Week 1: August 27

**ENED1020**

* Ethics lecture and software download
* Class introductions
  + Students were very shy and reserved, especially during table and group discussions. Found it necessary to encourage all to participate by asking individuals for their opinions. This seemed to help many students open up and be more comfortable voicing their thoughts.

**ENED1090**

* Table of 10 girls- all BMEs students
* Professor said “go” on assignment, without giving any lecture, introduction to material or course.
  + Students had no idea where to begin, none had ever even or opened up Matlab before. I gave my table a brief introduction to what Matlab is, the wide range of uses, and personal experiences that I have used it for. Many seemed very interested and asked further questions about my experiences with it.
  + Went through the powerpoint, helping to clarify confusion and relate the material to future applications they may see.
* I did not feel comfortable with how the professor approached the recitation, I felt overwhelmed by the abrupt responsibility to introduce, teach, and relate the entire material, rather than supplementing and being a point of reference.

Week 2: September 3

**ENED1020**

* Verification Lab
* Students did not exhibit very effective teamwork, commonly 1 or 2 students were doing the majority of the work and the 3rd person was not very involved. There was very minimal communication between group members.
  + I was interested in observing their strategies and behaviors, to see in what areas to watch for improvement throughout the semester and how to suggest they improve for the next lab.
* Provided mainly technical support today, such as how to graph in Excel.
* When questioning students for comprehension of the material, most understood the concept of forces, tension and compression.

**ENED1090**

* Plotting in Matlab
* Professor lectured on the relevant material, so the students were much better prepared for recitation assignment today.
* Students quickly and very easily frustrated when scripts not working, which is how I was too when I was first learning coding.
  + Tried to help them avoid easy and common mistakes by highlighting to the entire group troublesome spots and easy things to mess up that would cause an error.
  + Emphasized persistence, that this is something brand new and it will get easier as they learn more things to look for and how to avoid error messages.
* Students already using other tools (lecture powerpoint, Google, each other) to be self-sufficient and not just ask me for answers. However, they did appear comfortable approaching me when several of them could not fix a problem or for general guidance when they were completely lost or stuck.

Week 3: September 10

**ENED1020**

* Basic Electric Circuits experiment (week 1)
* Students had very few difficulties with lab procedures. I tried to ensure students understood the content of the lab beyond exactly reproducing the circuit board pictures to yield numbers. Asked each group to explain the concepts they were applying in the lab.
* Had one personal conversation with a female BME student, who approached me questioning if what she is doing has any relevance/application to BME. This provided a great opportunity to give her examples of how future classes and projects connect to this material as well as how more general topics, such as teamwork and report writing, will be applicable to future coursework as well as co-ops.

**ENED1090**

* Plotting sine waves and generating sound
* The lab instructions were very straight forward, thus the students had very few issues and questions.
* I am noticing the students becoming more self-sufficient and capable of problem-solving and debugging their own codes.
* Today was an example of implementing the laissez-faire leadership theory.

Week 4: September 17

**ENED1020**

* Electric Circuits (week 2)
* The students do not appear to be preparing for lab (reading the instructions prior to recitation) or before asking for help from myself and the other TA. If something does not work, they immediately ask us what is wrong, without trying to solve the issue themselves or refer back to the lab instructions/figures. Furthermore, there is little collaboration between groups for troubleshooting.
* Teams are starting to work together better, there is more communication between group members. However, many of the groups appear to have a dominant individual who is taking the leadership role of the group.
* Returned graded verification lab reports today, many students appeared to not use the rubric report and formatting guidelines.
  + I took a few minutes to discuss with the students common mistakes I saw while grading the reports and things to improve in future reports.

**ENED1090**

* myDAQ lab
* Very long lab, the students were nowhere near finished after the two hour recitation period
* Common problems/errors in code around my table of students as well as in the classroom. At first, I gave my students subtle hints and reminders of general coding practices and requirements (such as pre-defining variables). For some, this solved their problem. For other students, they still were confused and stuck so I had to provide further guidance. For common errors, I addressed the entire table as a whole to mitigate repeated errors and so students could learn from each other’s mistakes.
* Individuals starting to work with others to solve their problems.
  + I encouraged continuation of this behavior by suggesting students ask each other as well as fellow classmates on how they solved a certain problem before approaching me.
* Discussed with the table specific applications of RC circuits and frequency responses, specifically in BME

Week 5: September 24

**ENED1020**

* Solar cell experiment
* Students do not seem to be progressing in teamwork as fast as the ENED1090 students are. 1, sometimes 2, students are the dominating personality in each group and the 3rd member does not actively participate.
* Students not as adept in troubleshooting strategies, they go straight to the TA before their own group members and other table members.
  + Encouraging students to develop self-sufficiency in various ways: refer to the lab, ask your classmates, “Why do you think this may be happening,” etc.
* Ensuring each student understands what is being calculated and what each element does by asking them to explain what is happening.

