University of Pittsburgh
Office of Measurement and Evaluation of Teaching

Dear Professor Matthew Barry:

Student Opinion of Teaching Questionnaire Results

This form contains survey results for ELECTRICAL CIRCUITS(MEMS-0031)-1050.

Attached is a report in PDF format containing your Student Opinion of Teaching Survey results from last term. The report is best viewed and/or printed in color.

The evaluation results are broken down into three distinct categories. The first part of the report shows a breakdown of student responses to the quantitative questions. For each item, the number of students (n) who responded, the average or mean (av.) and standard deviation (dev.) are displayed next to a chart or histogram that shows the percentage of the class who responded to each option for that question. The percentages are above the number on the rating scale which increases from left to right, i.e. the number 1 equals the least favorable rating and the number 4 or 5 (depending on the scale) equals the most favorable rating. The sum of percentages will equal 100%. A red mark is displayed on the chart where the average or mean is located. To calculate how many students responded to each option, multiply the number of students who answered the question by the percentage for that option. For example, if 14 students answered the question and 50% responded to option 3 then 7 students marked option 3 for that item (14 x .50 = 7). The standard deviation is a common measure of dispersion around the mean that may be useful in interpreting the results.

The second part displays individual comments to each question in the open-ended section of the evaluation. All the responses to the first question will be listed together after the first question and then the responses to the next question will be listed together after the next question, and so on.

The final part gives you a profile of the student responses to the quantitative section of the evaluation. This is a chart listing all of the means for the scaled items with a dashed red line connecting the means.

If the number of respondents for any of the scaled items is fewer than seven, please be cautious in interpreting the quantitative results.

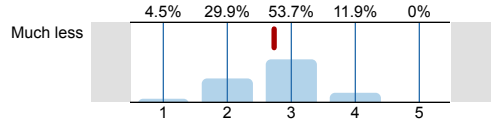
Office of Measurement and Evaluation of Teaching (OMET)

Professor Matthew Barry

ELECTRICAL CIRCUITS(MEMS-0031)-10502164_UPITT_MEMS_0031_SEC1050
Spring 2016
67 RESPONDENTS = 43.51% OF NUMBER REGISTERED

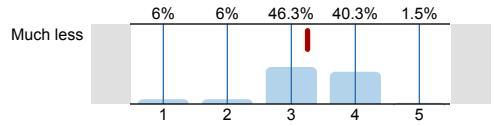
1. SELF RATINGS

1.1) Compared to other courses at the same level, the amount of work I did was:



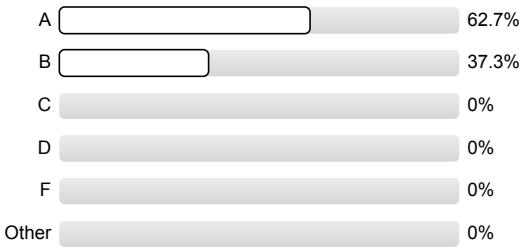
n=67
av.=2.73
dev.=0.73

1.2) In this course I have learned:



n=67
av.=3.25
dev.=0.84

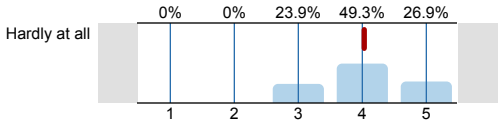
1.3) The grade I expect in this course is:



n=67

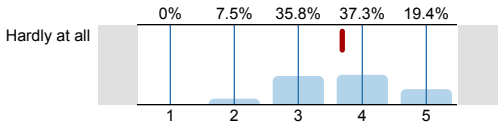
2. TEACHING EVALUATION

2.1) The instructor presented the course in an organized manner.



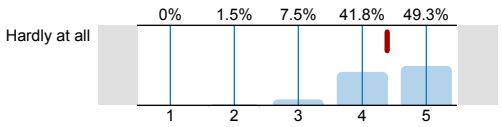
n=67
av.=4.03
dev.=0.72

2.2) The instructor stimulated my thinking.



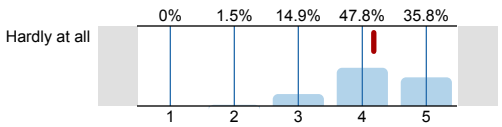
n=67
av.=3.69
dev.=0.87

2.3) The instructor evaluated my work fairly.



