

## COVER PAGE

### PROJECT INFORMATION

Please complete the fields below with information regarding your project.

**Project Title** Design Team Sustainability Internships

**Brief Description** Fund McGill Design Teams to host summer interns who will explore projects focused on sustainability.

**Total Estimated Project Budget** \$19,380      **Amount Requested from SPF** \$10,000

**Campus(es) Impacted**  Downtown  Macdonald  Gault Nature Reserve  Other \_\_\_\_\_

### CONTACT INFORMATION

#### Project Leader

*This person must be a current McGill University student, administrative staff, or academic staff.*

Name	<u>Aidan Gerkis</u>	Affiliation	<u>Undergraduate</u>
Email	<u>dt.director@mcgilleus.ca</u>	Campus	<u>Downtown</u>
Faculty/Unit/Organization	<u>Engineering Undergraduate Society of McGill University (EUS)</u>		

#### Project Team Members

*The SPF encourages you to be inclusive, collaborative (especially between staff and students), diverse, and interdisciplinary when possible. To list more members, please complete a second cover page. You may email it to [SPF Staff](#) to include with your application.*

Name	<u>Owen Quinn</u>	Affiliation	<u>Undergraduate</u>
Email	<u>vpstudentlife@mcgilleus.ca</u>	Faculty/Unit/Organization	<u>EUS</u>
Name	_____	Affiliation	<u>Choose one.</u>
Email	_____	Faculty/Unit/Organization	_____
Name	_____	Affiliation	<u>Choose one.</u>
Email	_____	Faculty/Unit/Organization	_____
Name	_____	Affiliation	<u>Choose one.</u>
Email	_____	Faculty/Unit/Organization	_____
Name	_____	Affiliation	<u>Choose one.</u>
Email	_____	Faculty/Unit/Organization	_____

### SUBMISSION INFORMATION

In line with the [SPF Eligibility Criteria](#), our team certifies that this project takes place at **McGill University**, is **sustainability focused**, is requesting **seed funding**, and is **action oriented**.  Yes  No

Our team has read the [SPF Terms & Conditions](#) and agrees to respect them.  Yes  No

Our team understands that this application is not confidential and consents to have its contents shared with relevant stakeholders during the review process and, if approved, on the SPF website.  Yes  No

Our team agrees to have **their contact information** included in the complete and shared application and, if approved, on the SPF website.  Yes  No

## PART 1: PROJECT OVERVIEW

**Instructions:** Please answer the questions below as clearly and concisely as possible. You will be able to detail your project further in Part 2 of the Over \$5,000 application process, the Project Plan, as well as submit relevant appendices. Once you have completed this Project Overview, save it and submit it online. SPF Staff will respond with feedback on your application within two weeks and send you Part 2. Once all sections are complete, the combined application will be provided to the SPF Governance Council for their review and decision. As a reminder, all SPF applications are assessed using the [SPF Eligibility & Evaluation Criteria](#):

ELIGIBILITY CRITERIA		EVALUATION CRITERIA		
AT MCGILL	SUSTAINABILITY FOCUSED	ANALYSIS	IMPACT	FEASIBILITY
SEED FUNDING	ACTION ORIENTED	COLLABORATION	SUPPORT	CAPACITY BUILDING

Before starting, you may find it helpful to consult the [SPF Sustainability Brief](#) and the [Climate & Sustainability Strategy 2020-2025](#).

### CONTEXT

Criteria assessed in this section: **SUSTAINABILITY FOCUSED, ANALYSIS**

- 1. What specific sustainability-related need/issue have you identified at McGill and aim to address through your project? In your response, please describe clearly how the need/issue is related to sustainability. Note: Please wait to detail your project idea in response to Question 5. Limit ~100 words**

Design Teams at McGill are student groups that work every year to design and build an original design (e.g. rocket, electric race car, robotic submarine) to compete in engineering competitions across North America. The majority of their design work is done during the school year, which limits the design scope to what team members can reasonably accomplish alongside their courseloads. Since teams are focused on building the most performant design possible this results in projects related to improving sustainability being sidelined in favour of projects that directly impact performance. This has a negative impact on sustainability, as team's use large amounts of raw materials, with few components being reused.