**ENED1090**

* Students came to recitation very prepared, many had the lab completed and only needed to check answers.
* Common errors/misunderstandings of the lab instructions
  + I created a flow chart on the whiteboard with the students directing me as to the steps they thought were required, which all of the students seemed to benefit and move forward on the assignment.
* Very collaborative environment between the students.
  + I verbally praised students when I observed the teamwork and collaboration.
* One student particularly frustrated week after week. It is apparent she feels inferior in her coding abilities, so I particularly sought to work with her and encourage her that she was on the right path, she had the right ideas, etc. This was an example of applying the Hersey-Blanchard leadership theory.

Week 6: October 1

**ENED1020**

* Fuel Cell experiment
* The lab has downtime while gas accumulates; I used this time to discuss other topics with students, such as scheduling classes for spring. Some students inquired about co-op.
  + This provided an opportunity to share insights I have gained through my experiences as well as suggestions for courses and preparing for co-op.
  + I was able to connect with multiple students based on hometowns, interests, and goals that were discussed during this time.
* Reviewed lab reports with students by discussing new things to improve for the next report, application for what they are doing (example: rewriting the procedure so it is repeatable for somebody else) for future job experiences

**ENED1090**

* DNA Lab
* I have noticed the codes the students are provided with on Blackboard are much more developed then when I took the course two years ago. We started every assignment from scratch.
* Students appeared very uninterested and unmotivated, they were just trying to get it done as fast as they could. This led to many small, careless errors.
  + It would be easy for me to point out their easy mistakes, but in this situation I thought it better to suggest areas to look to fix their problems since they are in a rush and know better than to make these mistakes. This will require them to pay closer attention to detail now and in future assignments.
* Explained the structure of for/if loops and how it can condense multiple lines of code. Students seemed to understand how it can essentially help them do less work.
* Concept of a ‘flag’ variable (in lab instructions) was very difficult for students to grasp, but found simpler ways to explain it until they understood and could implement it in their codes.

Week 7: October 8

**ENED1020**

* Thermodynamics (week 1)
* Straight-forward lab, very few problems and questions from students
* This was a good lab to make sure students actually understood what was happening, again rather than simply reproducing images from the assignment. Asked for students to demonstrate integration of previous knowledge, such as the concepts of work and power. Asked students to explain how changing the conditions (such as removing insulation, changing the voltage) affected the experimental results.

**ENED1090-** no recitation due to Reading Days

Week 8: October 15

**ENED1020**

* Thermodynamics (week 2)
* Problem solving with the students in getting multiple plots on the same figure window in Capstone
* Probing students to interpret results, hypothesize what will happen based on changing variable conditions. Most students were able to demonstrate understanding of the material

**ENED1090**

* Students were again prepared for class, most had completed the lab prior to recitation
* Taught students how to debug line by line, especially before entering to loop to understand if code within the loop is wrong
* Encouraged students to check for basic errors (equation coded correctly, parenthesis, consistent capitalization)
* Asked students to explain their findings (data table) and trends they found in the data
* Students are continually progressing in assisting each other and asking less of me (unless all of them are experiencing the same issue and can’t find a solution)
* Aside from the mini debugging lesson, today was another example of laissez-faire leadership

Week 9: October 22

**ENED1020**

* Bridge Building (week 1)
* Students not thinking about what they need to test to verify/validate their designs, very little exploring.
  + I found myself having to tell the students exactly what to do, if the lab did not explicitly state what to test or build, they needed to ask questions. I found myself asking them questions to get them thinking about what they need to know, what they need to test in order to answer their own questions. Also, myself and the other TA explained that they are not always going to be provided with exact directions, in practical situations it is often necessary to find the means to reach the solution or goal.

**ENED1090**

* Debugging Code lab
* Frustrated students, copying or asking for explicit answers
  + When I heard, observed students copying, I immediately told them they needed to resume their own work or they may face consequences in the future. When asked for explicit answers, I rather provided guidance and suggestions to continue, but would not give the outright answer.
* As many finished the lab early, they stayed to begin working on the homework assignment and best utilize their resources (each other, me).
* Large group of students did not understand how to create a vector and add new values.
  + I drew a basic example on the whiteboard and walked the through it step-by-step, asking along the way what they thought the immediate response/output would be to each step. After the explanation, all of the students were successfully able to complete this step of the homework assignment.

Week 10: October 29

**ENED1020**

* Bridge Building (week 2)
* Not a lot of need for my assistance in this lab
* First time the entire table of students worked together, I noticed different team dynamics with more than 3 people to each team. Their organization was better, each group had defined roles for each team member, and they developed a methodological way to test their bridges (move the load cells to collect all data).
* Discussed lab report expectations with the entire room, explicitly stated what we would be grading for, in hopes students would capitalize on this knowledge to create better lab reports.

