**St Mary’s University**

Faculty of Informatics

**Senior Project Guideline**

**Aug 2022**

# **Introduction**

The senior Project is designed to be the culmination of each student’s academic experience at St. Mary’s University. The project is a vehicle for seniors to demonstrate autonomy, complexity, and awareness. An education at St. Mary’s University has many facets, from the basic facts of subject matter, to critical thinking, problem solving, and attaining lifelong learning skills. The senior project is a measurement of those lifelong skills that are important to attaining a quality life and a desire for continued learning.

Senior project is a work of focused research intended to advance a student's particular interest in a topic or issue, starting with the formulation of a research design, determining relevant sources, carrying out logical analysis till presenting the research results in a scholarly format. The topic or issue is chosen by the student in close collaboration with a faculty member, and in the student's area of study. The student selects a concept / question to address; collects data and information deemed relevant to the question raised, determines a methodology to analyze the data and the information; performs the necessary analysis on the results obtained and develop a system. Finally arrives at studied conclusions. The senior project is a capstone requirement for the student's undergraduate education experience. It demonstrates the student's ability to conduct research by drawing on knowledge gained throughout the period of undergraduate education in various areas of study. Hence, it is typical for a senior project in developing a software, web app, mobile app, AI and machine language with particular emphasis on one of these areas.

Students in the Faculty Informatics at St. Mary’s University are required to complete a senior project in their senior year in partial fulfillment of the requirements of a Bachelor Degree. The senior project is considered complete once the student presents the results and implementing a full functioning system. The presentation manner or mode of the project must be managed and planned by the department.

**The Four Main Components of the Senior Project**

1. Organization and Writing (Project Proposal),
2. Well prepared project document (document project),
3. Design and implementation (Code project),
4. Oral Presentation/Portfolio (Presentation/Portfolio).

**Organization and Writing (Project Proposal)**

Each student will develop a project proposal during the junior year in advisory will submit at graduating year of first semester. The proposal will include an overview of the project and identify measurable goals. The proposal will identify the area of focus and the purpose of the project and illustrate how the project connects to his/her academics, community service, and/or career. Times New Roman 12 pt., double spaced and MLA Format should be considered.

**Well prepared project document (document project)**

The project is a creation based on choosing, designing, creating, investigating, building, learning, producing, developing, etc. a product, project, or service related to the student’s interest while connecting it to academics, community service, and/or career. Times New Roman 12 pt, double spaced and MLA Format should be considered.

**Design and implementation (Code project)**

A full implemented code is developed guided by the document project. A tangible creation based on choosing, designing, and developing an item related to your field of study must be impactful and relevant.

**Oral Presentation/Portfolio (Presentation/Portfolio)**

A portfolio will be compiled that includes all paperwork completed while working on the senior project. The student will provide presentations by participating in Open House and senior project rooms. Each student will present a formal presentation of the project before examiners.

# **Objective of guideline**

The senior project is usually require multidisciplinary or interdisciplinary study and rules to be followed. The objective of this guideline is to facilitate and guide students and Instructors on senior project that are to refine communication skills, as well as to develop research and information retrieval skills, and other related academic competencies.

# **Document quality**

## **Grading**

After the oral, students will be notified whether or not have passed.  No letter grade will be given at this point.  At the discretion of the director, you may receive written comments or be encouraged to meet with the director at a later date to discuss the project.  After you have left the room, the board members will discuss the grade, which will be made known to you only when you receive final grades for the semester.

Grades should be based on the following guidelines:

* 50% of the grade on a written product, per writing-intensive guidelines by examiners
* 40% of the grade on a written product, per writing-intensive guidelines by examiners,
* 10% of the grade on the oral presentation.

The grade will be given by the advisor and examiners.

The student must pass with a 65% or higher and complete each component​ of the senior project to receive the credit needed for graduation.

If the paper who got A+ grade on the on the final paper, the paper will be selected to RAKMO.

The final paper must have at least 3 Primary Sources and 2 Secondary Sources.

## **Documentation Style**

Technical note: Before writing anything in the senior manuscript, you have to perform the following steps: **Please follow current MLA (Modern Language Association) format.**

* Using Microsoft Word 2010 (preferable). Click on “File” on your toolbar
* Select and Click on “Page Setup”
* Select “Margins” and set up the margins as required in this manuscript, that is; Left Margin at 1.5 inches, Right Margin at 1 inch, Top Margin at 1 inch, and Bottom Margin at 1 inch.
* Next select “Paper” and choose A4 paper size.
* Then go back to your tool bar and select “Format” and click on “Paragraph” and select 1.5 line spacing.