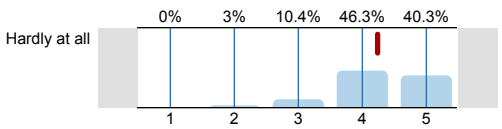
n=67
av.=4.39
dev.=0.7

2.4) The instructor made good use of examples to clarify concepts.



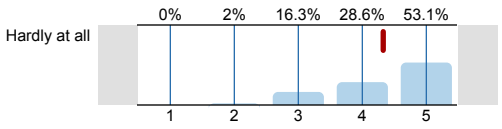
n=67
av.=4.18
dev.=0.74

2.5) The instructor maintained a good learning environment.



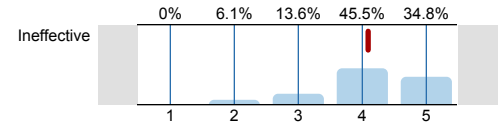
n=67
av.=4.24
dev.=0.76

2.6) The instructor was accessible to students. (Do not answer if no basis to judge)



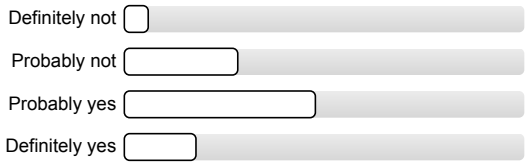
n=49
av.=4.33
dev.=0.83

2.7) Express your judgment of the instructor's **overall teaching effectiveness:**



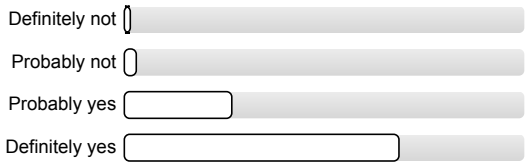
n=66
av.=4.09
dev.=0.85

2.8) Would you recommend this <u>course</u> to other students?



n=67

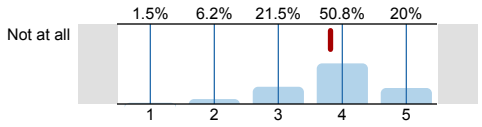
2.9) Would you recommend this <u>instructor</u> to other students?



n=67

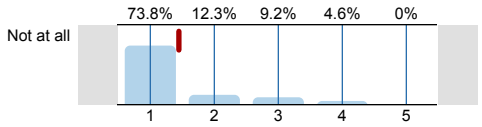
3. SWANSON SCHOOL OF ENGINEERING ADDITIONAL ITEMS- select only one answer for each item

3.1) ability to use math concepts to solve engineering problems.



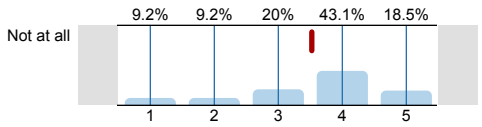
n=65
av.=3.82
dev.=0.88

3.2) ability to use chemistry concepts to solve engineering problems.



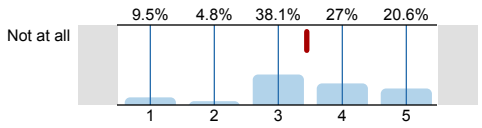
n=65
av.=1.45
dev.=0.85

3.3) ability to use physics concepts to help solve engineering problems.



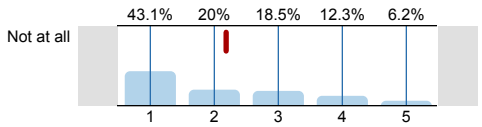
n=65
av.=3.52
dev.=1.17

3.4) ability to use engineering concepts to help solve problems.



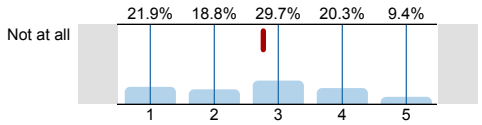
n=63
av.=3.44
dev.=1.16

3.5) ability to design an experiment to obtain measurements or gain additional knowledge about a process.



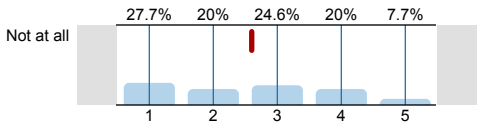
n=65
av.=2.18
dev.=1.29

3.6) ability to analyze and interpret engineering data.



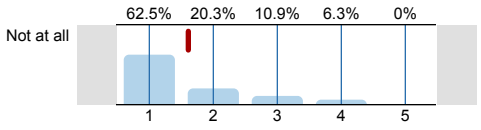
n=64
av.=2.77
dev.=1.27

3.7) ability to design a device or process to meet a stated need.



