

Engineers in Scrubs

Call for Design Project Ideas

Created in 2011, UBC's [Engineers in Scrubs \(EiS\)](#) is a specialization of the graduate program in the School of Biomedical Engineering (SBME), and provides essential observational and experiential training in medical technology innovation. EiS teaches engineers to understand where and how technology fits in healthcare, and identify technological gaps as opportunities to advance the field. EiS emphasizes partner engagement in the innovation process to maximize two-way knowledge translation and impact. Many of our students will take prominent roles as engineers, researchers, entrepreneurs, and clinicians in the vibrant and growing med-tech ecosystem in BC and beyond.

At the heart of Engineers in Scrubs is a team-based project course. **You are invited to submit ideas for design projects in clinical engineering applications.** Our project partners have included physicians, clinical researchers, nurses, clinical engineers, and other allied health professionals. Projects selected by student design teams will go through an in-depth, fast-paced innovation process that will culminate in a validated prototype. Design teams are expected to engage closely with their clinical partners, and work under the mentorship and guidance of experienced professors, entrepreneurs, and med-tech innovators.

KEY THINGS TO KNOW

- Project course timeline:

Proposals collected from clinicians and screened by EiS instructors	Summer
MedTech CAFÉ #1: Clinicians "pitch" their project proposals (~5 min for each project); students to do research	September (date TBD)
MedTech CAFÉ #2: Students present their research back to project proposers for discussion	~Two weeks after first session
Project selection (clinicians notified of outcomes)	Late October - November
EiS team project design work	November - April

- The best projects are those where the problem is defined, but the solution space is relatively open.
- The EiS instructional team would be happy to work with prospective partners to identify suitable project ideas.
- Approximately 20 projects are pitched per year, and the students perform research (literature review, gap analysis, preliminary stakeholder and market analysis, feasibility assessment, etc.) on all projects. **Four are ultimately chosen for actual design work.**
- Project proposers who want to increase their chances of their project being worked on have the option of also having their projects advertised to the SBME Capstone course, which typically has 40+ senior undergrad teams, and/or the 3rd or 2nd year undergrad design courses.



TIME COMMITMENT AND EXPECTATIONS

- 0.5 to 2 hours over the summer to submit a project, including optional meeting with the EiS instructional team.
- Attendance of 2 MedTech CAFÉs in the fall. Each CAFÉ is scheduled for 2 hours, but with advanced coordination it is possible to only attend part of each.
- For a project selected to go through the design process, its success is typically highly dependent on partner engagement. **Clinician feedback in team meetings, dialogue and testing with potential end users, and constructive criticism during prototype testing are all potentially important determinants of project success.** Time commitment varies widely, but each team is instructed to report to the clinical partner on a weekly basis in the second term.
- If a partner is too busy to engage deeply, they are encouraged to assign a designate (e.g., fellow or resident).

EXPECTED BENEFITS FOR DESIGN PROJECT PARTNERS

- A fun way to engage bright and motivated graduate students in a flagship biomedical engineering program.
 - For those with faculty appointments, this is a productive way to acquire teaching credit (if needed, we can provide a letter with the course number, hours, and other details).
- All project proposers will have their projects researched and have the option to receive the written research reports.
 - The students often discover research results previously unknown to the project proposers, such as existing solutions or even commercialized products.
- Project selected to go through the design process will have an extensive written report to support potential future work.
- Promising prototypes may be eligible for post-course support, in the form of student stipends (in collaboration with Mitacs), continued access to prototyping facilities, business development expertise (in collaboration with entrepreneurship@UBC), and an extensive network of medtech experts.
- Partners typically benefit most if they approach the relationship with EiS and SBME as a potentially long-term and evolving one, rather than a “one-off” experience.

INTELLECTUAL PROPERTY (IP)

IP arising from EiS is governed by UBC’s Policy LR11:

https://universitycounsel.ubc.ca/files/2022/05/Inventions-Policy_LR11.pdf

GETTING STARTED

Project submission link:

https://ubc.ca1.qualtrics.com/jfe/form/SV_afwdWeVUgUvKOx0

Or contact (either or both):

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APPENDIX: COMPARISON OF SBME DESIGN COURSES

Course	Client Interaction	Length of Project	Student Expertise	Number of teams/projects	Expected outcomes
BMEG 501 (Engineers in Scrubs)	<p>Two clinical engagement sessions (MedTech CAFÉs) in the first term. In the first session, multiple clinicians will pitch their problems to the students, who will perform research on each problem, then present their findings in the second session.</p> <p>If a project is selected by a team, the team is expected to touch base with the clinical partner on a weekly basis throughout the second term.</p>	<p>8 months (2 terms from Sep – Apr)</p> <p>The first 2.5 months are largely devoted to research on each problem to assess the potential impact of a solution, and the rest of the year is devoted to developing solutions for the selected projects.</p>	<ul style="list-style-type: none"> • Cohort represents a cross-section of the backgrounds of SBME graduate students, which include life sciences and engineering, so physical prototyping experience varies. • Enrollment in Engineers in Scrubs is competitive, and all EiS students are high achievers before entering graduate school. • Students are strongly encouraged to form well-rounded teams with a variety of complementary skills to produce creative solutions. 	<ul style="list-style-type: none"> • 4 teams work on individual projects • 20+ projects proposed to give the students some choice 	<p>Prototype at TRL 3 or 4 by the end of the course</p> <p>Prototype at TRL 5 or 6 by the end of summer, if teams choose to develop their prototypes further</p>
BMEG 457 (undergrad)	<p>Students meet with their clients on a regular basis (recommended bi-weekly).</p>	<p>8 months (2 terms from Sep – Apr)</p> <p>Projects are selected in the first week.</p>	<ul style="list-style-type: none"> • Advanced design project experience • Intermediate/advanced prototyping experience 	<ul style="list-style-type: none"> • 40+ teams work on individual projects • 80+ projects proposed to give the students some choice 	<p>Prototype at TRL 3 or 4 by the end of the course</p>
BMEG 357 (undergrad)	<p>Students collect questions to ask the client in a group setting at specific checkpoints throughout the term (~4 – 5 checkpoints including final presentation)</p>	<p>3 months (1 term from Jan – Apr)</p>	<ul style="list-style-type: none"> • Intermediate design project experience • Beginner/intermediate prototyping experience 	<ul style="list-style-type: none"> • 10+ teams work on 1 project • 2 – 3 projects proposed to give the students some choice 	<p>Novel ideas for future development</p>