

ENGR 190

TA Manual

This manual is intended to help you in running the ENGR 190 “Mindstorms Meets Matlab” course. It should at least give some idea of the administrative tasks that need to be done and help you avoid past mistakes. Sample emails are also included.

Contacts

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First Week

Since there aren't regular meetings for this class on the first week of the semester, this week will just be preparation.

Get card access to the Holtzendorff storage room from Dr. Brandon. The UTA key ring is kept there, and you can use it to unlock the project lab.

Get the email address for the class mailing list from Dr. Stephan, Dr. Park, or Dr. Dawson. If there are multiple sections, make sure to get all of them. Also, the list server will only accept emails sent from your employee account. Any messages sent from your student or other account will be rejected.

Talk to Dr. Stephan to reserve times for the project lab. Try to choose times so that they are spread out across all days of the week and so that some are morning and some are afternoon. Also, choose at least one evening time since evening will be the only time when the majority of students have space in their schedules. Keep in mind that some classes like Chemistry 101 or Math 106 will have evening tests that will occasionally conflict.

Introduce yourself to the class and give the time and location for the introductory meeting, if there is one. Give them the link to the course web page.

Also, tell the students to install MATLAB. There are instructions in the lab manual or they can go to CCIT. Become familiar with how to install MATLAB on both Windows and Mac OS. Students frequently have trouble with the installation. When they do, you can always refer them to CCIT, but often it is easier and faster to just walk them through it since CCIT is usually swamped at the beginning of the semester.

I'm _____, and I'll be your TA for ENGR 190. To start the semester off, there will be a short introductory meeting on _____ at _____. I understand some of you will have scheduling conflicts with this meeting. If so, don't worry about it, as the same material is on the course webpage.

The course webpage is located at <http://www.clemson.edu/ces/departments/ece/academics/undergrad/mindstormslab.html>. The PowerPoint slideshow we'll be showing at the meeting is posted there. So if you can't make it to the meeting, take a look at that. Also, if you don't already have MATLAB on your computer, download and install it. There are instructions on the course webpage, under "RWTH Toolbox Setup Instructions", which can also be found on the course webpage. Alternatively, you go to CCIT and have them install it for you.

Also, email the class explaining the schedule and attendance requirements. Since this class doesn't have a normal schedule / attendance policy, students will very likely ask a lot of questions about it and you will have to explain it several times. In addition, make sure that there isn't any student that has a conflict with every project lab time.

There will be no attendance requirement. I will be available in the Holtzendorff Project Lab for 12 hours a week. Those times are:

- _____
- _____
- ...

You can stop by at any time during those hours to work on your projects and get help, but you are not required to. Also, we'll be allowing you to take your kits back to your dorms if you like, so you can work on the projects outside of the scheduled meeting times. For labs 1-5, you will have to get the lab checked off to receive credit. To do that, you will need to come by the project lab during the scheduled hours the week the lab is due and show that you've completed the lab. That shouldn't take more than 5-10 minutes per group and will consist of demonstrating the challenge section at the end of the lab.

Is there anyone who has a conflict with all of the above times? You don't necessarily have to be there the whole time, I want to be sure everyone has a time they can come and get help. I'll do the best I can to accommodate everyone.

Finally, make sure they know you are available to help them and that they should not hesitate to contact you. In almost every email, include a line saying "Feel free to email me with questions" or something similar.

Selecting Partners

The students who register for this particular section of ENGR 190 will most likely be scattered through several sections of CES 102. Also, since they did just arrive at Clemson, very few will know each other. So you cannot just say “Find a partner” and let them go. Probably the best thing to do is have about a half hour meeting in the project lab, in the evening to accommodate the most people, and tell everyone who needs a partner to come. That lets the students at least meet someone before they agree to work with them for the entire semester. Also, that way if they don’t end up liking their partner, they don’t feel forced into it. Tell everyone who either doesn’t care or can’t come to the meeting that they will be assigned a partner. And of course, if some students already know who they want to work with, give them the option of just emailing that request to you.

Labs

On the weekend before a lab week, send out an email reminding the class of the lab and what they have to do. Summarize the lab and tell them specifically what they have to complete for credit. Also, include the link to the lab manual again.

This week, your task is to build the robot that is used in the labs and to complete Lab 1. You can work on the robot either in the project lab or you can take your kit with you and work on it elsewhere. During one of the scheduled project lab times this week, each group will need to show be their completed robot and also demonstrate Lab 1 by connecting to the robot.

Again, the lab manual can be found at

<http://www.clemson.edu/ces/departments/ece/academics/undergrad/mindstormslab.html>

The weeks dedicated to the labs are likely when attendance will be highest and the most students will have questions. Be sure you're well acquainted with the RWTH Toolbox commands used in each lab so that you can answer questions when asked.

Also, keep in mind that for the challenge section, many students will come up with solutions that aren't exactly like the sample solution or one you came up with. Try your best to understand how they are doing things and help them along that path instead of trying to steer them toward something in line with the sample.

Project

For the project, take a very hands-off approach. Make it clear that this is a student driven project and they are going to basically be given the equipment to complete it and then set loose to work on it as they please. Of course, do be sure to emphasize that you will still be available to answer specific questions, help with debugging programs, etc. But as for general design questions, try to steer them toward coming up with their own ideas instead of just throwing out some of your own for them to use. Encourage them to do their own research on the internet to find design ideas or check the RWTH toolbox documentation to find out all the capabilities of the robot that are available to them.

Each week, be sure to remind the students of upcoming deadlines.

Last week was the end of the preliminary labs, so now you have the rest of the semester to work on your project. The project description is available on the lab manuals page of the course website. The next deadline is the week of ____, when the robot prototype and a report are due. As stated in the project description, you are free to use building instructions and programming resources that are available on the internet, but if you do, you must cite your sources and document your reasons for choosing that design over others.

Also, you will undoubtedly get a lot of questions about what to put into the progress report, final report, and presentation.

A reminder, the prototype and progress report for the project are due next week. By ____, everyone should come by the project lab and show me A. that you've built a robot and B. that you've begun the programming for it. Also, you will need to submit a short (one page or so) progress report.

The report should talk about why you chose the design you did and how you went about programming it. If there are any specific problems you ran into, include those and how they were solved. Also, include what you plan to do next. The basic idea is to demonstrate that you've put some thought into this and can analyze why one design/sensor/algorithm/etc. may be better than another. Also, don't forget to cite your sources if you used a design or program found on the Internet.

For another example,

As you are probably aware, the final report and presentation for the project are due next week. This report should be similar to the progress report. Include what you were the obstacles that prevented the project from working well. Also, include anything you feel you've gained from this class. As for the presentations, we've decided to do things a little differently. Rather than try to find a time that fits everyone's schedules, especially in the crunch time before exams, you can just email your presentations to me. Attached are instructions for how to record audio narration in PowerPoint. Obviously, doing this precludes the possibility of a live demonstration, so you should include a video of your robot in the presentation.

Final Presentations

The students can do their final presentations by recording narration in PowerPoint, converting their presentation to a video, and then submitting that by email. Instructions for this are attached below. Also, be sure to have them include a video of their project in action in their presentation. Due to the potential for large file sizes, it is probably best to have them convert their presentation to a video, upload it to YouTube or Vimeo, and email you a link to it.