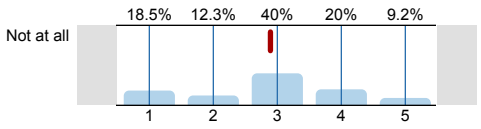
n=65
av.=2.6
dev.=1.3

3.8) ability to function effectively in different team roles.



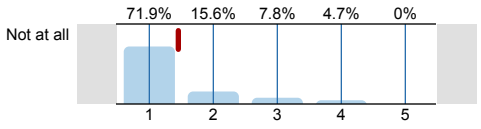
n=64
av.=1.61
dev.=0.92

3.9) ability to formulate and solve engineering problems.



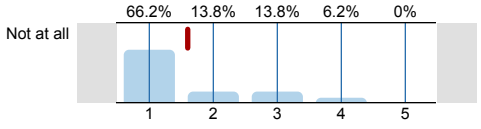
n=65
av.=2.89
dev.=1.2

3.10) ability to use laboratory procedures and equipment.



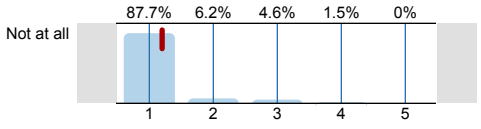
n=64
av.=1.45
dev.=0.83

3.11) ability to use software packages to solve engineering problems.



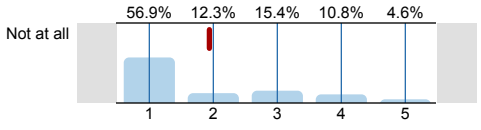
n=65
av.=1.6
dev.=0.95

3.12) ability to use CAD software.



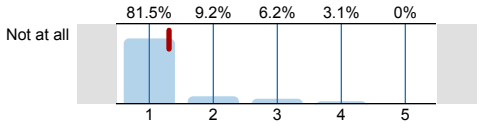
n=65
av.=1.2
dev.=0.59

3.13) knowledge of professional and ethical responsibility.



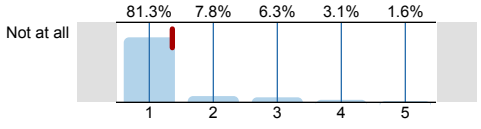
n=65
av.=1.94
dev.=1.26

3.14) ability to write reports effectively.



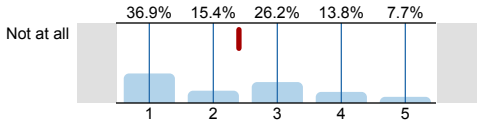
n=65
av.=1.31
dev.=0.73

3.15) ability to make effective oral presentations.



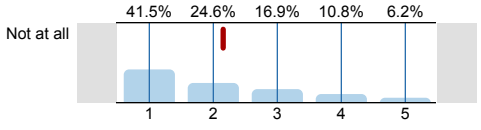
n=64
av.=1.36
dev.=0.86

3.16) knowledge about the potential risks (to the public) and impacts that an engineering solution or design may have.



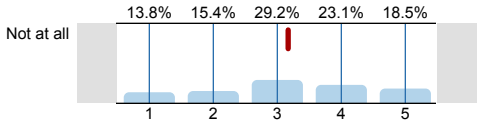
n=65
av.=2.4
dev.=1.32

3.17) ability to apply knowledge about current issues (economic/environmental/political/societal/etc.) to engineering-related problems.



n=65
av.=2.15
dev.=1.25

3.18) appreciation of the need to engage in life-long learning.



n=65
av.=3.17
dev.=1.29

4. TEACHING COMMENTS

4.1) What were the instructor's major strengths?

- - Friendliness
  - Very thorough understanding of many fields of engineering
  - Ability to relate class concepts to real life situations

- -Made a 5pm class that meets M/W/F bearable by keeping class engaged/ making jokes
  -Exams were fair
  -Presented all material in straightforward fashion

- -taught the lessons in a well-organized manner
  -very nice and funny
  -answered any questions that people had

- Always available to help

- Barry is very clear and very helpful. He should teach more courses in the MEMS dept.

- Clear and concise.

  Mostly went over examples during class to strongly fortify the concepts taught alongside them.

  Helpful to be able to ask questions while working through an example.

- Connecting with students, answering questions effectively

- Down to earth, laid back

- Dr. Barry interacts well with the students, and is deeply beloved. He has a pragmatic view of the roll of engineering in society and, more importantly, has a pragmatic approach to solving problems in circuits. He understands the relative low value of solving many of the problems that we're faced with in a circuits class, and gears the class to help students understand what's important in the material.

