

# Benjamin Beauchamp

Ottawa, On. K1T 4C9

BenBeauchamp@cmail.carleton.ca ■ 613-314-8004

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## Education

**B.Eng Mechanical Engineering** – Biomedical Focus

**MASc Mechanical Engineering** – Heat Pump Focus

- Carleton University
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## Skills and Knowledge

### ***Technical***

- Experience in design software such as Creo, Autodesk, and Fusion 360
- Experience in simulation software such as TRNSYS, COMFEN, eQuest, THERM, W7, ANSYS CFX (inc. ICEM meshing), and Climate Consultant
- General Software: MATLAB (inc. Simulink), Maple, and Excel
- Familiar with a variety of experimental and statistical methods used in the analysis of materials and thermodynamic systems.
  - Beam bending, stress and deflection analysis.
  - Metals: Material phase analysis, compression/tension testing.
  - Engine, refrigeration system thermodynamic analysis.
  - Fluid density, boundary layer, property relation investigations.

### ***Communication***

- Presented update reports regularly to supervisors and task researchers
- Completed numerous reports on engineering principles and the design process.
- Performed numerous presentations involving the design process.
- Intermediate French ability

### ***Teamwork***

- Acted as team leader for 4th year capstone project.
    - Planned meetings, helped teammates with research and ideas, delegated tasks effectively, organized and kept schedule to meet deadlines.
  - Completed team research project in ethics.
    - Coordinated with team members to iterate through ideas and meet deadlines.
  - Acted as team leader for Communications semester project.
    - Assigned and delegated tasks to teammates.
    - Led the decision-making process in meetings to iterate through ideas.
    - Maintained team schedule and assisted teammates in research and writing.
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## Applied Projects

The following are projects and assignments I have completed to develop my skills.

- **Residential Heating - Heat Pump System Simulation**
    - Modelled a series solar-assisted heat pump (SAHP) in Excel. I gained understanding in ground-up simulation and system modelling.
    - Modelled a heat pump and parallel SAHPs in TRNSYS. I gained experience in advanced simulation. System performance was compared against other system types across several cities and residential archetypes.
  - **Communications - RV Heat Recoup System Proposal**
    - Wrote a technical proposal for an RV water heater system using recycled heat from vehicle exhaust. This involved an iterative process with a team of students. I gained experience in technical report writing and the design process.
  - **Capstone - Crash Dummy Design**
    - 4th year Capstone project. Made adjustments to an existing crash test dummy. Improved usability and anatomical accuracy through redesigned components
  - **Circuit Design - Muscle-Computer Interface**
    - Constructed a circuit which transmits muscle signals from contact electrodes, filters them to a clean signal, and uses it to activate a computer mouse.
  - **Tool Design - Vice Grip**
    - Designed, modelled, and 3-D printed components for a vice-grip. I gained experience in designing to meet specifications through planning and prototyping.
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## Employment History

- Ottawa Heart Institute - EPIC Implementation Team (2019)
    - Trained nurses in the use of patient charting software.
    - Identified errors and areas of concern with front-end users.
  - Recreational Kayak Coach at Petrie Island Canoe Camp (2015-2018)
    - Improved leadership and group coordination skills. As well as my **ability to communicate and plan with co-workers.**
  - Assistant to carpenter/contractor (PB Construction-Renovations)
    - Gained a **practical understanding and familiarity with a variety of building materials and techniques.** Learned about visualizing and planning repairs through design concepts and technical drawings.
  - Teaching Assistant – Carleton University (2019-2022)
    - Lectured students on mechanical engineering topics, lead students through technical processes. **Gained valuable experience in planning and leadership.**
  - Brantwood Park after-school program -Ottawa CAG (2014-2015)
    - Improved communication and group coordination skills.
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## Volunteer and Extracurricular Experience

- Acted as 4<sup>th</sup> year representative for Carleton University Biomedical Engineering Society
- Participation in the Ski CADS, Scouts Canada, and Run for the Cure
- Lifeguard, First Aid, Canoe kids, White Water Canoe and various safety certifications