EE 382: Introduction to Design

Electrical Engineering Department
New Mexico Tech

Spring 2007

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Course Objectives

- Learn an approach to design, project management and team work.
- Learn to use spec sheets and design according to available components.
- Learn how to write technical documents and give presentations.
- Perform various case studies.

Project

- Design two robots capable of wireless communication and coordination among themselves.
- The task is to use the two robots to push a long bar in a straight line within a lane.
- The communication and actions of the robots are supposed to be displayed on a remote basestation.
- The class will be divided into 4 teams with 4-5 students each.
- The subdivision of the teams is determined by the individual teams.

Tasks

- Low-level control: real-time control of the robot motion.
- Communication: communication among the robots and themselves, the robots and the base station, and among the different subsystems.
- High-level control: The coordination behavior of the robots to ensure that the bar moves in a straight line from the beginning to the end.

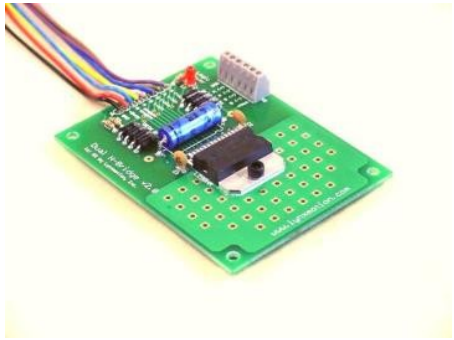
Project Specifics

- Lane : 2m(wide) X 4m(long)
- Object: long bar approx. 1m wide
- Team budget: TBD

Provided Items

- 3 micaz per team

- 2 Dual H-bridge motor drivers



- 2 Dual motor gearbox kits

Grading

Assignments: (survey papers, etc.)	10%
Preliminary Design Review:	10%
Midterm Functionality & Design:	25%
Final Presentation:	10%
Final Report (including electronic version):	10%
Final Functionality & Design:	25%
Group Members Evaluation:	10%

In general, same grade is giving to the entire team. Occasionally, higher grade will be given to team members with outstanding contribution, as well as lower grade to members is insignificant contribution.

Assignments

- Assignment 1: A survey paper about coordinated behavior.
- Assignment 2: Outline of possible approaches.

Early Milestones (1st month)

- Compile and run Blink Application
- Compile and run Basestation Application
- Reading and writing to I/O
- Running the motors using micaZ
- Demo Platform
- Reading from ADC

Expectation from You

- Attend class
- Work efficiently within your team
- Complete assignment and milestones
- Complete the project
- Regularly check the website for updates, announcements and deadlines.

Your Expectation of Us

- It is a design course, so you will be guided but not provided with the solution.
- You will be provided with a series of presentations to help you with your project.
- We will be available during the class period and during office hours.