- 2. How do you know this is a need/issue? What research have you done on this need/issue (e.g. consultation, observation, survey)? Limit ~100 words**

Through my experience as a Design Team Captain I know the limitations that teams face when setting their design scope, and have personally had to cancel projects related to improving sustainability to ensure that team members have a manageable workload. In my position as Design Team Director I have consulted with other Design Teams at McGill and discussed this issue with them, finding that they too are facing this problem.

- 3. What relevant information and/or best practices have you found that relate to this need/issue? In addition to information from external sources, detail any relevant related initiatives (past or current) that you are aware of at McGill. Limit ~100 words**

The Engineering Undergraduate Society of McGill University has previously hosted a similar internship program that was focused on providing Design Teams with funding for summer internships that would allow them to pursue new and innovative designs that they would not have had the opportunity to pursue otherwise. This program was very popular with the Design Teams and was quite successful, resulting in many new and impactful improvements to their designs. The previous program was similar to the proposed program, but was lacking a focus on sustainability and provided only one internship position. We would like to revitalize this internship program with a focus on sustainability related initiatives and projects.

- 4. What expertise or qualifications does your team have regarding this need/issue, if any? Limit ~100 words**

Working under the portfolio of the Vice President Student Life of the EUS it is our responsibility to understand the needs of students and student groups that serve engineering students. Our team has personal experience with this issue, and has also consulted with Design Teams at McGill and found that they are facing the same issue. The office of the Vice President Student Life has previously hosted a similar program for Design Teams, and found it to be very advantageous for these teams. Additionally, the teams who will be hosting the internships have experience in project management and leadership and are aware of the sustainability issues that their teams face.

## PROJECT IDEA

Criteria assessed in this section: **ALL ELIGIBILITY & EVALUATION CRITERIA**

5. **What is your project idea? Please describe the idea thoroughly and concisely. Identify how SPF funding will be used, key contributions to sustainability at McGill, and, if your project is happening in different stages, core phases in the project.** *Note: You may also share how the project is new or how it complements, builds upon, or scales existing initiatives. Limit ~400 words*

We are proposing a design team internship program to fund two paid summer internship positions, which will allow Design Teams to explore projects related to sustainability. These summer internships will be project based, where the intern will be paid to undergo the conception, design, manufacturing, and testing of a complete design. Projects will be proposed by Design Team's, with the goal of improving the sustainability of the team and giving the student undergoing the internship the opportunity to learn skills that will help prepare them for a successful career engineering a sustainable future. The proposed projects should not be part of the team's typical design scope, and should be projects that would not be pursued without the funding from this program. At the end of the summer the intern should have produced a final design, ready for integration into the team's complete design during their normal design cycle. The intern will also be expected to produce a final report detailing the design process, their final design, and any relevant learnings. This report will help enable the integration of sustainable design practices into the team's typical design cycle by transferring knowledge between members. These projects will allow teams to address issues related to reducing material consumption, increasing reusability of components, and many more.

The funding obtained from the SPF will be used to supplement the salary of the intern. The EUS is planning on providing each intern with hourly wages equivalent to a \$10,000 salary. Funds from the SPF will make up a large portion of the interns salary, and additional funding will be obtained from wage subsidy programs such as the Student Work Placement Program. Interns will be selected from an applicant pool of members of the design team.

This program will improve sustainability at McGill by giving Design Teams the opportunity to address sustainability issues on their team. The potential improvements are varied, but some potential issues to be addressed include reducing consumption of non-renewable resources such as composites and metals and increasing the reusability of components. The knowledge that the student gains during the internship will be documented and shared with other team members, allowing the team to make more sustainable decisions during the design of their competition entry and integrating sustainable design practices into the team's design methodology. This internship position will work to improve the sustainability of Design Teams at McGill and will provide the student undertaking the position valuable knowledge and experience, helping them advance their career and prepare them to engineer a sustainable future.