**The manuscript is composed of four main sections:**

**Section One**

It consists of the preliminary pages inserted prior to chapter one of your manuscript.

These pages are called the first pages and these are numbered using Roman numbers:

* Title Page (Not numbered)
* Blank Page (Not numbered)
* Signature Page (Numbered as ii)
* Table of Contents (All material which follow this page should be listed)
* Page or more for List of Figures
* Page or more for List of Tables
* Page or more for List of Symbols and/or Abbreviations
* Acknowledgment Page
* Abstract (no more than 300 words but not less than 210 words)

**Section Two**

It consists of the text or the body of the manuscript; and these pages are numbered using Indian numbers:

* Text
* Introduction
* Main body, usually consists of well-defined chapters. (Template is provided in the Appendix).

**Section Three**

It consists of the references page(s). Indian numbers are also used:

* References

**Section Four**

It consists of the Appendices (if any). Indian numbers are also used.

**Paper Quality and Size**

* Use A4 White paper.
* Oversized material (drawings, official papers, Gantt charts, questionnaires, and so forth are recommended to be photo-reduced to fit onto A4 pages). However, you should ensure clarity, readability, high-contrast for copying, and within the required margins.
* Diskettes and CD-ROMs will be used, and should be attached to the inside of the final cover in an envelope specially designed for that purpose.

**Table and Exhibit Notes**

Number tables and exhibits consecutively as these appear in each chapter. Use only numbers, do not use 5a, 5b, etc. Tables and exhibit’s numbers and titles should be placed at the top of the tables and exhibits.

* Place tables and exhibits close to where they are first mentioned in your text, but do not split a table and exhibit across pages.
* Label each table and exhibit beginning with the table and exhibit number followed by a description of the contents.
* Each row and column must have a heading. Abbreviations and symbols (e.g., “%” or “nos.”) may be used.
* Use uniform units of measurement where needed.
* You may use both single space and double space within a table and exhibit to achieve clarity

## **Issues of Grammar, Punctuation, and Mechanics**

The prose in the senior project is expected to be mechanically correct in all respects (grammar, punctuation, spelling, etc.), and to be of consistent quality throughout.  The project must be proofread scrupulously.  There will be no opportunity for revision or correction of errors after the project is submitted.  Please be aware that projects suffering from a significant number of errors will be graded accordingly.

## **Length**

While there is no required length, it is generally expected that projects will be 40-100 pages in length, not including documentation.

## **Plagiarism**

Plagiarism will not be tolerated in the senior project.  Plagiarism includes direct and indirect uncited use of any words or ideas other than your own.  Using the words or ideas of another person without proper citation is a crime.  All acts of plagiarism will be taken seriously, and all incidents will be reported to the department.

## **Policies on Extensions and on Lateness**

### **Extensions**

An important aspect of writing the senior project is learning to adhere to a strict deadline.  The students must make every effort to meet the deadline.  If genuine need for an extension of the due date should arise, they must petition members of senior project board in writing.  After receiving a petition, the department will review and provide immediate response to the students.  Petitioners will be informed of action taken as speedily as possible.  No second petition is permissible.

### **Lateness**

Late projects will be handled in the following manner:

* a senior project submitted after the deadline will be penalized by one whole grade on the college grade scale after the board has determined the final grade for the project (for example from “A” to “B” or “C” to “D”).
* If the senior project is not turned in by Tuesday at 4 p.m. following the Friday deadline, it will not be accepted.
* The lowest final grade after penalties have been imposed shall be no lower than a D, unless the quality of the project (according to the judgment of the committee) merits an F.

## **Expected output**

* Organization and Writing (Project Proposal)
* A well written project related to a particular problem or issue. The project shouldn’t documented with previously done by other students.
* Oral presentations. The students are expected to have presentation twice in each semester.

