- **YYY** is the unique number allocated to each student.

Hence a student who was allocated the number 023 and submitted the project report in 2019 should label the digital copy of the project report as *19BScTDT023*.

Any supplementary material should be named using the same convention followed by a hyphen (-) and a two (2) digit number. For instance, a 3D CAD model would be labelled as *19BScTDT023-01.* This number should be used when making reference to the 3D CAD model in the project report.

11.0 References

American Psychological Association. (2010). Publication Manual of the APA. *APA 6th Edition*. https://doi.org/10.1006/mgme.2001.3260

Faculty of Education Research Ethics Committee. (2019). *The Research Ethics Review*. Retrieved from https://www.um.edu.mt/__data/assets/pdf_file/0008/409409/FRECGuidelines2ndedition.pdf

Neville, C. (2007). The complete guide to referencing and avoiding plagiarism. *Open University Press*. https://doi.org/10.1016/B978-0-08-100072-4.00007-1

Appendix A: Project Proposal Form

L-Università ta' Malta	**Bachelor of Science (Hons.) in Technical Design and Technology** **Form: F-01**

Part A

This section is to be completed by the student, principle supervisor and advisor as applicable.

Proposal Preference Ranking	

Provide a unique ranking from 1 to 3 to the proposed project. 1: Most Preferred – 3: Least Preferred

Section 1: Student Details	
1.1 Student Name & Surname	
1.2 Student ID	
1.3 Student e-mail	

Section 2: Supervisor Details			
2.1 Principal Supervisor Name			
2.2 Faculty/Department/Institute/Centre			
2.3 Principal Supervisor e-mail			
2.4 Post	Full Time ☐	Part Time ☐	TR Status ☐
2.5 I confirm that, as principal supervisor, I have discussed the proposed research with the student and endorse this Design and Manufacture (TET 3004) project proposal.	*Signature*		

Section 3: Advisor Details			
To be completed in case of an advisor			
3.1 Principal Advisor Name			
3.2 Faculty/Department/Institute/Centre			
3.3 Principal Supervisor e-mail			
3.4 Post	Full Time ☐	Part Time ☐	TR Status ☐
3.5 I confirm that, as advisor, I have discussed the proposed research with the student and endorse this Design and Manufacture (TET 3004) project proposal.	*Signature*		

Note: External advisors are required to submit short CV where applicable

Section 4: Proposal Details

4.1 *Project Title:*

4.2 *Project Description (250 words max)*

4.3 *Keywords*	
Indicate between 4 to 6 words which characterise your project	
Keyword 1:	
Keyword 2:	
Keyword 3:	
Keyword 4:	
Keyword 5:	
Keyword 6:	

Section 5: Project Resources

Tick which resources are foreseen to be used during the project.

Customer feedback, interviews, etc.	☐
Questionnaires	☐
Manufacturing of Prototypes	☐
3D CAD Modelling	☐
Programming Software	☐
Other resources *Indicate any additional resources not listed.*	☐ *(Please provide a brief explanation)*

Section 6: Student Endorsement

I declare that the information provided in this form accurate

6.2 I confirm that the information is accurate	*Student Signature*

Part B

This section is for office use.

Section 7: Ethical Clearance	
After receiving and reviewing the project proposal it is concluded that:	
The project requires ethical clearance from UREC	☐
The project does not require ethical clearance from UREC	☐

Section 8: Project Proposal Review Result	
Accepted	☐
Accepted with changes	☐
Rejected	☐

Explanation for Result

Appendix B: Downloadable Version of URECA

L-Università ta' Malta

University of Malta staff, students, or anyone else planning to carry out research under the auspices of the University, must complete this form. The UM may also consider requests for ethics and data protection review by External Applicants.

Ahead of completing this online form, please read carefully the University of Malta Research Code of Practice and the University of Malta Research Ethics Review Procedures. Any breach of the Research Code of Practice or untruthful replies in this form will be considered a serious disciplinary matter. It is advisable to download a full digital version of the form to familiarise yourself with its contents (https://www.um.edu.mt/urec/onlineforms). You are also advised to refer to the FAQs (https://www.um.edu.mt/urec/faq).

03 DEC 2019 *required*

Part 1: Applicant and project details

Applicant details
*1. Name and surname
*2. Applicant Status UM staff/UM student/Other
*3. Faculty (Faculty or institute, school or centre)
*4. Department (Name of department, institute, school or centre)
 5. If applicable: Principal Supervisor's name (Compulsory field for students).
 6. If applicable: Co-Supervisor's name
 7. If applicable: Course and Study-unit code (Compulsory field for students).
 8. If applicable: Student number (Compulsory field for students).

