Mechanical Engineering Specializations:
Students typically select their 4B courses from the courses offered in the ME specializations below. Students may select any combination of courses that meets their career objectives; however, at least 7 of the required 9 fourth-year technical electives must be ME courses. Note that there are additional rules about CSEs, and additional rules for students enrolled in the Biomechanics Option. Please refer to the ‘Mechanical Engineering Fourth Year Course Selection’ sheet available in the Mechanical Engineering Undergrad Office or on the web at

Please note that MSCI 331, MSCI 431, MSCI 432, MSCI 444, MSCI 452, MSCI 423 and MSCI 551 count as 4th year technical electives (non-ME technical electives). Contact Tanya Yoworski if you need more information.

1. Fluid Mechanics

   ME 563 Turbomachines
   ME 564 Aerodynamics
   ME 567 Fire Safety Engineering
   ME 595 Special Topics course “Experimental Methods in Fluids”

   Instructor
   D. Johnson
   S. Peterson
   E. Weckman
   S. Yarusevych

2. Thermal Engineering

   ME 452 Energy Transfer in Buildings
   ME 547 Combustion 1
   ME 571 Air Pollution
   ME 599 Special Topics course Sect 001 “Low Energy Building Systems”
   ME 599 Special Topics course Sect 002 “Hybrid Vehicles Project 2”

   Instructor
   M. Collins
   R. Fraser
   Cancelled
   D. Mather
   TBA

3. Solid Mechanics and Design

   ME 524 Advanced Dynamics and Vibrations
   ME 526 Fatigue and Fracture Analysis
   ME 598 Spec Topics course “Engineering Biomechanics” (equiv to CIVE 460)

   Instructor
   A. Salehian
   G. Glinka
   W. Brodland

4. Materials Engineering and Processing

   ME 531 Physical Metallurgy Applied to Manufacturing
   ME 533 Non-metallic and Composite Materials
   ME 535 Welding Metallurgy
   ME 538 Welding Design, Fabrication and Quality Control
   ME 596 Spec Topics course “Manu of Mech Materials & Components"

   Instructor
   L. Liao
   R. Varin
   N. Zhou
   T. Nguyen
   K. Musselman

5. Automation and Control

   ME 547 Robot Manipulators: Kinematics, Dynamics, Control
   ME 555 Computer-aided Design
   ME 597 Multi-Sensor Data Fusion
   ME 597 Autonomous Mobile Robots

   Instructor
   Not Offered this term
   B. Khamesee
   C. Hulls
   C. Hulls

6. Welding Specialization – see Prof Adrian Gerlich, Co-ordinator, or visit the website at
http://uwaterloo.ca/mechanical-mechatronics-engineering/current-undergraduate-students-mechanical-engineering/welding-and-joining-specialization

