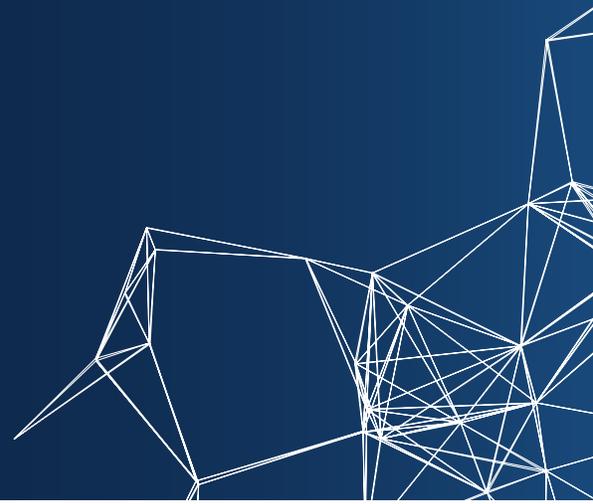




Mechanical Engineering Undergraduate Options

AEROSPACE | BIOMEDICAL | MECHATRONICS | THERMOFLUIDS



Our Options

The UBCV Mechanical Engineering undergraduate program engages you in an education with breadth and depth, giving you the teamwork, leadership, design and technical skills you need to work across a wide variety of sectors. This flexibility gives you the opportunity to explore different areas of interest, and the mobility to adapt when the industry changes. For many students, our general program is exactly what they want.

Some students, however, have a narrower focus.

They know where their passion lies, and they want to customize their degree to uniquely suit their career goals. The UBC Mechanical Engineering Options in **Aerospace, Biomechanics & Mechanical Devices, Mechatronics, and Thermofluids** allow you to pursue specialized coursework with professors who are leaders in their field, while still maintaining a solid core competency in mechanical engineering. Whether your goal is grad school, a second professional school, building your own business, or that perfect job in industry, pursuing a Mechanical Engineering Option allows you to demonstrate your passion, commitment, dedication, and abilities in the field you love.



Admissions

THERE ARE TWO INTAKES INTO THE OPTIONS:

Early Admission - apply by February 28 of your first year

- Acceptance to an Option is conditional upon being placed in Mech and successfully completing Mech 2

Regular Admission - apply by March 31 of your second year

- Must have completed Mech 2 (including 224/225)

TO APPLY

Submit an application package, including the application form (available online), a cover letter, resume, unofficial transcript, and up to 5 pages of supplemental material. See our website for full details.

IMPORTANT TO KNOW

- Acceptance into Mech is a separate process than acceptance into an Option, and your acceptance into any of the Options will be conditional upon you being placed in Mech
- Because the cohort sizes for the Options are so small, most classes are only offered once per year. As most students in Mech are enrolled in Co-op, the class schedule for the Options follows the Co-op schedule. This means it will require a minimum of 2.5 years after Mech 2 to complete an Option, regardless of whether or not you enroll in Co-op.

Learn More

MECH.UBC.CA/UNDERGRADUATE

Student Services Office

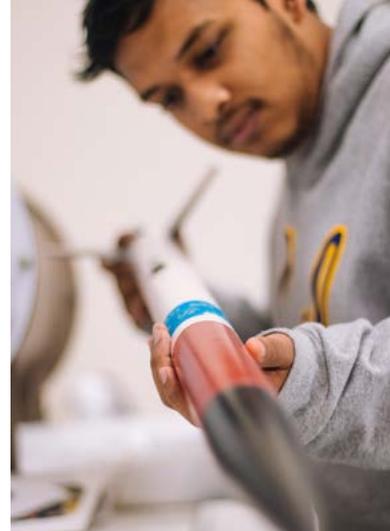
P: 604-822-6584

E: students@mech.ubc.ca

Aerospace

To infinity and beyond – the sky is no limit when you create the aircraft, drones, and rockets of the future.

The Aerospace Option is designed to prepare you for mechanical engineering within the high-tech world of aircraft and spaceflight. Aerospace combines concepts like heat transfer, fluid dynamics, thermodynamics, and combustion with more application-specific areas like materials, vibration, propulsion and aircraft design and structures.



HOW DOES THIS OPTION CUSTOMIZE YOUR DEGREE?