  Dr. Barry regularly brought stories and information from his career in power generation to class to give students an idea of context.

- Dr. Barry is a terrific professor and clearly conveys his messages in class and provides very clear examples and notes are very organized. Homeworks are relevant material and are good practice for exams. KEEP GOOD PROFESSORS LIKE DR. BARRY AROUND!!!!

- Dr. Barry was a great teacher. He explained everything clearly. I like how he understands that mechanical engineering majors are not passionate about circuits and really just want to learn the basics.

- Everything was great, Barry is the man

- Examples were thoroughly covered

- Explanation of material,
  Understands where students have trouble and makes a point to clarify

- Felt our pain and sympathized.

- Fun effective learning environment.

- Funny

- He cracks jokes and is willing to help out students. Makes good use of examples.

- He is very good at slowly and clearly explaining and deriving what we are learning. Has a good sense of humor that makes class enjoyable. Good at relating the topics to real world applications.

- He made the lectures more enjoyable overall.

- He understands the important concepts of the course and teaches and tests on those thoroughly. He is very straightforward and doesn't try to trick us. He's humorous and fun in lecture. He makes a boring subject less boring.

- He understood that we all hate this subject and make the class enjoyable. He is very funny and sensitive to what the students want.

- He was great. Casual with the students but still covered material effectively. Brought up relevant material from his job and how circuits work in the real world. Occasional speeches about how engineering works in the real world were great.

- He was very clear in his examples. They were useful to help me understand the material and to do the homework.
- He was very fair with the exams and did a good job for the class not being his strong suit.
- He was very funny and made class really fun, I want him again for more classes!
- He was very helpful and always answered questions. Made sure to make the material easy to understand was available to students frequently. Would recommend him. He should teach more classes.
- He was very prepared for class and had the lectures and lecture notes were always posted before class.
- I had him before for thermodynamics. Overall he just makes the classes easier because he cares that the students do well on the exams over them being super challenged and do poorly. He may not have liked circuits as much but he was still able to make the class fairly enjoyable for me.
- I was quite impressed by his charisma, energy, and effectiveness considering every day he comes in after work to teach. He also conveys the material that I have never seen before and have no intuition toward in a way that is easy to understand. Also, he's hilarious even though I'm not quite sure he realizes.
- In class examples.
  Making fair tests.
  Lecture slides.
- Matt is awesome. He is extremely friendly and will talk about anything or help out with anything you could need.
- Organized
- Overall just an excellent person who is by far the best professor I had this semester. Provides hints for exams, plenty of practice, and is very understanding of students who struggle with the material.
- Personal, likable and new the material well.
- Prepares students well for exams, very straight forward class
- Presented the class in an organized manner and worked out many examples. Did a good job of explaining how the concepts did (or did not) apply to the real world.
- Professor Barry does a great job decomposing abstract electrical concepts into easily digestible chunks of pedagogy.
- Professor Barry kept circuits interesting. He understood what the student needed and was very empathetic. I would definitely take any other courses he would teach in a heartbeat.
- Professor Berry is a wonderful instructor with an excellent sense of humor.
- Super nice guy.
- The instructor cares about his students and is very willing to help.
- The instructor had the class structured well and easy for students. The manner in which he taught and how students take notes is probably the most effective, given the classroom. Even though he doesn't specialize in circuits, he clearly knows the material very well.
- The instructor's major strength was his willingness to help the students understand the problem, no matter how long it took.
- The professor presented the material pretty clearly and used great examples to help present the material. I enjoyed his lectures and learned a lot from them.
- Used a considerable number of examples to clarify abstract concepts.
- Used examples to show us how to go through problems and always used humor to make class easier
- Very approachable. Answered questions students had easily. Did a lot of examples.
- Very receptive to students' questions, good presentation style. Accessible for extra help when needed. A very good professor overall, I would like for him to teach Applied Thermodynamics in the fall.
- Walked us through multiple examples of the material while hitting major concepts as well. Tests were very fair.
- Was able to keep a 5 o'clock class (after having two classes before, all in the same room) interesting and engaging enough to be a very productive class. Worked with us to make sure that we understood the concepts instead of rushing through lectures to get as much material covered as possible. Definitely my favorite professor out of my five classes this semester.
- Was very good about showing examples and explaining them. Prepared students very well for examinations

- Your lectures were well lead and actually kept me interested instead of wondering off like a lot of lectures. And it really felt like you care about students doing well in your class which goes a long way
- explaining the materials
- keeping powerpoints online, and maintaining organization in the course overall
- this professor made me feel really relaxed and confident when preparing for an exam. I have severe testing anxiety and through his teaching methods i was better able to calm down and remember the material.
- very organized, grades fairly, tests fair, gives good examples, respectful to students, values student's input
- very practical

4.2) What were the instructor's major weaknesses?

