AUGUSTA UNIVERSITY

CAPSTONE PROPOSAL (SAMPLE TEMPLATE)
Spring/Fall 20XX

Project Title:

Sub-description if appropriate

Mentor:
First Last, Title

Title
Department / Organization

website:
Telephone:
Email:

Motivation for the Project (5-7 sentences)

The real-world problem is ABC. This problem is important because…

Overall Goal and Deliverables (5-7 sentences)

The overall goal of the project is to develop software that does ABC. Over the course of the semester, the team will need to deliver a software package in the form of source files/an executable/an API/etc., a two-page instruction manual, and a demonstration to the client.

Project Objectives (3-5 High-level objectives)

1. Make use of your knowledge of an API to build an integrated end-user application.
2. Develop both a GUI and database with which to facilitate user interaction and store data.
3. Implement your design on a web-based system that is to be hosted on a remote server and accessed by 200 users per day.
4. Load test your application and ensure there are no bottlenecks.
4. Depending on the progress made, you will have the opportunity to co-author abstracts, posters, or other scholarly publications.

Part 1 (Sample): Set up, design, and build software (Technical goal #1)

For this part of the project, you will **use plugin ABC/toolset DEF/API XYZ/etc.**. Detailed instructions and design requirements follow:

(Example for a virtual reality project follows. Please modify this to fit your project content.)

Virtual Reality:

- To use the VR Headset, you will need to install and **log in to SteamVR**, which is part of Steam, a client for using a variety of software. Steam and SteamVR should already be installed on the development PC that you will receive shortly.
- To get things running, you will need to set up the device's base stations and run a **room calibration**. Detailed Instructions for setting up and calibrating the VR headset can be found here: https://support.steampowered.com/kb_article.php?ref=2001-UXCM-4439
- Test to make sure you can use the VR headset.
- Integrate VR into Unity, which has an easy interface for using Virtual Reality. Tutorial here: https://unity3d.com/learn/tutorials/topics/xr/getting-started-vr-development.
  - Note that this very simple and should only take you one or two hours, if that .

Unity:

- The interface should be built in Unity 3D. The software (Free personal licenses are available) can be found here: https://unity3d.com/.

- A **very useful tutorial** to get started in Unity and teach you about the game elements can be found here: https://unity3d.com/learn/tutorials/s/roll-ball-tutorial.

Part 2 (Sample): Develop the deficit simulation and two new Impairments (Technical goal #2)

Eye Tracking Requirement

- The Scotoma (or other impairment) must follow the eyes of the user

Project Summary Visual Deficit Simulation:

- A **template** of last year's macular degeneration application (built by the former capstone group) will be provided as a reference.
- You will need to consult with the faculty from the Physical Diagnosis once every three weeks to verify the accuracy of your simulation and confirm that the simulation meets their needs.

Your specific tasks for this project will be to:

1. **Familiarize yourselves with Unity** and last year's assets for the medication self-administration task.
2. A) **Integrate eye tracking** so that the scotoma (black spots) shown in the macular degeneration simulation correspond to eye movement, not head movement.
   B) Develop **a second and possibly third visual deficit** (cataracts, mono-vision, color blindness, glaucoma, etc.) and apply it to the medication task.
3. **Build a Graphical User Interface (GUI)** to allow clinicians to control each task and select a desired deficit.
4. Update the data-output feature to include any updated information (e.g. current deficit)
5. Work with the PT staff to **integrate the application** into the medical students' curriculum

Your GUI should allow the administrator of the simulation to:

1. **Start and stop the simulation**
2. **Change the visual deficit** from the current deficit to another (e.g. from scotoma to glaucoma)

Since this application will be integrated for real-world use, your system must be:

1. **User-friendly** for the PT staff administering the simulation
2. **Maintainable**, i.e. **modular**, **well-documented**, and **understandable** so that future students can maintain and add to your project