6. Is your project related to the University's [Climate & Sustainability Strategy 2020-2025](#)?  Yes  No
7. Is your project related to the University's [Equity, Diversity & Inclusion Strategic Plan 2020-2025](#)?  Yes  No
8. If you answered yes to Question 6 or 7, how does it relate? Please refer to the relevant strategy category, theme, goal, and/or action in your response. *Limit ~200 words*

This project aims to allow McGill Design Teams to develop new designs that focus on improving the sustainability of their team. New designs generated during this project will be used by Design Teams as a base design for further iteration and improvement, allowing members to continue to work on these sustainability oriented projects over

time, improving and advancing them. This will provide new students at McGill an opportunity to apply their engineering skills to solving sustainability-oriented problems, providing a valuable learning experience in sustainability. Students undergoing this internship will also be introduced to new technologies and design methodologies that are oriented towards improving sustainability in engineering. The learning they undergo will benefit the team as a whole through thorough documentation of the design process, which will allow these learnings to be integrated into the team's design methodology. This position will encourage the growth of sustainability oriented design ideologies on design teams, creating an environment where McGill students can learn about and practice sustainable engineering. We believe this project ties into McGill's Climate and Sustainability Strategy, specifically in the category of Research & Education, where the objective is to increase learning opportunities in sustainability.

## TRANSFORMING CAMPUS

Criteria assessed in this section: **AT MCGILL, IMPACT**

9. **In the table below, describe your proposed project's 2-5 main impacts on the McGill community or its main goals to accomplish. Please check the stakeholders that will be impacted. Finally, list at least one key success indicator for each impact (e.g. # people will be engaged, % waste will be diverted, # buildings certified). Note: Indicate a realistic target for each success indicator (e.g., rather than "# people engaged," include a target such as "50 people engaged").**

Main Impacts/Goals		McGill Stakeholders Impacted (check all that apply)	Key Success Indicator(s)
REQUIRED	1 Reduce the amount of raw materials consumed by Design Team's each year.	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Academic Staff <input type="checkbox"/> Postgraduate <input type="checkbox"/> Admin. Staff <input type="checkbox"/> Alumni	A 10% reduction in raw material used by the team.
	2 Increase the number of components or parts that are reused each year.	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Academic Staff <input type="checkbox"/> Postgraduate <input type="checkbox"/> Admin. Staff <input type="checkbox"/> Alumni	A 10% increase in the number of reused components.
	3 Improve the efficiency of the team's final design.	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Academic Staff <input type="checkbox"/> Postgraduate <input type="checkbox"/> Admin. Staff <input type="checkbox"/> Alumni	A 10% increase in efficiency of the design.
OPTIONAL	4 Please note that the above are simply examples of potential impacts that the projects may have.	<input type="checkbox"/> Undergraduate <input type="checkbox"/> Academic Staff <input type="checkbox"/> Postgraduate <input type="checkbox"/> Admin. Staff <input type="checkbox"/> Alumni	The above will be tuned to be specific to the selected project & team.
	5 Increase the number of design teams implementing sustainable design practices.	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Academic Staff <input type="checkbox"/> Postgraduate <input type="checkbox"/> Admin. Staff <input type="checkbox"/> Alumni	A 30% increase in the number of teams implementing sustainable design practices by 2024.

10. **Have you considered implementing your project at more than one McGill campus? (e.g. If your project is downtown, could it be implemented at Macdonald Campus as well?)**

Yes  No

11. **Please describe your choice of campus(es) and why this choice is best for your project. Limit ~150 words**

The EUS only represents engineering students on the downtown campus, and does not represent or include any groups that are active at the Macdonald campus or other campuses. Additionally, the majority of Design Teams at McGill are active only on the Downtown campus. As such we are restricting the scope of this project to Design Teams on the downtown campus.

