

Governor's STEM Academy Final Design Project Overview and Expectations 2022-2023

Project Description

This project constitutes the culmination of four years of STEM education in the Landstown High School Governor's STEM Academy. Students will bring together their knowledge towards the completion of a "research and design project". Some of the skills acquired by students, in previous academy courses, fall in the traditional areas of Engineering Design, Business/IT, and Marketing. However, some skills, not directly technical in nature, are required to have a successful career. These include: leadership skills, team-oriented mentality, problem solving, project planning and control, management and writing skills, etc.

It is assumed that a senior enrolled in the academy will have mastered all the skills within the courses in which they were enrolled. **The purpose of the Academy Final Design Project is to allow the student to draw from all these skills and apply them towards the design and implementation of a "product"**. This "product" is to be in the form of a planning, design and construction of a "Major Project". These activities are designed to afford the students an opportunity to experience team-based design under conditions that closely resemble those that will be encountered in industry. Students must develop and sharpen skills in team organization, time management, self-discipline, and technical writing, in order to be successful in this course. An important goal of this course is to expose students to a 'hands-on' experience in which they have to specify, design, and produce a full-system beginning from relatively ill-posed needs as stated by a 'customer'. This objective can be accomplished while working as an individual or a team.

Some of the 'non-technical' areas that have been a part of your academy education are:

- Leadership skills
- Team organization and motivation
- Interpersonal skills applied within the design team
- Technical writing (specifications, proposals, reports, online documents, etc.)
- Presentation skills
- Professionalism and ethics
- Scheduling and budgeting
- Personal time management
- Project planning, work breakdown structure, and design record-keeping
- Identifying customer needs and needs assessment
- Concept generation and selection (prototyping)
- Preparing a design, with documentation
- Problem formulation and application of engineering and IT disciplines to design components

This design project is demanding in terms of hours needed to complete tasks, self-motivation, team dynamics, and time management skills. Students will be expected to be self-starters, and be able to follow instructions and time-lines as established by the Academy Coordinator, and the advisor.

Evaluation/Grading

Academy seniors will be enrolled in an Independent Study course where they will earn high school credit for completion of their senior design project. The evaluator of the Academy Final Design Project will occur within the academy senior elective course with their academy senior teacher as the assigned advisor teacher on their Independent Study. Students advisors will report progress of their project through Synergy. Rubrics will be utilized throughout the process to assess progress and the final product. All required documents and information will be housed in the students assigned **Independent Study Canvas Course**.

Advisor

- Academy senior teacher
- Check-in with your teacher

Project Topic

- Senior project topics should reflect the students' academy strand and pathway
- Groups can go deeper into a subfield that surrounds their pathway

Grading

- Synergy - enrolled in an Independent Study with Senior academy teacher
- (25%) Check-in to show progress and receive feedback
- (75%) Submission of Documentation

Groups

- Students are not permitted to create groups across courses
- Groups include 2-3 students
- Students may work individually based on their request

Deliverables throughout the YearProject Proposal (One-Page)

- Students (each group) are required to formulate a one-page summary of their project
- Three submissions of the one-page summary will occur over the Fall
- Students project summary submissions will be reviewed and given feedback
- Project Proposals must follow the required format with only three sections:

Overview: The overview includes a description of the activity that is being proposed and a statement of objectives and methods to be employed.

Intellectual Merit: The statement on intellectual merit should describe the potential of the proposed activity to advance knowledge

Broader Impacts: The statement on broader impacts should describe the potential of the proposed activity to benefit society and contribute to the achievement of specific, desired societal outcomes.

Poster Session

- During the school day
- Classes will sign-up to come through and see your progress
- Not finished product; update of where you are
- Visual can be used for final presentation

Presentations

- Conference style presentations
- After school
- Professional dress
- 7-10 minutes
- Central office, experts in the field invited, parents

Technical Paper

- Formatting guidelines
- Required sections (Title page, abstract, introduction, body, etc.)
- Reflection

Student Conduct

Seniors are expected to meet the project deadlines and attend check-in meetings with their advisors monthly. *Students are responsible for preparing to present their progress at the check-in meetings.* All expectations, guidelines, rules and regulations outlined in the student handbook/agenda and the student code of conduct will be adhered to. Each individual must demonstrate responsibility for all tools, materials and computers, show initiative, respect co-workers and teachers,

and follow all safety rules. Students will follow all the rules and regulations pertaining to the use of the computers within the classroom.

Project Fee

In meeting the goal of increasing knowledge and skill for all students, a variety of materials and supplies will be needed for this class. Since students will be planning and designing a "Senior Project" materials may be needed. **The student will be responsible for purchasing all materials and supplies needed for their approved "Senior Project".**

Estimated Timeline

1. Submit Google Form Pre-Proposal Idea - **due September 28th**
2. Parent Acknowledgement Form - **due October 14th**
3. Proposal One-Page Summary Draft 1 - **due October 14th**
4. Proposal One-Page Summary Draft 2 - **due November 3rd**
5. Proposal One-Page Summary Final - **due December 5th**
6. Poster Session - **early March**
7. Presentation - **April**
8. Technical Paper - **May**

Please return this page signed to your academy senior advisor by October 14th.

Acknowledgement of Academy Final Design Project Policies

2022-2023

I HAVE READ AND DISCUSSED THE OUTLINE, PROCEDURES AND RULES. I WILL ADHERE TO THEM IN ORDER TO SUCCEED IN MY ACADEMY FINAL DESIGN PROJECT. I ALSO UNDERSTAND THAT IN ORDER TO SATISFACTORILY COMPLETE THIS DESIGN PROJECT, I MUST COMPLETE ALL ASSIGNMENTS AND STATUS UPDATES, ON TIME AND WITHIN THE APPROVED GUIDELINES.

I UNDERSTAND THE EXPECTATIONS AND TIMELINES ASSOCIATED WITH THE ACADEMY FINAL DESIGN PROJECT. I UNDERSTAND THAT FAILURE TO MEET DEADLINES AND REQUIREMENTS WILL RESULT IN A FAILING GRADE FOR THE ACADEMY FINAL DESIGN PROJECT.

Student's Name

Date

MY CHILD HAS INFORMED ME OF THE OUTLINE, PROCEDURES, GENERAL RULES, PROJECT TIMELINES, ESTIMATED PROJECT COST AND SAFETY RULES THAT HAVE BEEN SET FORTH BY MRS. WHITE.

Parents/Guardians Signature