

EEL 5666/EEL 4665: Intelligent Machine Design Laboratory (IMDL)

<http://mil.ufl.edu/imdl/>

Class Description

In EEL 5666 and EEL 4665: *Intelligent Machines Design Laboratory (IMDL)*, the student will be trained in the areas of design and construction of autonomous robots and machine learning. Over the last 17 years (since the course was created in 1994), IMDL has been taken by over 575 students. A comprehensive list of projects, research topics and papers can be obtained from our web site. Each undergraduate or graduate student will design, build and assemble his or her own robot platform in 1 semester! Some past robots built in IMDL/MIL are shown. *Rover* (a *Mars Rover* clone), *LawnNibbler* (an autonomous lawnmower) and *Koolio* (a mid-size autonomous refrigerator) were robots originally designed in the IMDL laboratory and known throughout the country through various media exposure including *CNN* and *USA Today*.



Spider: Insect robot

This course is non-competitive in nature. Your grade will be determined from how you meet the course performance objectives, not by how well you perform compared to a fellow student. If you meet the performance objectives, you make a grade of A! You are encouraged to help your classmates with ideas, concepts, and advice as well as to discuss problems encountered. Someone may have already solved a problem that is plaguing you, therefore we encourage you to share about your successes and difficulties. If you like someone's concept about a sensor, a behavior, an actuation mechanism, a mechanical structure, etc., and want to include the same on your robot, you will be free to do so, as long as you always give credit to the student in your documents (reference the author's work.)



ARBOR: Opens beer bottles

The *Intelligent Machines Design Laboratory (IMDL)* provides students with a realistic engineering experience in design, simulation, fabrication, assembly, integration, testing, and operation of a relatively complex, intelligent machine. A course project, oriented about a small, microcomputer controlled, electronically sensualized, autonomous mobile robot that exhibits various tasking behaviors, requires the integration of various sub-disciplines in electrical, mechanical and computer engineering: microcomputer interfacing and programming, analog and digital electronics, computer aided engineering, platform fabrication, control, and communications.

Course Options (from syllabus)

1. Design, build, and program an autonomous mobile robot using kit parts combined with novel circuits and mechanics of your design.
2. Build a sophisticated robot kit and then program and demonstrate sophisticated machine intelligence behaviors.

Prerequisites

Any UF undergraduate or graduate student is eligible and encouraged to take this course. We have had mechanical, industrial & system, agriculture and aerospace engineers, physicists, and of course computer scientists, computer engineers and electrical engineers all succeed in this course. Recently many of the students have been undergraduates, although 40-50% of the class is still composed of graduate students. Electrical and computer engineering students should have had EEL 3701 and may take EEL 4665 or EEL 5666 along with or after EEL 4744.

Demo Day

All semesters end with *Demo Day*, the day you demonstrate your robot to your peers, the professors, your TA's and any guests and media. VIPs including the university president, provost and various deans have attended; as have representatives from the local TV stations, radio stations and newspapers. Become famous! Sign up for EEL 5666 or EEL 4665: IMDL today!



Coin Frog: Collects coins from a fountain



Eyebotic: "Eyes" for the blind



Gizmo: Soda can sorter



Hyena: Metal detector and collector



Silly Goose: Gathers up her children



PANTS: A converted Robosapien can understand speech and play games