Remove these courses

MECH 325	Machine Design
MECH 329	Materials for Mechanical Design
MECH 368	Engineering Measurement and Instrumentation
MECH 392	Manufacturing Processes
MECH 457	Mechanical Engineering Design Project
+	3 Technical Electives

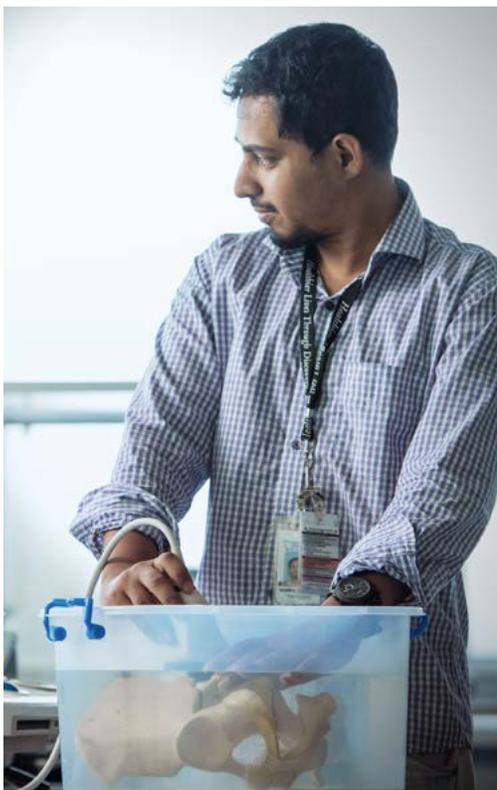
Add these courses

MECH 462	Finite Element Analysis
MECH 477	Aerospace Propulsion
MECH 479	Introduction to Computational Fluid Dynamics
MECH 481	Aerodynamics of Aircraft I
MECH 484	Aircraft Design: Aerodynamics
MECH 485	Aircraft Design: Structures
MECH 489	Experimental Thermofluids
MTRL 494	Composite Materials
MECH 453	Aerospace Design Project

WHAT DOES THIS MEAN FOR YOU?

Aerospace allows you to tailor your mechanical engineering degree with industry-specific skills, uniquely positioning you to work in the world of airplanes, helicopters, rockets, drones and unmanned

aircraft systems. With passenger and cargo flight connecting our world, and satellites an integral part of global infrastructure, aerospace engineers open our skies to the future.

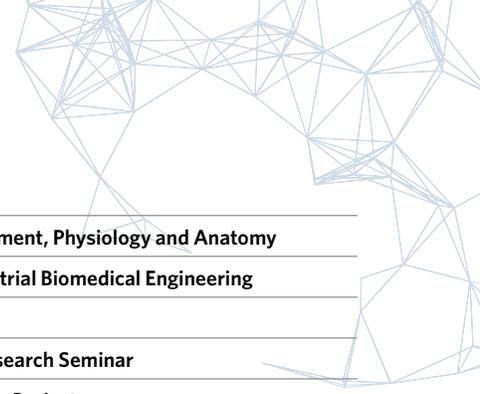


Biomechanics & Medical Devices

In a world where the need for innovative medical solutions is rapidly growing, it's not surprising that biomedical engineering is one of the fastest growing fields.

From designing hip implants to heart valves, conducting research in academic and government institutions, and testing medical products, mechanical engineers are part of life-changing innovation in the medical field.

Courses in the Biomechanics & Medical Devices Option are highly specialized to medical applications, from biofluids to orthopedics, providing students with first-hand exposure to medical technologies and applications. Access to highly reputed professors in the field and the opportunity to gain hands on experience at some of the best biomedical facilities in Western Canada, also opens doors for those wishing to work in industry, pursue a graduate research degree or even head off to medical school.



HOW DOES THIS OPTION CUSTOMIZE YOUR DEGREE?

Remove these courses

MECH 327	Thermal System Design
MECH 329	Materials for Mechanical Design
MECH 392	Manufacturing Processes
MECH 457	Mechanical Engineering Design Project

Add these courses

BMEG 410	Biomedical Equipment, Physiology and Anatomy
BMEG 456	Clinical and Industrial Biomedical Engineering
MTRL 495	Biomaterials
MECH 439	Biomechanics Research Seminar
MECH 459	Biomedical Design Project
+	Specialized technical electives

WHAT DOES THIS MEAN FOR YOU?