## **Responsibility of students / group members**

**Students completing a senior project should strive to the following points:-**

* Senior project will be undertaken when a student has reached senior standing in terms of course offer.
* Students must complete all prerequisites before registering for senior project courses unless exceptions are given by the discipline.
* With the assistance of department, students should begin preparing the senior project proposals during the first semester prior to enrollment in the course,
* Students must have the approval and signature of their senior project by the department prior to proceed. If the title of the project requested is rejected by the department, the students should change the proposal and resubmit for the approval.
* Students can make a group for one senior project with maximum 3 students.
* Although Choosing a title is under a student choice that will be interesting and worthwhile and will extend your knowledge in your chosen field, should gain a thorough understanding of their title;
* Students must submit a proposal of the senior project to the department.
* Senior Project students and advisor should hold a minimum of 12 structured meetings during a semester.
* Students should work closely with advisor during all phases of the senior project. Responsibility for completion of the work rests with the students.
* The students should visit St. Mary’s University’s library and see what graduated students had chosen as topics in their completed projects. Such a review would provide an idea of what may be chosen.
* The student should aware about the plagiarism rules and finally signed the agreement and attached at the Annex of the document section. (Reference the appendix in this packet for more clarity.) A student who is found Plagiarizing will earn “F” grade on the project, and will be served an “Academic Warning”.
* The final document will be submitted to the department after the advisor approved and signed the document.
* Students are asked to complete an initial proposal by the 2nd week of first semester in their graduating year and submit it to the Department.
* During their senior year, they must also submit a more comprehensive project document (deadlines for the full document will be posted by the department after final exam of the 2nd semester in which the project is being done for a 2 semester project). Templates for each phase of the senior project will be available on the department board and Appendix. The following points will give an overview of each document preparation here:

1. **Phase One-Proposal**: The student is asked to describe the type of project, the topic, and the context (introduction, statement of the problem, objectives, significance of the project, scope and limitation, methodology, etc.) and also identify the group member(s) with whom they will work.
2. **Phase Two-Project:** The student is asked to provide a detail description of the project, a timeline for the project, methodology used, design and implementation, reading list or annotated bibliography (choice at advisor’s discretion), working project, etc.

**Students expects to discuss the following issues with advisors**

1. Contact advisor directly when they receive the confirmation
2. Arrange to meet with their advisor, at least weekly.
3. Discuss schedule on weekly tasks,
4. If materials (hardware and software), participants are involved, discuss how to prepare a proposal and make sure it is submitted to the department in a timely fashion,
5. Discuss when drafts are due and what type of feedback they would like on drafts.
6. Discuss grading—what aspects of the process will be graded?
7. Discuss final presentation—how the presentation PowerPoint should prepare, on the dressing code, on how they will present their presentations.

## **Responsibility of the department**

**The department should fulfil the following points:-**

* Students and department should agree on
* A well-defined set of goals and objectives,
* Scheduled meeting times, and
* Section and/or draft due dates before beginning work on the projects.
* Department should facilitate senior project courses should be on the onset of assigned advisors.
* The department should assigned examiners for specific project and post a schedule for oral presentation before a week for Advisors and examiners and before a day for students.
* Senior Project course need to be mentored by a senior faculty member from their related experience.
* The department will facilitate orientation for graduating students on senior project before the semester start

# **Appendix one:  Cover page**



**COMPUTER SCIENSE DEPARTEMENT**

**TITLE HERE**

**A STUDY PRESENTED AS A PARTIAL FULFILMENT OF THE REQUIREMNT FOR BSC DEGREE IN COMPUTER SCIENSE**

**Done by:**

**GROUP MEMBERS**

DATE

SMU

ADDIS ABABA

Advisor: \_\_\_\_\_\_\_\_

**LOGO AND TITLE**

# **APPENDIX TWO: Signature page**

**Authentication of our work**

**Advisee’s Declaration**

We the undersigned declare that this senior project paper is our original work. Prepared under the guidance of \_\_\_\_\_\_\_. All sources of materials used for the manuscript have been duly acknowledged.

Name: -

Name: -

Name: -

Date of Submission \_\_\_\_\_\_\_\_\_\_

**Advisor's Declaration**

The paper has been submitted for the examination with my approval as the University advisor

Name:

Signature:

Date: - \_\_\_\_\_\_\_\_\_\_\_\_

APPROVED BY THE COMMITTEE

CHAIR PERSON SIGNATURE DATE

ADVISOR SIGNATURE DATE

EXAMINOR SIGNATURE DATE

# **APPENDIX THREE: Proposal example**

**Senior Design Project Proposal**

|  |  |  |
| --- | --- | --- |
| **Group members** | **ID** | **Full Name** |
|  |  |
|  |  |
|  |  |
| **Title** |  | |
| **Type** | Software Web App Development Mobile App development  AI Machine learning Data mining Other | |
| **Description** | 1. Introduction 2. Research question 3. Objectives 4. Scope and limitation 5. methodology | |
| **Required background** | Mobile development java quantitative data analysis html    php desktop App css javascript JSON | |
| **Required resource (hardware and software)** | Android or ios devices server | |
| **Conclusion** |  | |