## PART 2: PROJECT PLAN

**Instructions:** Please answer the questions below as clearly and concisely as possible. Once you have completed this Project Plan, save it and submit it online. SPF Staff will respond with feedback on your application within 2 weeks. Once all sections are complete, the combined application will be provided to the SPF Governance Council for their review and decision. As a reminder, all SPF applications are assessed using the [SPF Eligibility & Evaluation Criteria](#):

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## IMPLEMENTATION

Criteria assessed in this section: **ACTION ORIENTED, FEASIBILITY, IMPACT**

1. List the key **activities** for your project and indicate the timing for these on the right. Please be specific and realistic when formulating your activities, ensuring that they are achievable within the indicated timeframe.

Key Project Activities	Start Date (DD-MM-YY)	End Date (DD-MM-YY)
Project Collection - Promote internship opportunity to design teams, collect applications	30-03-23	07-03-23
Application Review - Review projects, evaluating how they meet the program goals, select project.	08-03-23	10-03-23
Internship Promotion - Promote selected project to design team members, collect applications	12-03-23	19-03-23
Candidate Review - Review and interview selected applicants, select final interns.	21-03-23	23-03-23
Goal Generation & Performance Metric Development. Done as part of the application process.	24-03-23	15-04-23
Design Conception - Development & Evaluation of Concepts.	01-05-23	10-05-23
Design Development - Generation of the Design (in Computer Automated Design software).	11-05-23	30-06-23
Simulation & Modelling - Analysis of the generated design. Performed in parallel with design.	11-05-23	30-06-23
Manufacturing Preparation - Finding suppliers of parts and services, development of drawings.	12-06-23	17-07-23
Manufacturing - Manufacturing and assembly of the physical design.	10-07-23	17-07-23
Test Design & Preparation - Develop and prepare tests to validate the performance of the design.	19-06-23	17-07-23
Testing & Validation - Execution of tests and data analysis to validate performance.	18-07-23	21-07-23
Design Iteration - Improve the design based on feedback from test data.	24-07-23	18-08-23
Report Writing - Prepare the final technical report, outlining the design process and final design.	16-08-23	25-08-23
Some project activities overlap. This is typical of an engineering project, and is necessary to ensure the final design is performant and meets its goals.		

2. Please describe what will happen to your project after the SPF funding ends. Additionally, please share if anything will be produced or installed (e.g. a workshop guide, equipment, a toolkit, a network, website, etc.) and indicate future maintenance plans. *Limit ~200 words*

The design developed by the intern will be one component of the complete design that the team builds (e.g. the motor of an electric vehicle, or the fuel for a rocket). After the internship ends the design will be integrated into the Design Team's complete product. In future years the design will be iterated on and improved, being used as a basis for work done by future students. The design developed during this internship will provide future students with the opportunity to learn about sustainable engineering, and apply their theoretical knowledge to improve the design generated by this project. In this way, this project will help to cultivate and support a culture of sustainability within design teams.

The technical report prepared at the end of the internship will be referenced by other design team members as they work on their designs. This report will provide members with valuable insight and learnings about sustainable design practices, as well as any sustainable technologies that were explored or implemented in the design developed during the internship. We hope to continue funding this program in future years, however a significant investment

would be required to provide reliable funding for the program. Therefore, this year is being viewed as a trial year of the program. If it sees great success we will be able to use these results to support larger funding requests.

**3. Please list any potential risks associated with your project and the measures you will take to reduce their likelihood.**

Main Risks	Preventative Measures
Project is not completed by the end of the Summer.	A timeline will be required in the project application process, and only projects with feasible timelines will be considered.
Final design is not feasible to integrate into complete product.	The technical report will document all learnings and failures, ensuring that the team grows regardless of the design's success
Final design does not have impact on environmental sustainability of team.	The technical report will document all learnings and failures, ensuring that the team grows regardless of the design's success

## STAKEHOLDER ENGAGEMENT

Criteria assessed in this section: **AT MCGILL, COLLABORATION, SUPPORT, CAPACITY BUILDING**

4. **Please list all the key stakeholders involved in your project, indicating their role and support. If the stakeholder has provided a support letter, please indicate so here and attach it as an appendix document.** *Note: Projects involving modifying a space on campus, making a permanent installation, hiring a full-time staff, or adding/modifying a garden, etc., must seek permission from the appropriate stakeholder(s) (e.g. building director, Campus Planning and Development Office, staff supervisor, etc.). SPF Staff can help you assess if any key stakeholders need to be added to your list.*