- handwriting using the notePad
- - None. One of the best teachers I've ever had
- -Bad handwriting combined with a digital whiteboard on slides is a bad time.
- -needed to give a few more examples on some of the hard topics in this class because when I got to the homework a few were kind of difficult to solve and took a while to figure out.
  -handwriting on computer was a little hard to read at times
- Absolutely none. Barry would be an excellent professor for any class he is qualified to teach.
- Being too good
- Did not explain how to do problems and often skipped through quickly without explanation
- Did not follow syllabus as well as would have been desired
- Dr. Barry is not an expert in electricity and was totally unprepared to teach this class. The material was new to him, and was therefore was confusing to the students.
- HANDWRITING
- Hand writing on the tablet could be a little more clearer.
- Hand writing was not very good. Also didn't post completed notes so it was difficult if you missed anything during lecture.
- Handwriting
- He is very loose with class. Sometimes we get way of topic.
- He mentioned to us that this is not his specialty. He prefers Thermo-Fluids. I would love to have him teach applied Thermo next semester instead of circuits. He is more comfortable with that material and we would learn more from his expertise in that area.
- He possessed an infectious ambivalence to electrical circuits.
- He went very fast and some of the concepts were very new and hard to understand, but reading the book was fine.
- His hand writing is absolutely terrible and, at times, illegible. Sometimes difficult to follow in class examples and notes.
- His handwriting could use a little work. Occasionally goes from a really easy problem to a complex problem without doing some medium-difficulty ones
- I can't think of any.
- I could have used the examples online for later use rather than just the blank slides.
- I didn't observe any glaring weaknesses.
- I don't really have anything negative to say about Professor Barry.
- I don't think he had any.
- It was clear from his lectures that the instructor did not have great enthusiasm for the subject he was teaching. There were a few times throughout the semester when the instructor solved a problem incorrectly and did not recognize his mistake when it was pointed out. In each case however, the problems were eventually rectified. I did not agree with the instructor's decision to use a multiple choice format for

certain written problems. All in all, it is understandable that Circuits was probably not the instructor's favorite subject to teach, and I imagine he might be better fit to teach other courses.

- Lecture notes were sometimes difficult to see/read, especially if you were in the back of the class room
- Matt doesn't have any weaknesses. Seriously, give him more classes to teach.
- N/A
- No glaring weaknesses
- No really major weakness I understand you are not a circuits teacher that kind of excuses the rare mistakes you made
- None (2 Counts)
- None, he's a boss.
- Not his fault, but not super knowledgeable on the subject matter.
- Off cie hours were rough, but understandable with his work, and he made up with it being responsive with emails
- Organization and lecture style (tablet drawing) may not be best suited for the class, but it works alright
- Sometimes hard to follow in-class examples, handwriting on touch screen hard to read
- Sometimes he did not know some things students asked on the spot.
- Terrible handwriting. Slides become unreadable as he works through problems. Especially in a large class, unless you're sitting directly in front of him, you can't read a thing he writes. Also he is quite negative about his teaching topic which guides his students to have the same mindset. Not very motivating to learn
- The homework problems were not very helpful. They did not seem to align with the main things we would focus on in class. Homework assignment problems were not overly helpful for exam preparation.
- The iPad at times seemed to make it sloppy.
- The only complaint I have is that it's not uncommon for the examples in class to go awry and for him to correct it later.
- The only weakness I could think of of the instructor's is that his notes, regarding key terms, equations or concepts, sometimes brushed over, or didn't emphasized them enough.
- Tough to read handwriting.

  Very fast.

- Used examples that were different than the test format
- You didn't want to be there any more than us
  Hand writing is sub-par
  I wish you could write on the board instead of the projector
- a little bit disorganized and handwriting is horrendous
- ability to use tablet and handwriting
- lack of enthusiasm for circuits
- none at all
- none, did i mention he was awesome?
- slightly dull
- this was Prof barrys first time teaching circuits and he did a fantastic job teaching a subject he knew very little about

5. COURSE COMMENTS

5.1) What aspects of this course were most beneficial to you?