This option allows graduates to develop technical, communication and problem solving skills, as well as an in-depth understanding of medical technologies. As such, graduates are well-equipped to go out and work in industry, government institutions, or research facilities, or to pursue post-graduate education.

In industry, biomedical engineers can work in a variety of settings, from hospitals and pharmaceuticals to medical imaging and bioinstrumentation companies. Prosthesis development is a major area involving the design and optimization of knees, hips, shoulders and heart valves.

Mechatronics

With the growing capabilities of electronics, many mechanical systems are now either controlled by computers or enhanced by embedded sensors and circuits. This is Mechatronics, and it is one of modern society's most critical fields.

Mechatronics combines the principles of mechanical, computer, electrical, and controls engineering into a unified whole. Mechatronics engineers design everything from smartphones and kitchen appliances to CNC Machines, medical devices, and robots.

Students in the Mechatronics Option have access to one of the most well-equipped laboratories in North America, giving them the unique opportunity to gain hands-on experience in the integrated design of mechanical, electrical, and software systems. Students leave with the necessary background to pursue interesting and relevant projects, either in industry or graduate studies.

HOW DOES THIS OPTION CUSTOMIZE YOUR DEGREE?

Remove these courses

ELEC 344	Applied Electronics and Electromechanics
MECH 305	Data Analysis and Mechanical Engineering Laboratories
MECH 327	Thermal System Design
MECH 329	Materials for Mechanical Design
MECH 358	Engineering Analysis
MECH 368	Engineering Measurements and Instrumentation
MECH 380	Fluid Dynamics
MECH 426	Mechanical Design
MECH 457	Mechanical Engineering Design Project
MECH 466	Automatic Control
+	1 Technical Elective

Add these courses

CPSC 259	Data Structures and Algorithms for Electrical Engineers
CPEN 333	System Software Engineering
CPEN 312	Digital Systems and Microcomputers
ELEC 302	Electronic Circuits for Electromechanical Design
ELEC 343	Electromechanics
MECH 306	Data analysis and Mechatronics Laboratories
MECH 366	Modeling of Mechatronic Systems
MECH 420	Sensors and Actuators
MECH 421	Mechatronics System Instrumentation
MECH 423	Biomechanics
MECH 458	Electromechanical Design Project
MECH 467	Computer Control of Mechatronics Systems



WHAT DOES THIS MEAN FOR YOU?

The Mechatronics Option provides students with technical, teamwork, and communication skills. Students leave the program well-positioned to pursue graduate studies in mechatronics, mechanical, electrical, or computer engineering, or to work in a wide range of industries, from consumer goods or industrial applications, such as CNC machine tools and biomedical instrumentation.

Thermofluids

The most customizable of the Options, Thermofluids allows you to focus on what you're truly passionate about. Automotive design, naval architecture, power generation, heating and air conditioning - it's all here and it's your ticket to an exciting industry full of opportunities.

Thermofluids is the combined study of heat transfer, fluid dynamics, thermodynamics, and combustion. The applications of thermofluids range from efficient engine design to heating, ventilation, and air-conditioning (HVAC). Engineers in the field of thermofluids will find themselves well prepared for almost any challenge in a variety of industries.

Thermofluids courses include fluid dynamics, computational fluid dynamics, and a plethora of thermofluids technical electives. The Option itself is heavily customizable and allows each student to refine their degree to suit their needs, while enriching them with a sound base of both general mechanical engineering and thermofluids knowledge.



HOW DOES THIS OPTION CUSTOMIZE YOUR DEGREE?

Remove these courses

MECH 329	Materials for Mechanical Design
MECH 368	Engineering Measurement and Instrumentation
MECH 392	Manufacturing Processes
MECH 457	Mechanical Engineering Design Project
MECH 426	Mechanical Design

Add these courses

MECH 386	Industrial Fluid Mechanics
MECH 479	Computational Fluid Dynamics
MECH 489	Experimental Thermofluids
MECH 454	Thermofluids Capstone Design Project
+	Specialized technical electives

WHAT DOES THIS MEAN FOR YOU?

Expect to take on some of the most challenging and applicable courses in your undergraduate degree. This Option will prepare you to tackle our generation's growing energy demand, and give you a new perspective to solve engineering problems using applied thermofluids.