Stakeholder's Name(s)	Title	Role in the Project	Support/Permission	Support Letter
Aidan Gerkis	Design Team Director	Program Organizer	Confirmed	No
Owen Quinn	Vice President Student Life	Program Organizer	Confirmed	No
Andrew Xie	Incoming Vice President Student Life	Program Organizer	Confirmed	No
N/A	Design Team Captain	Project Supervisor (to be selected in application process)	Not Confirmed/Asked	No
N/A	Design Team Technical Director	Project Supervisor (to be selected in application process)	Not Confirmed/Asked	No
N/A	Faculty/Industry Advisor	Project Supervisor (to be selected in application process)	Not Confirmed/Asked	No
N/A	Faculty Advisor	Advise the team & the intern throughout the design process	Not Confirmed/Asked	No
	Industry Advisor	Advise the team & the intern throughout the design process	Not Confirmed/Asked	No
People's in the Captain, Technical Director	& advisor roles will be dependent on the	Design Team selected to host the intern.	Choose one.	Choose one.
			Choose one.	Choose one.

5. **How will you communicate about your project and share its impacts with your stakeholders and the McGill community? Please describe your tactics (e.g. social media, workshops, tabling, newsletters, etc.) and any related timing (e.g. at the beginning, during, or after the project). Related activities can also be included in Question 1. Limit ~200 words**

The internship program will be advertised to Design Teams at McGill through email, communication on Teams, and word of mouth (the Design Team Director regularly interacts with Captains from each Design Team). Once a Design Team has received approval for its project it will advertise the internship position to its members through their communication channel of choice (typically Teams/Slack).

The impacts and outcome of the project will be shared by the EUS and the Design Team on social media after the completion of the project. Additionally, the technical report developed by the intern may be shared on LinkedIn, and will be shared with other Design Teams at McGill, to reach and support as many students as possible.

6. **If applicable, are there any training, volunteer opportunities, jobs, or complementary applied student research integrated in your project? Please describe. Limit ~100 words**

The main focus of the project is to provide an engineering student with the opportunity to design and implement a project focused on improving the sustainability of their Design Team. This involves the research of sustainable technologies, and the implementation of these technologies in their design.





## APPENDIX

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### Relevant Support Documents

List any appendix documents in order in the table below.

*Please keep the total number of pages as low as possible (recommended max 10). Please include any relevant support letters.*

Doc #	Appendix Document Title	# of Pages
1	Cover Page	1
2	Design Teams - Background	2
3	Design Teams - Funding	1
4	Design Teams - Example Project	1
5	List of Design Teams	1
6	Design Team Internship - Project Selection Criteria	2
7		
8		
9		
10	<a href="#">Staff Position Information Appendix</a> , if applicable	2

## STAFF POSITION INFORMATION

Please complete the fields below with information regarding the position that you would like to fund through your project. Should you have more than one type of position, please fill and attach a form for each position.

**Position Title** Design Team Summer Sustainability Intern

**Brief Description of Role** Complete the design, manufacturing, and validation of a project related to improving the sustainability of a Design Team.

1. **This position is:**  New  Already exists on campus

2. **Please describe which McGill unit/department/group/association will host the position.** *Limit ~100 words*

The position will be hosted by a Design Team at McGill. Design Teams are student groups that operate under the Engineering Undergraduate Society of McGill University (hereafter the EUS). The Design Team hosting the position will be selected from a pool of applicants. They will be responsible for managing the project the intern is working on and funding any manufacturing and testing costs associated with the project. Funding from the SPF will pay for the wages of the intern.

3. **Who will supervise the employee? Please list the supervisor's name and role at McGill.** *Note: The supervisor must provide a letter detailing their commitment. Please include this in the application appendix. Limit ~100 words*

The project will be supervised by the management of the selected Design Team. They will be responsible for organizing regular meetings to track the progress of the project and check-in with the student working on the project. Additionally, the project will be required to have an advisor, who may be a professor or industry professional, to help guide their design. There will also be oversight from the Vice President Student Life of the EUS and the Design Team Director, who will host several meetings throughout the course of the internship to ensure that the project is progressing as planned.

