

Capstone Design is a win-win opportunity for your organization and University of Toronto Engineering: You benefit by gaining a fresh design perspective; U of T Engineering students benefit by applying their newly acquired engineering skills to meet your business needs.

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COURSE COORDINATOR

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For a catalog of all previous capstone projects, visit  
<http://mie.utoronto.ca/undergrad/thesis-catalog>

For more information, visit our website  
<http://mie.utoronto.ca/industry/capstone>

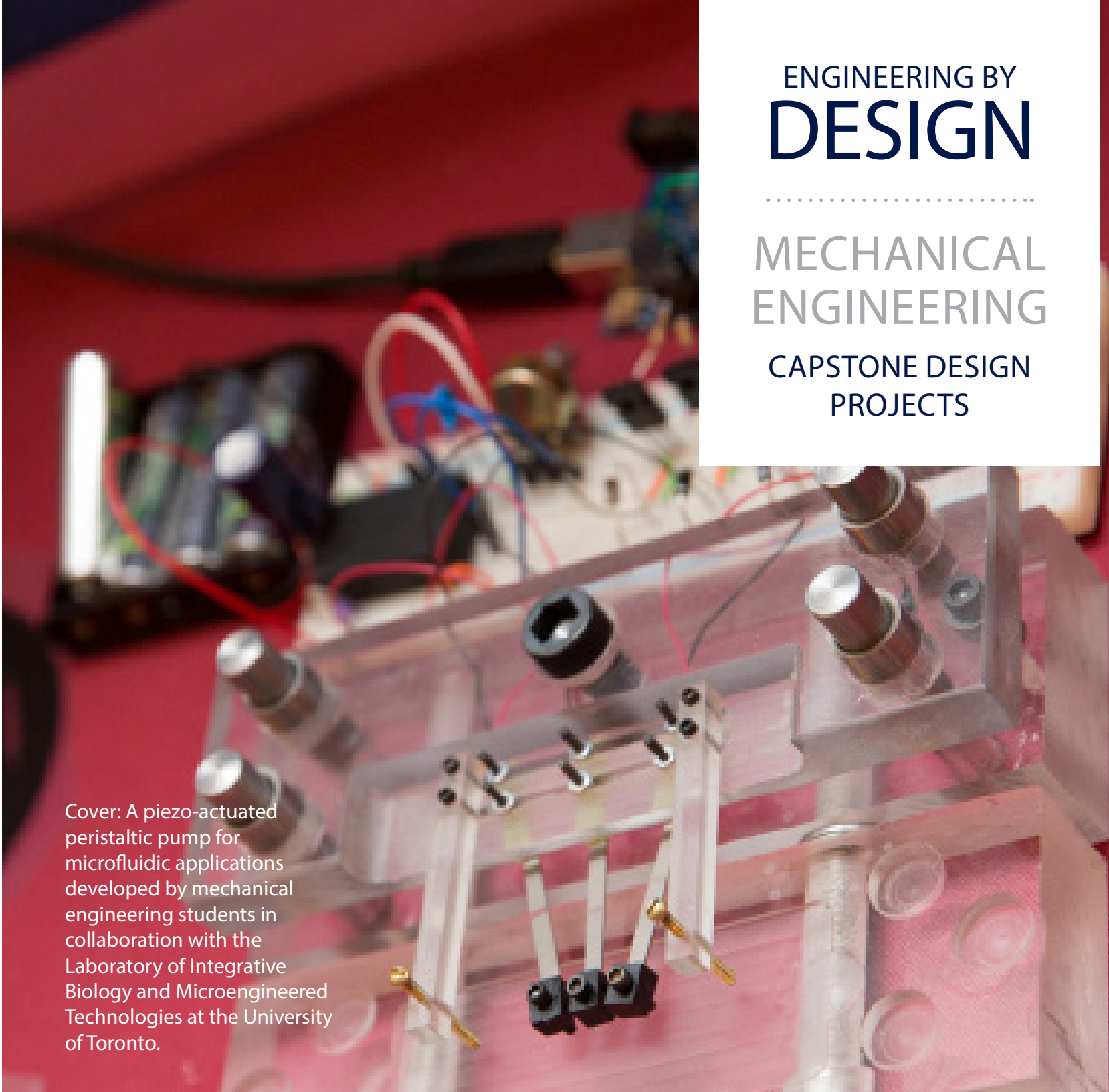
or email us at [capstone@mie.utoronto.ca](mailto:capstone@mie.utoronto.ca)