**ENED1090**

* myDAQ Refrigerator lab
* Great interaction within groups (3 students per DAQ device) as well as between groups of the table
* When questioned what each component of the setup represented, majority of the students were able to explain the representations correctly and demonstrate their understanding of the lab.
* Some students who were not using their computer for the software (1/group) seemed distracted and not helping their group members as much as they could. I insisted all students needed to participate in writing the code and further asked each of these individuals to explain what was being done in the lab to me to ensure they were involved.

Week 11: November 5

**ENED1020**

* Design-your-own lab (fuel cell car, Matlab audio)
* Not a very high demand for my assistance, all the groups were troubleshooting their own problems very well and using creativity to improve poor results
  + Praised the creative behavior and further challenged students to continue to improve their designs to yield better results. Due to a lack of measuring equipment, allowed for students to be creative in measuring their distances the cars traveled and some unique solutions were realized (ex. shoe lengths)
  + Found myself thinking about possibilities to test, possible experimental designs (ex. use a fuel cell to power a car across the bridge, using the fan to pull the string of the car)
* Tried to foster an interactive, fun atmosphere with the students and included the professor when she came into the room
* Students sharing ideas with each other to get their cars to travel greater distances

**ENED1090**

* Heat Transfer along a Rod lab (nested loops)
* Confusion from the start of the assignment, even with simple calculations at the beginning
* I had to explain almost every step in greater detail than the lab instructions, which required me to improve my patience. I used the whiteboard to draw several simpler examples of concepts that would be used in the code. One student grasped the concept quicker than others, and then took the lead to further explain the material to her peers, which was great to see.
* Despite 2 different formats of loops being used to accomplish the task, students were collaborating with each other despite the differences. This resulted in various approaches and codes that all accomplished the same result. I used this example to emphasize to the students usually there is not just one correct way to solve a problem, both coding and in real world situations.

Week 12: November 12

**ENED1020**

* Work on NAE Grand Challenges group project
* Discussed research techniques and resources with the students that I have used in my own research projects
* Discussed methods to approach each group’s selected challenge, looked for unique outlooks for the problem rather than the common perception or solution

**ENED1090**

* 2D Heat Gradient lab
* Students came to recitation with a negative attitude about the assignment, I encouraged them that it was not as bad as they thought and based off their progress last week, I had confidence they would be able to complete this assignment. Suggested they take time to read through the entire lab and understand all the steps required before beginning.
* I drew basic sketches on the whiteboard to try and help the students understand what the calculation of each condition represented. After completing the assignment, feedback from the students included “the drawings at the beginning were how we got it.”
* A few girls gave up before they even started, I encouraged them to utilize their peers and resources available during recitation rather than waiting until later in the week to complete the assignment. Additionally, this was a time I could share my previous experiences where although a difficult task emerged, it is not always possible to put it off until a later time. They seemed to understand and appreciate this and began to work on the assignment.

Week 13: November 19

**ENED1020**

* NAE Grand Challenge project progress
* Encouraged critical thinking towards project topics, questioned validity of information and sources to ensure students could defend their material
* Suggested students do no procrastinate on the project and to use class time wisely, due to impending finals and other projects. To do this, the other TA and I made each group prove their progress to us before they were allowed to leave recitation for the day.

**ENED1090**

* Stenography lab
* Students were very confused about commands introduced in lecture (mod, floor). Thus, for the entire table I explained the basic principle and idea behind the commands and used the whiteboard to provide alternate examples and descriptions until all comprehended the application of the commands.
* Old, basic mistakes reappearing in codes, which required my patience when students were asking why their code would not run but it was old errors they should not be making at this point in the semester. I found myself giving general feedback that guided them to solve their own mistakes.
* To see if the students could translate the basic ideas and principles the lab was using, I explained an alternate method and structure to approach the problem, which the students were able to implement successfully.

Week 15: December 3

(Week 14- No recitations)

**ENED1020**

* National Academy of Engineering (NAE) Grand Challenges group project presentations
* Did not grade my normal room of students.
* Found myself comparing the presentations and presenters’ skills to what I have been taught as proper presentation techniques. Many students were much better than I expected, whereas several groups and students struggled in effectively presenting their Grand Challenge.

**ENED1090**

* CVG Airport Weather data analysis
* Very easy lab, students appreciated the professors’ thought of saving a quick lab for the last assignment before finals week.
* This lab required almost no assistance from me, but I was able to have multiple conversations with students about preparing for exam week, returning in the spring semester for classes, starting the co-op job search, and even one conversation about this TA experience for the Honors program.