Project details
*9. Title of research project _____
*10. Research question/statement & method, in brief _____
*11. Will project involve collection of primary data from human participants? No (Proceed to Part 2. Self-Assessment) or Yes/Unsure (Please answer next question).

 12. If applicable: Explain primary data collection from human participants. Please explain a. salient characteristics (min-max participants, age, sex, other); b. how they will be recruited; c. what they will be required to do; d. duration; e. if inducements/rewards/compensation are offered; f. how participants may benefit.

Part 2: Self-assessment

In what follows, leave the box unmarked if your answer is "No", or if the section is not applicable. If you answer "Yes or Unsure" then your research proposal presents potential issues in the domain of research ethics and/or data protection. In the following section you will be asked to elaborate upon the specific issue/s you indicate, and you will need to seek FREC permission before data collection.

	Yes/Unsure
Human participants	
Skip questions 1-10 if your project does NOT involve primary data collection from human participants (or their tissue/samples)	
1. Risk of harm to participants: Are your participants at risk of harm? (Physical, psychological, legal, economic, social, etc.)	
2. Physical intervention: Does your research involve non-harmful physical intervention on participants which may raise ethical concerns in your discipline?	
3. Vulnerable participants: Do you include participants who, in your study or discipline, would be considered vulnerable (e.g. children, prisoners, persons with disability, substance abusers, or economically or educationally disadvantaged persons, or other).	
4. Identifiable participants: Are there participants in your research whose identity may be revealed in your research data, even though they have not given explicit consent to be so identified/attributed?	
5. Special Categories of Personal Data (SCPD): Do you plan to collect SCPD (sensitive personal data), which, for identifiable participants (in records, data and/or publication), reveals race or ethnic origin, political opinions, religious or philosophical beliefs, membership in a trade union, genetic or biometric data that may uniquely identify a natural person, health, sex life and/or sexual orientation?	
6. Human tissue/samples: Will your research involve the collection of human tissue/samples?	
7. Withheld info assent/consent: Do you plan to withhold information from potential participants regarding the nature of the research when you seek to obtain assent/consent?	
8. Opt-out consent/assent: Do you plan to employ opt-out method when obtaining consent/assent from potential participants?	
9. Deception in data generation: Do you plan to actively provide false/misleading information or passively withhold information during the process of data generation (e.g. experiments, use of placebos, scenarios, games)?	

1

10. Incidental findings: Could your research generate incidental findings that may need to be communicated to participants?	
Unpublished secondary data	
Skip questions 11-13 if your project does NOT involve use of unpublished secondary data.	
11. Human: Was the data collected from human participants?	
12. Animal: Was the data collected from animals?	
13. No written permission: Is written permission from the data controller of the original data still to be obtained?	
Animals	
Skip questions 14-16 if your project does NOT involve primary data collection from animals (non-human vertebrates and cephalopods) or their tissue/samples.	
14. Live animals, lasting harm: Does your research involve taking live animals out of their natural habitat for use in procedures or where such removal may cause the animals lasting harm?	
15. Live animals, harm: Is there a risk that your research causes harm to live animals?	
16. Dead animals, illegal: Does your research involve the use of dead animals (or their tissue/samples) that have not been acquired legally or from a legal source?	
General Considerations	
These questions are to be considered for all projects.	
17. Cooperating Institution: If you need permission from a cooperating institution, do you require your FREC's approval prior to approaching the institution?	
18. Risk to researcher/s: Does this research expose any members of the research team to any significant foreseeable risk that would require precautionary measures over and above those typically required in their line of work?	
19. Risk to environment: Is there significant foreseeable risk that your research can cause harm to the environment?	
20. Commercial sensitivity: Does your research make use of data that may be commercially sensitive?	
Other potential risks	
Other potential risks for research ethics and data projection may arise from conflict of interest; the harvest of social media data; the involvement of low income and/or lower middle income countries; the import and/or export of records, data, materials and specimens; the need for special permits/licences to employ specific constructs/tests; the researcher/s having a dual role; and/or the dual use/misuse of research, among other. Applicants are advised to refer to the FAQs in case of doubt (https://www.um.edu.mt/urec/faq).	
21. Other potential risks: Does your research run other potential ethical or data protection risks?	