4. **Employee's Location(s):**  Downtown  Macdonald  Gault  Other: \_\_\_\_\_

5. **Please provide a detailed task list and/or job description.** *Limit ~400 words*

The Design Team hosting the intern will apply for funding with a specific project in mind. The role of the intern will be to carry out the design, manufacturing, and testing of this project. These responsibilities will include: concept generation and evaluation, simulation and modelling, evaluating performance and feasibility, developing and executing tests, and iteration and improvement. The intern will also be responsible for working with the management of the Design Team to develop and update a timeline and budget for the project. At the end of the internship they will be expected to prepare a brief presentation and demo (if applicable) showcasing the project to the Design Team management and the Vice President Student Life of the EUS.

The intern will be expected to spend the equivalent of 36 hours of work on the project each week.

6. **Working hours:**  Full time  Part time *If part time, indicate hours per week:* \_\_\_\_\_

7. **Wages:**  Salaried  Hourly pay *Indicate salary or hourly wage:* \$14.47/hour

8. **Please share how you have determined the hours and wages included in the budget.** *Limit ~200 words*

The hourly wages for the internship was set to be comparable to that available to students in the SURE program, a similar program that provides funding to undergraduate students working with research labs at McGill. A total value that is slightly higher than historical SURE stipends was selected to be more competitive with market rates for engineering internships, although the final stipend value is still significantly less than

typical engineering internship salaries. By budgeting for a lower wage we hope to be able to offer positions to more students, while still offering an acceptable amount of funding. This will allow more projects to be undertaken, having a larger impact on Design Teams. The hours were selected to be representative of a typical summer internship. Mandating a 36 hour work week will ensure that the intern is progressing the project at an acceptable rate, making certain that the final project deliverables will be completed.

The funding requested from the SPF will provide the wages for 1 internship position. Funding from other sources will be used to cover the cost of additional positions.

**9. If applicable, please share how you will integrate the employee into the existing team/group structure.**

*Limit ~100 words*

The employee will be selected from an applicant pool consisting of existing members on the team. This will ensure that the member already has sufficient knowledge of the communication and design tools used by the team, reducing the amount of time required to onboard them. Less time spent onboarding will allow for the intern to spend more time working on their assigned project, bringing more value to the Design Team.

**10. What will happen to the position after the project funding concludes? Is there an intent to institutionalize this position?** *Limit ~200 words*

This position is intended to be only available for the Summer months, when engineering students typically take internships to gain work experience. This decision is mainly due to the limited financial resources of the EUS. We do not have the money available to fund this internship ourselves and rely on funding from other sources to host the internship. Additionally, most students take internships during the summer, and the choice of time period for this position was meant to reflect that. The EUS does hope to continue providing this position in future years, reviving it as an annual summer internship program.

**11. If applicable, please briefly describe how you plan to recruit the employee.** *Limit ~200 words*

Design Teams will propose projects to the EUS and one to two of these projects will be selected to receive funding by a non-biased review committee. Once the project has been approved for funding by the EUS, the Design Team will advertise the internship position to its members and accept applications for a brief period of time. Applications will be reviewed by the same committee, and interviews will be done with the preferred candidates. One to two candidates will be selected to receive internship funding for each project. The total number of candidates selected will depend on the amount of funding received from the SPF and other sources.

The review committee will consist of myself (the Design Team Director of the EUS) and three members of the EUS executive committee. The EUS executive committee is responsible for the operation of the EUS, supporting engineering students and student groups, such as Clubs and Design Teams. One of the main goals of the executive committee is to ensure the longevity of the EUS and its affiliated student groups. As such, executive committee members will be incentivized to select projects and applicants that will benefit engineering students the most.

**12. My project team already has a candidate in mind to fill this position:**  Yes  No

**If yes, please disclose.** *You may wish to attach a CV for the candidate in the application appendix. Limit ~100 words*