- - Learning to use software to model circuits
- -Light enough on the electricity that it didn't feel like a EE course, enough background on circuits that should get me through a lot of ME
- -the lectures helped me learn for the most part
  -the practice tests helped prepare me for the midterms
- A basic understanding of circuits, from what I've heard, is important for nuclear engineering.
- All of it.
- As this was an introductory circuits class, all the material was beneficial.
- Can't think of any.
- Circuits
- Examples in class, Wiley Plus connecting the homework to the textbook
- Going through tons of examples.
- Homework, lectures
- I don't know, maybe robots
- I enjoyed the course and how to often connected to mechanical engineering concepts such as strain gauges and such. It made a somewhat irrelevant course, much more relevant to us.
- I find the material very interesting. It was very refreshing to have a course that I actually cared about and enjoyed going to (even if it was scheduled at 5PM).
- I learned a lot more than I ever have about circuits, and the instructor was very helpful when it came to questions I had about the material.
- I learned what an op-amp is.

  Meeting Matt Barry.
- I learned what an op-amp is. That was neat.
- I think learning a bit about circuits will be beneficial for the future. I may never see them in my career field but having the experience with it could certainly prove to be useful. It's always a good thing to expand your knowledge into multiple fields to continue life long learning.
- It forced me to learn and think about things I would normally pawn off on someone else or the computer.
- Learning about circuits.
- Learning circuit analysis
- Learning how to approach all types of circuits.
- Learning the different functions of circuit components
- Most topics, since they will be utilized in future courses (such as Measurements 1).
- Online homework problems, lecture notes for concepts and worked out examples, practice exams
- Practice tests
- Problem solving, critical thinking, and application of electrical circuitry and engineering.
- Probs Op-Amps based on what others tell me.
- Relaxed environment
- Relevant knowledge, interesting stuff from the professor
- Taking this class made me realize I enjoy Circuits and it was one of the factors that made me decide to pursue a minor in Electrical Engineering to complement my major in Mechanical.

- Teaches the basics of electrical circuits that could helps me with other courses in the future.
- That it was a very laid back approach to teaching a painful subject. And by taking it slow the material was easier to understand.
- The WileyPlus homework problems were often harder than the in-class problems and exam problems which was actually quite helpful because they prepared me for the more simpler yet conceptually abstract problems that appeared on the midterms.
- The course relied heavily on previously learned material which made the class easier to follow along with.
- The homework problems assigned to us were a good indication of what had to be known for the test. The examples in class were helpful to refer to later.
- The homeworks and practice exams he posted online. Doing practice problems is always the best way for me to learn things.
- The homeworks on WileyPlus helped a ton
- The lectures were the most useful part of the class. I learned a lot just from hearing him and watching his examples.
- This course helped me see the broader application of circuit analysis
- Understanding the way that different circuit elements and configurations can affect a system.
- Using different methods to solve a problem
- homework, practice exams
- i appreciated the relaxed attitude of the professor and his availability and approachability.
- learned how to analyze circuits
- online homework, attending lecture

5.2) What suggestions do you have to improve the course?

- - None
- -Having to pay to do homework is objectively terrible.
- -get rid of Wileyplus, I don't care for that site at all and I would rather prefer to have an physical textbook rather having to look at a computer screen.
- An added recitation/lab.
- Be more design focused so that we can see the hardware applications.
- Don't make it for mechE
- Explain where the formulas come from
  practice hours, such a lab
  physical demonstration of the principles we learn in class
- Get rid of Wiley Plus. Its problems were not helpful for exam preparation. Would have greatly benefited from other outside problems.
- Give more thorough explanations
- Go into more detail of practical applications that a MEMS student could expect to see in their field, it is pointless to go over technology that we will never see.
- HANDWRITING
- Have real homework. Don't make students pay $100 for a garbage homework service which provides 5 problems every two weeks.
- How to use this knowledge/applications could be incorporated
- I have no idea
- I have no idea about circuits, so I am in no position for what I should have learned
- I think I just don't like circuits.
- I thought the course was fine.