Self-assessment outcome: Please examine your self-assessment checklist above. Option 1: If you marked NONE of the questions, then you may proceed to data collection without FREC permission. You must nonetheless submit the form to FREC for records and audit purposes. Option 2: If you marked ANY of the issues, then you will be asked to elaborate on (only) these issues in the next section, for FREC's review. You may NOT start your data collection until you receive FREC approval. Please take note of the numbers you marked before proceeding to detailed review.

No self-assessment issues ticked. Submitting to FREC for records. SKIP PART 3, GO TO SUBMISSION

Ticked one or more self-assessment issues. Submitting to FREC for review. PROCEED TO PART 3, DETAILED EVALUATION

Part 3: Detailed evaluation (ONLY PROJECTS WITH POTENTIAL ISSUES)
If you answered "Yes/Unsure", to any of the potential issues flagged in the self-assessment checklist, please elaborate on these issues for FREC's evaluation. Please SKIP all other sections.

For projects that involve primary data collection from human participants (or their tissue/samples)
1. Risk of harm to participants: Please explain: i. whether and how participants risk any harm (physical, psychological, legal economic or social) by participating in the research; ii. why such risks are unavoidable; iii. what safeguards you have taken to minimise the risk.
2. Physical intervention on participants: Please provide a brief risk assessment of each technique used and a brief overall risk assessment.
3. Vulnerable participants: Please explain: i. the nature of the vulnerability; ii. what safeguards will be taken to protect vulnerable participants (e.g. by not stigmatising participants, not putting undue pressure, implementing safeguards while processing consent, providing contact details for professional help should this be required, safeguarding privacy, providing compensation, etc. If participants are unable to give consent, please explain how you intend to obtain their assent; if this is not possible,- please explain why.
4. Identifiable participants: Please elaborate on: i. the nature of the records, their storage, security, traceability, identifiability of participants and access to research records; ii. how participants will be protected when disseminating results (e.g. pseudonyms, coding, making data attributable with consent); iii. plans for retention and destruction of the records.

2

5. Special Categories of Personal Data (sensitive personal data): Which of the following data categories are collected, if any? i. race and ethnic origin; ii. political opinions; iii. religious and philosophical beliefs; iv. trade union memberships; v. health status; vi. sex life or sexual orientation; vii. genetic information; viii. biometric data that may uniquely identify a natural person. Please describe.

6. Collection of human tissue/samples: Please elaborate on: i. the nature of materials and/or biological tissue/samples, their storage, security, traceability, identifiability, and who has access to them; ii. plans for retention and destruction.

7. Withholding information at consent/assent: Please explain: i. the nature of the information withheld; ii. why withholding information is necessary; iii. whether and how participants may be given the information at any point during the research.

8. Opt-out consent/assent: Please explain: i. the nature of the consent; ii. why opt-out is necessary; iii. how you will ensure that participants are able to make an informed choice concerning whether to participate or opt out.

9. Deception in data generation: Please explain: i. the nature of the deception; ii. why this is unavoidable and why you have rejected alternative methods of conducting research; iii. whether the information is likely to be significant to subjects; iv. what explanation for deception and debriefing you give to participants following their participation.

10. Incidental findings: Please elaborate on: i. the nature of potential incidental findings; ii. how such findings will be managed (participant consent to be informed, communication of information, etc.)

For projects that involve use of unpublished secondary data

11. Unpublished secondary data collected from human participants: Please indicate the nature of the data collected. In the case of data that has not been anonymised/coded and that could lead to the identification of persons, provide evidence that the research project from which the data has been generated was covered by data protection and ethics review (including participant consent for secondary use), or (if administrative data) evidence that the data controller had permission from subjects for secondary use of data and conformed to the requirements of the Data Protection Act and GDPR.

12. Unpublished secondary data collected from animals: Please indicate the nature of the data collected. If the source was a research project, provide evidence that the project was covered by ethics review

13. Unpublished secondary data (no written permission from data controller): Please elaborate.

For projects that involve primary data collection from animals (non-human vertebrates and cephalopods) or their tissue/samples

14. Lasting harm to animals out of natural habitat: Please inform the Joint FREC Animal Research Sectoral Subcommittee and provide further information based on their guidance.

15. Risk of harm to live animals: Please inform the Joint FREC Animal Research Sectoral Subcommittee and provide further information based on their guidance.

16. Use of non legal animals/tissue: Please inform the Joint FREC Animal Research Sectoral Subcommittee and provide further information based on their guidance.

General Considerations

17. Permission from cooperating institution: Please explain: i. how the cooperating institution will be contacted; ii. whether the approval of another Research Ethics Committee or Data Protection Office is required.