ENGINEERING BY  
**DESIGN**

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MECHANICAL  
ENGINEERING

CAPSTONE DESIGN  
PROJECTS



Cover: A piezo-actuated peristaltic pump for microfluidic applications developed by mechanical engineering students in collaboration with the Laboratory of Integrative Biology and Microengineered Technologies at the University of Toronto.



Above: Portable Assistive Mobility Device (PAMD) developed by mechanical engineering students in partnership with the Partners for Advancement in Engineering Education (PACE) and Peking University.

2014-2015 Mechanical Engineering Capstone Course

## BY THE NUMBERS

177	students	17	faculty supervisors
43	projects	7	international projects

### WHAT IS “CAPSTONE DESIGN”?

Capstone Design is a final year core course in which students use engineering principles, methods, and processes to address a client’s needs, under the supervision of a faculty member. Student teams meet specific client requirements through a creative, iterative, and open-ended design process.

A Capstone project must include:

- Application of disciplinary knowledge and skills
- Demonstration of engineering decision-making
- Client interaction
- Demonstration of proof of the design concept

### WHY SHOULD YOU PARTICIPATE?

- Introduce innovative concepts and improvements into your organization
- Obtain solutions to key design issues
- Address problems requiring an infusion of talented resources
- Leverage technical and theoretical engineering knowledge
- Identify potential employees for your organization
- Gain access to expertise of our faculty members
- Build longer-term relations with our professors
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### DISCIPLINARY KNOWLEDGE & SKILLS

Following is a list of subject areas covered in our Mechanical Engineering program:

Fluid Dynamics	Manufacturing
Heat and Mass Transfer	Materials and Structures
Energy and Environment	Control Systems
Combustion	Robotics
Solid Mechanics	Mechatronics
Dynamics and Vibration	Biomechanics
Machine Design	

### SELECTION CRITERIA FOR PROJECTS

#### High Value of Project to the Client

The project should have the potential for real impact on the organization, or its clients. Capstone projects often address a problem or challenge that the organization wants to resolve, but may not have the resources or knowledge to undertake.

#### Right Level of Project Criticality to the Client

The project should not unduly expose the client to downside risk as a result of delays or failure to deliver, arising from the students’ inexperience.

#### High Relevance of Project to Students

In order to test each student’s ability to apply what they have learned in the program, the project requires the application of disciplinary knowledge and skills.

### REQUIRED RESOURCES FOR PROJECTS

#### Student Resources

Each project team involves 3-4 students, each working approximately 10 hours per week for about 26 weeks.

#### Client Resources

The client’s immediate contact is expected to spend about 1-2 hours per week to support the project. This includes timely access to data essential for the completion of the project.

### HOW TO PARTICIPATE

Complete a Statement of Need (SON) to be found online:

<http://uoft.me/MechE-SON>

- The SON defines the general nature of the problem to be solved;
- Explains the main idea or problem in one or two paragraphs, and;
- Details and scope of the project will be discussed in the first team meeting in September with the client, students, and optionally, the faculty supervisor.
- An organization may submit multiple SONs.
- Clients can request for an NDA to be signed by the students and supervisor.

Submit your Statement of Need (SON) to:

[capstone@mie.utoronto.ca](mailto:capstone@mie.utoronto.ca)

### WHEN TO SUBMIT

We request that you submit your project proposal by mid-June. All accepted projects will be made available for students’ viewing on our course website in August. By early September, students will be assigned to a project based on their stated preferences.

### ACCEPTING YOUR PROPOSAL

Acceptance notifications will be issued within a few business days after your submission.

### FINANCIAL SUPPORT FOR PROTOTYPING OF MECHANICAL ENGINEERING PROJECTS

A client participation fee of \$2,500 (cash and in-kind) is required to support the year-long development of the client’s project(s). Your support ensures the quality of the student-designed prototype(s). Only one fee applies per participating client; not subject to the number of projects.