- I wish the Pitt bookstore offered a hardcopy version of the textbook instead of just a computer copy. I do appreciate the use of the online textbook for homework, however.
- I would present the material in a more organized manner. It made it difficult to constantly draw out circuits for examples and I really didn't want to print out the lecture slides because that is a lot of paper that would stack up.
- It overall was done very well
- LAB! I feel like it would be very useful to have a lab component of the course, even if it only covers basic electric circuit design and creation.
- Make more relevant for Mechanical Engineers.
- Maybe have some actual physical examples so you can visualize circuits
- More homework to help students get even more comfortable with the material.
- N/A
- No suggestions.
- None
- None
- None at all. Keep being the awesome professor you are!
- None.
- None. He really emphasized teaching us the more important things for MEMS students instead of going over/testing us on things we'd never use in the real world.
- Not a 6
  Not a tablet to teach it
- Nothing. I really don't like circuits and there is no saving this class. Just take it and get through it.
- Perhaps an approx. 2 hr/week lab component to practice circuits knowledge we've obtained on the past week
- Possibly make exams more difficult
- Practice writing on the tablet or find a different method. I really like the lecture slides to take notes with.
- See notes above
- Show more practical examples of what circuits look like instead of circuit diagrams.
- This course does not belong in the curriculum. The vast majority of the material was taught in PHYS 0175, a prerequisite for circuits. I learned almost nothing new in this course -- except for op-amps, as stated above-- and the concepts were covered much more superficially than they were in PHYS 0175. This course was a waste of time and money and I'm upset at the Mechanical Engineering Department for requiring it. I think it's totally irresponsible and frankly unethical for the department to assign this course to a professor as ill suited and ill prepared for the course as Matt Barry was, although he did the very best one could expect.

  The course could easily have been very useful. We could have learned about circuit design and designed circuits for a variety of applications. We could have learned how brushed motors, brushless motors, stepper motors, servos, linear servos, electromagnets, generators, strain gauges, and a host of other electo-mechanical devices work. Instead the most valuable thing I did was disentangle a morass of wires to find the voltage drop across the most remote resistor.
- This course needs a lab component. Electrical circuit theory is very difficult to conceptualize when you're unable to physically build circuits and apply the principles encountered in the classroom.
- To preface: I have taken an electronics course once, and I have learned about 5 times as much information in that course than here.

  The methods for analysis are limited. We are taught Kirchoff's current/voltage laws in January, and exclusively use those to analyze more circuits. There are certain combinations of electronic components that have special properties/known ways to analyze, but we didn't learn about any of those and seemed to reinvent the wheel for analyzing every circuit.

  The circuits analyzed in this course are arbitrary and have no tangible relevance to any that are implemented in day-to-day life.

  I hate to say it, but the time this course took was not worth what I learned from it; we could learn so much more in a single semester
- Why are the phase angles so weird???
- WileyPlus was not always the best option for online homework.

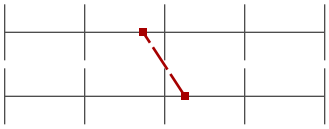
- Wileyplus kind of sucked. It was really expensive (~$95 compared to the $38-$50 for other online homework systems I used) and it wasn't as good as the others. It went down the day before one of the homework assignments was due and it was just annoying to navigate. Maybe use Sapling or Webassign if possible. Also the textbook wasn't all that useful. I needed more examples or better explanation or something. I was trying to do the homework but I couldn't find anything useful in the text to help me so it was difficult.
- focus on why we need to know this stuff
- have a professor that cares about circuits
- none- keep prof- barry he is a fantastic teacher and i wish he could teach more classes. i would actually enjoy going to class again

Profile

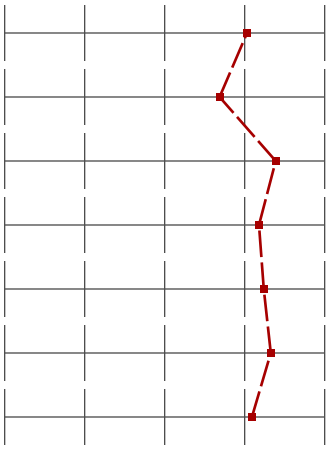
Subunit: ENGINEERING-MECHANICAL & MATERIALS SCIENCE
Name of the instructor: Professor Matthew Barry,
Name of the course: (Name of the survey) ELECTRICAL CIRCUITS(MEMS-0031)-1050