18. Risk to researcher/team: Please elaborate on: i. the nature of the risk; ii. why it is unavoidable; iii. the mitigating and/or compensating measures you plan to implement.

19. Risk of harm to environment: Please elaborate on: i. the nature of the risk of harm to the environment; ii. why it is unavoidable; iii. the mitigating and/or compensating measures you plan to implement.

20. Commercial sensitivity: Please elaborate on: i. the nature of the data; ii. how you plan to.safeguard sensitive data.

Other Risks

21a. Dual use and/or misuse: Please elaborate on: i. the nature of the risk of dual and/or misuse; ii. why this is unavoidable; iii. the mitigating and/or compensating measures you plan to implement.

21b. Conflict of Interest: Please elaborate on: i. the nature of the conflict of interest; ii. how you plan to guarantee the impartiality of the research process given such conflict.

21c. Dual role: Please elaborate on: i. the nature of the dual role; ii. how you plan to address issues that may arise, such as power imbalance, unwarranted surveillance, coercion of participants, exclusion of participants from other services, etc.

21d. Permission/license to use research tools: Please explain: i. how you satisfy such criteria; ii. how you will obtain permissions/licenses when required.

21e. Collaboration/data/material collection in low/lower-middle income country: Please elaborate on: i. the countries (of the researcher/s and the institution/s involved) and partners involved; ii. the resources, participants and materials involved; iii. whether and how you plan to implement capacity building measures, and if not, why not; iv. whether and how you plan to implement benefit sharing measures, and if not, why not.

21f. Import/export of records/data/materials/specimens: Please provide details on: i. the nature of the records, data and/or materials involved; ii. the countries involved; iii. legal and regulatory considerations; iv. licenses, permissions and/or safeguards necessary.

21g. Harvest of data from social media: Please provide details.

3

21e. Other considerations: Please provide details.

Part 4: Submission
You are now ready to submit your form to FREC.

*1. Which FREC are you submitting to?

Arts	Engineering	Media and Knowledge Sciences
Built Environment	Health Sciences	Medicine and Surgery
Dental Surgery	Information and Communication	Science
Economics, Management and Accountancy	Technology	Social Wellbeing
	Institute of Earth Systems	Theology
Education	Laws;	

*2. Attachments:
Please indicate which of the following materials you will be attaching. Failure to provide these, where relevant, risks delaying approval to proceed with the research. Materials should be saved to a zipped folder. Students may be required to produce their DRAFT letters of request ahead of sending to cooperating institutions and to obtain their supervisor's signature on consent and assent forms. *Please produce these materials in English and/or Maltese and/or any other relevant language (or equivalent text that may be communicated orally for those who do not read).

- Information and recruitment letter*
- Consent forms (adult participants)*
- Consent forms for legally responsible parents/guardians, in case of minors and/or adults unable to give consent*
- Assent forms in case of minors and/or adults unable to give consent*
- Data collection tools (interview questions, questionnaire etc.)
- Data management plan
- Data controller permission in case of use of unpublished secondary data

- Licence/permission to use research tools (e.g. constructs/tests)
- Any permits required for import or export of materials or data
- Letter granting institutional approval for access to participants
- Institutional approval for access to data
- Letter granting institutional approval from person directly responsible for participants
- Joint FREC Animal Research Sectoral Subcommittee guidance
- Other (please specify in remarks below)

3. Please feel free to add a cover note or any remarks to FREC:
If this is a re-submission of a Form to FREC, please include previous form reference number.
Please indicate if you require written approval for institutional/funding purposes.
Please include reference to project grant and/or any previous ethics/data protection approval of related parent project.
Please elaborate on any additional attachments you are providing.

*4. Declarations:
- o   I hereby confirm having read the University of Malta Research Code of Practice and the University of Malta Research Ethics Review Procedures.
- o   I hereby confirm that the answers to the questions above reflect the contents of the research proposal and that the information provided above is truthful.
- o   I hereby give consent to the University Research Ethics Committee to process my personal data for the purpose of evaluating my request, audit and other matters related to this application. I understand that I have a right of access to my personal data and to obtain the rectification, erasure or restriction of processing in accordance with data protection law and in particular the General Data Protection Regulation (EU 2016/679, repealing Directive 95/46/EC) and national legislation that implements and further specifies the relevant provisions of said Regulation.

