ME 4905

Engineering Design for Rehabilitation & Assistive Technology

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Course Structure

Students:

- 25 - 30 ME students
- 25-30 BME students
- 5 -10 Occupational therapy and Physical therapy students

Mentors/team advisors:

- Engineering mentor from ME or BME
- Clinical mentor from Occupational therapy, Physical therapy, Sports Medicine, Surgery
Course sequence: Fully integrated BME, ME, OT/PT teams

Fall:
• First seven weeks in a specific section of ME 4900 for Medical Device Students:
  MECHENG 4900 LEC: Monday_4:10-5:30PM (W180)
  LAB: Wednesday/Friday_3:55-5:45PM (W180)

• Second seven weeks:
  ME 4905.01 ‘Capstone Design II – Assistive Devices’

Spring
• ME 4905.02 – ‘Capstone Design III – Assistive Devices’
Where we work

The Assistive Technology (AT) Center
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Recent Projects

Adaptive Rowing Device for use with Lower Extremity Prosthesis

Rowing with Prosthesis

- Risk damage/loss of expensive prosthesis in water
- Very limited range of motion due to lack of ankle joint
- Reduced power output from lower body
Recent Projects

Powered pediatric mobility assist device

- Children, ages 2-5
- Down syndrome, spina bifida, arthrofibrosis, cardiac issues, cerebral palsy
- Endurance Limitations:
  - Assistance required for long-term activities
  - Able to stand with assistance
Recent Projects

Off-road wheelchair device

This group developed a reasonably priced device that can be attached to a manual wheelchair and allow a caregiver to navigate rough, hilly, or uneven terrain, allowing access to a wider range of environments and activities.
Recent Projects

Wheelchair monitoring system

Device to allow clinical physical therapists to better assist their manual wheelchair users.

The device collects data about the wheelchair user’s daily activity that can be adjusted in a way to give the clinicians valuable information that they can use to teach and make adjustments to their patients’ use wheelchairs.
Unique features & benefits

• Each group has an engineering advisor and a clinical/medical advisor.

• Opportunity to work in a medical environment on current real-world problems.

• Products are tested in the clinic with medical professionals and patients.

• Many of the designs are incorporated into the clinical setting during or after the course.

• Make a difference while learning the process of design!
Enrollment process

No advisor approval needed

Register for appropriate ME 4900 section in AU 2020

Register for ME 4905.01 in AU 2020 and ME 4905.02 in SP 2021

First come, first enrolled basis until course is full
Questions?

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