# **APPENDIX FOUR: Senior project document template**

**Contents**

**CHAPTER ONE**

1. Introduction
   1. Background of the Organization
   2. Statement of the problem
   3. Objectives of the project
      1. General objectives
      2. Specific objectives
   4. Feasibility study
   5. Significance of the project
   6. Beneficiaries of the project
   7. Methodology
      1. Data collection
      2. System design and analysis tools
      3. System Development tools
   8. Scope and limitation of the project
      1. Scope of the project
      2. Limitation of the project
   9. Risk, assumption and constraints
      1. Risk
      2. Risk assumption
      3. Constraints
   10. Organization of the project
   11. Budget allocation
   12. Work plan

**CHAPTER TWO**

1. Business area analysis and requirement definition
   1. Introduction
   2. Business area analysis

2.2.1 Detailed analysis

2.2.2. Current system

2.2.3. Players of the existing system

2.2.4. Proposed system

2.2.5. Forms and reports used

2.3. Requirement definition

2.3.1. Functional requirement

2.3.2. Essential Use case Modeling

2.3.3. Actor description

2.3.4. Essential Use Case Description

2.3.5. Essential Use Interface Prototyping

2.3.6. Collaboration modeling

2.3.7. Nonfunctional Requirements

**CHAPTER THREE**

1. System modeling
   1. Introduction
   2. System Use Case
   3. UI Identification
   4. Business Rules Identification
   5. Actor Identification
   6. Use Case Diagram
   7. Use Case Description
   8. Sequence diagramming
   9. Activity Diagramming
   10. Class diagram
   11. State chart diagram
   12. User interface Prototyping

**CHAPTER FOUR**

1. System design
   1. Database normalization
      1. First normal form
      2. Second normal form
      3. Third normal form
   2. Database table structure
   3. Deployment diagram
   4. Interface design
   5. High fidelity prototype

[**CHAPTER FIVE**](#_Toc83375734)

5. [Implementation](#_Toc83375735)

[5.1 Sample Code](#_Toc83375736)

5.2 [Testing and Testing Procedure](#_Toc83375737)

[5.2.1 Unit Testing](#_Toc83375738)

[5.2.2 Integration Testing](#_Toc83375739)

[5.2.3 System Testing](#_Toc83375740)

**CHAPTER SIX**

6. Conclusion and recommendation

6.1 Conclusion

6.2 Recommendation

**REFERENCE**

**APPENDIX**

**APPENDIX FIVE: PowerPoint template**

1. Introduction
2. Background
3. Statement of the problem
4. Objectives
5. Functional and non-functional requirement
6. Prototype and design
7. Development/ Implementation

**APPENDIX SIX: Plagiarism agreement**

Plagiarism Contract Plagiarism can be defined as submitting another person’s ideas, words, data, or images as your own. The Webster dictionary defines plagiarism as stealing and passing off the ideas or words of another as one's own or to use another's production without crediting the source. Plagiarism is a form of academic dishonesty and it is the same as stealing. It is important for you to understand that plagiarism has been committed if you have done any of the following:

● used phrases, quotes, or ideas not your own or copied and pasted from a document or source without using quotes and proper citation.

● paraphrased the work of another even if you have changed the wording or language

● used facts or data not considered to be common knowledge

● submitted a paper written for another class

● submitted a paper as your own (even though you may have paid for it) from a service or agency that wrote the paper or provided it for you

● submitted a paper that another person has written for you and used it as your own (even though the person may have given you permission to use it)

● used an interview conducted by another person or entity and passed it off as your own. Plagiarism not only encompasses written work, but also applies to computer data, visual arts, performing arts, music, and videos.

It is important that the integrity of the St.Mary’s University senior project process be protected from academic dishonesty. Academic dishonesty devalues the hard work and time students and staff have put into the senior project experience. Even inadvertent omission of a citation or reference is considered plagiarism. At a minimum, inadvertent omission of a citation can bring your integrity and character into question. Because of this, it is important to ask your teacher if you are unsure if an acknowledgement or citation is needed. Plagiarism will result in a zero for the senior project component and a mandatory redo of the component due within ten calendar days.

It may also result in further administrative disciplinary action. I, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ am aware of the serious nature of plagiarism and have read and understand what plagiarism is and its consequences. I will not use anyone else’s ideas, words or products as my own without proper acknowledgement as described in the Senior Project guidelines. Student

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date:\_\_\_\_\_\_\_\_\_\_\_\_\_

**APPENDIX SIX: Evaluation format (by advisor and examiners)**