*5. Applicant Signature (Write your full name here. By doing so and submitting this form you are effectively signing the declaration)
*6. Date of submission (Please insert date as ddmmyyyy – any other format will not be accepted)
*7. If applicable: Data collection start date (Please insert envisaged date of data collection as ddmmyyyy – any other format will not be accepted).
*8. E-mail address (Applicant) Please use UM account if available. Check this entry carefully, to ensure you receive a copy of your application form.
 9. If applicable: E-mail address (Principal Supervisor) Please use UM account if available.
10. Conclude:
You are now ready to submit. Once you do, your data will be stored for audit purposes. Please make sure you hit SUBMIT after you proceed to Submission. [Start over/Go back to Self-Assessment Checklist/Proceed to Submission]

1. You will shortly receive a PDF version of your form together with your unique ID. You may return to your form and edit it. To do this you MUST keep a copy of the URL. To obtain your URL, please click on the link below. Each time you edit the form, you will receive a PDF.
2. Once you are satisfied with the form, please submit the final version to FREC indicating whether you are submitting FOR RECORDS or FOR REVIEW and attaching the zipped folder of materials.

4

Template Title: URN_Date_Name | Submitted for FREC RECORDS OR Submitted for FREC REVIEW

3. In all instances, students are to CC their supervisor who must confirm that the form reflects the contents of the research proposal, which abides by the University of Malta Research Code of Practice. Until this confirmation, the submission to FREC will remain pending.
4. Should FREC require changes you may be asked to edit the submitted form or to start a new one altogether.

5

Approved Project Title

Author Name and Surname

A project report submitted to the Faculty of education in part fulfilment of the requirements of the degree of Bachelor of Science (Honours) in Technical Design and Technology

Month, Year

Appendix D: Logbook

L-Università ta' Malta
Faculty of Education

Design & Manufacture Final Year Project

Stud Unit Code: TET3004

LOGBOOK

PURPOSE

- To keep a record of the student's meetings with his or her supervisors, whether face-to-face or otherwise;
- To clearly identify the outcomes of each meeting and the actions that are required on the part of the students;
- To provide evidence of that process to the Boards of Examiners.

STUDENT'S RESPONSIBILITY

It is the responsibility of the student to keep this log book up to date. The student is expected to comply with the supervisors' suggestions and recommendations as noted by the student in the Logbook and approved by the supervisors. With the supervisors' permission, the template proposed below can be modified in order to render it more fit for purpose.

THE LOGBOOK HAS TO BE SUBMITTED TOGETHER WITH THE PROJECT REPORT

The Faculty of Education reserves the right not to accept the project report for examination if the Logbook is not properly documented. Email or other records of correspondence between principal supervisor, co-supervisor and student can also be attached to the logbook.

Dissertation Title	
Dissertation Number	
Student	
ID Card Number	
Date when project proposal was approved by the Board	
Principal Supervisor	
Co-Supervisor	
Date when submission is due	
Amendments to the original proposal approved by the Board (please insert date and attach copy of official approval by the board	

Date of Meeting:	
Meeting Number	
Themes/Topics/Issues Discussed:	

Matters Discussed

Recommendations and Agreed Action	Time Frame

_____   _____

Student Signature   Principal Supervisor/ Co-Supervisor
                                                                   Signature

This page should be printed and filled in at every meeting with your Principal Supervisor and/or Co-Supervisor.

Date of Meeting:	
Meeting Number	
Themes/Topics/Issues Discussed:	

Matters Discussed

.

Recommendations and Agreed Action	Time Frame

_____   _____

Student Signature   Principal Supervisor/ Co-Supervisor
Signature

This page should be printed and filled in at every meeting with your Principal Supervisor and/or Co-Supervisor.

Appendix E: Declaration of Authenticity Form

L-Università ta' Malta

FACULTY/INSTITUTE/CENTRE/SCHOOL_____

DECLARATIONS BY UNDERGRADUATE STUDENTS

Student's Code _____

Student's Name & Surname _____

Course _____

Title of Long Essay/Dissertation

_____

_____

_____

Word Count _____

(a) Authenticity of Long Essay/Dissertation

I hereby declare that I am the legitimate author of this Long Essay/Dissertation and that it is my original work.

No portion of this work has been submitted in support of an application for another degree or qualification of this or any other university or institution of higher education.

I hold the University of Malta harmless against any third party claims with regard to copyright violation, breach of confidentiality, defamation and any other third party right infringement.

(b) Research Code of Practice and Ethics Review Procedures

I declare that I have abided by the University's Research Ethics Review Procedures. Research Ethics & Data Protection form code _____.

_____   _____
Signature of Student   Name of Student (in Caps)

_____