Values used in the profile line: Mean

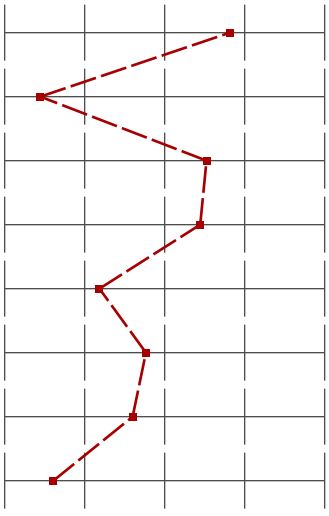
1. SELF RATINGS

1.1)	Compared to other courses at the same level, the amount of work I did was:	Much less		Much more	n=67	av.=2.73 md=3.00 dev.=0.73
1.2)	In this course I have learned:	Much less		Much more	n=67	av.=3.25 md=3.00 dev.=0.84

2. TEACHING EVALUATION

2.1)	The instructor presented the course in an organized manner.	Hardly at all		To a very high degree	n=67	av.=4.03 md=4.00 dev.=0.72
2.2)	The instructor stimulated my thinking.	Hardly at all		To a very high degree	n=67	av.=3.69 md=4.00 dev.=0.87
2.3)	The instructor evaluated my work fairly.	Hardly at all		To a very high degree	n=67	av.=4.39 md=4.00 dev.=0.70
2.4)	The instructor made good use of examples to clarify concepts.	Hardly at all		To a very high degree	n=67	av.=4.18 md=4.00 dev.=0.74
2.5)	The instructor maintained a good learning environment.	Hardly at all		To a very high degree	n=67	av.=4.24 md=4.00 dev.=0.76
2.6)	The instructor was accessible to students. (Do not answer if no basis to judge)	Hardly at all		To a very high degree	n=49	av.=4.33 md=5.00 dev.=0.83
2.7)	Express your judgment of the instructor's **overall teaching effectiveness:**	Ineffective		Excellent	n=66	av.=4.09 md=4.00 dev.=0.85

3. SWANSON SCHOOL OF ENGINEERING ADDITIONAL ITEMS- select only one answer for each item

3.1)	ability to use math concepts to solve engineering problems.	Not at all		A great deal	n=65	av.=3.82 md=4.00 dev.=0.88
3.2)	ability to use chemistry concepts to solve engineering problems.	Not at all		A great deal	n=65	av.=1.45 md=1.00 dev.=0.85
3.3)	ability to use physics concepts to help solve engineering problems.	Not at all		A great deal	n=65	av.=3.52 md=4.00 dev.=1.17
3.4)	ability to use engineering concepts to help solve problems.	Not at all		A great deal	n=63	av.=3.44 md=3.00 dev.=1.16
3.5)	ability to design an experiment to obtain measurements or gain additional knowledge about a process.	Not at all		A great deal	n=65	av.=2.18 md=2.00 dev.=1.29
3.6)	ability to analyze and interpret engineering data.	Not at all		A great deal	n=64	av.=2.77 md=3.00 dev.=1.27
3.7)	ability to design a device or process to meet a stated need.	Not at all		A great deal	n=65	av.=2.60 md=3.00 dev.=1.30
3.8)	ability to function effectively in different team roles.	Not at all		A great deal	n=64	av.=1.61 md=1.00 dev.=0.92

3.9)	ability to formulate and solve engineering problems.	Not at all	A great deal	n=65 av.=2.89 md=3.00 dev.=1.20
3.10)	ability to use laboratory procedures and equipment.	Not at all	A great deal	n=64 av.=1.45 md=1.00 dev.=0.83
3.11)	ability to use software packages to solve engineering problems.	Not at all	A great deal	n=65 av.=1.60 md=1.00 dev.=0.95
3.12)	ability to use CAD software.	Not at all	A great deal	n=65 av.=1.20 md=1.00 dev.=0.59
3.13)	knowledge of professional and ethical responsibility.	Not at all	A great deal	n=65 av.=1.94 md=1.00 dev.=1.26
3.14)	ability to write reports effectively.	Not at all	A great deal	n=65 av.=1.31 md=1.00 dev.=0.73
3.15)	ability to make effective oral presentations.	Not at all	A great deal	n=64 av.=1.36 md=1.00 dev.=0.86
3.16)	knowledge about the potential risks (to the public) and impacts that an engineering solution or design may have.	Not at all	A great deal	n=65 av.=2.40 md=2.00 dev.=1.32
3.17)	ability to apply knowledge about current issues (economic/environmental/political/societal/etc.) to engineering-related problems.	Not at all	A great deal	n=65 av.=2.15 md=2.00 dev.=1.25
3.18)	appreciation of the need to engage in life-long learning.	Not at all	A great deal	n=65 av.=3.17 md=3.00 dev.=1.29