MECH-322/420 FALL 2021

ANONYMOUS BLACKBOARD Q/A

Your comments are requested below to share with future MECH-322/420 students and to provide a personal reflection on your learning. **YOUR COMMENTS ARE 100% ANONYMOUS AND ARE SUBMITTED WITHOUT NAMES OR EMAIL AND ARE NOT SEEN UNTIL ALL GRADES HAVE BEEN SUBMITTED. THANK YOU SO MUCH FOR YOUR TIME AND FOR YOUR COMMITMENT TO THE PATH.**

Often there is discussion regarding the development of independent thinkers and how to achieve? The development of the independent mindset is never achieved by providing all the questions and all the answers! All researchers will agree that at the beginning of any research endeavor that one will never know all the problems and will never have all the answers. But the hallmark of the independent mind is having a problem-solving mentality, having the ability to self-learn, having the ability to extrapolate data and to form conclusions, and having the fortitude to be unafraid to seek answers from multiple independent sources. Academic institutions at all levels have a formidable task for the 21st Century to transform student learners from an environment where "likes" and "dislikes" are more important than learning and demonstrated knowledge. Institutions that are successful will provide the next generation of independent thinkers that will face significant challenges in the next 20 years, considering the massive rate of technological advancement.

In the next 25 years, the world we will see a cure for Cancer, we will reach out and will start to colonize other planetary worlds, we will discover new materials that will forever change our understanding of physics, we will start to control and hopefully reverse the ravages of global warming and climate change, we will be able to see further back into the past than ever imagined and we will begin to understand the origins of "everything". Academic leaders are faced with the challenge of teaching materials and concepts that have not changed for 100 years and are challenged to prepare students to solve problems that we cannot even imagine today, and to prepare students to develop and to use tools based upon concepts that have not even been conceived. We live in a daunting academic environment, and the only solution is to focus on student development that embraces discovery and inquiry, and to develop a mindset that "rejects" being told all the answers and to develop a mindset that expects to be challenged and to understand that it's "ok" to not know the answers. Rather the most important skill that we can impart to students is to develop an understanding of the "*process and roadmap*" to find and to understand answers to unknown problems and questions, that we can only dream about today. It will be these students and these institutions that will contribute to the long-term survival and the universal expansion of humankind.

Thanks for completing and emailing back. Have a great educational and industrial career. Thank you for your time.

Please answer the following briefly:

1. Engineering design is the execution of applied physics for the development of technical solutions for challenges facing the survival of mankind, and the technical communications of those solutions. Please comment on if you think MECH-322/420 Fluids Mechanics/Heat Transfer and a focus on parametric thought has enhanced your skills and ability as a student, and as a future

engineering professional, relative to engineering design thought and technical communications. Why or Why Not? Thank you.

- Yes, I believe fluid mechanics has enhanced my skills as an engineer and student to think critically about a subject. This course was definitely one where thinking of real world examples was extremely helpful when developing a thought process to solve problems in this course.

- I believe that Mech 322 has enhanced my skills and abilities to look at a problem that I have never seen before and use basic concepts to make steps towards finding a solution to the problem.

- Parametric thinking helps tremendously in the generation of unique solutions. Whereas any student can solve simple equations, learning how to think parametrically helps develop understanding at a much deeper level. The examples used in MECH-322 helped in solving parametrically as I had not solved solutions in that way before, and it has helped in solving solutions outside of the classroom as well.

- I believe that this course has improved my ability to think clearly through problems. Following the path is a great way of looking at solving a problem, and it has helped my understanding.

- While I struggled in the class at first because it had new way of lecture structure and overall class structure, I do believe it enhanced my skills with regards to critical thinking and ability to solve problems. I was used to more specific equations that are used on certain questions so following the path and working every problem in the same way took some adjustment.

- Parametric problem solving is one of the core skills of mechanical engineers. MECH 322 will challenge students over their ability to interpret and provide solutions to specific engineering problems. Being able to solve those problems demonstrates the student's critical thinking skills, engineering skills and ability to overcome complex obstacles in life.

- Yes I do believe MECH-322/420 Fluids Mechanics/Heat Transfer and a focus on parametric thought has enhanced your skills and ability as a student. It has made me think more about units and what they mean in a problem instead of just expecting to have the correct units in the end. You have to think about what your next step is going to be in the problem to achieve the correct answer.

2. What suggestion would you provide to future students to enhance their understanding and performance within ME-322/420 Fluid Mechanics/Heat Transfer?

   - My first piece of advice would be to look over the lectures before AND after the lecture. Berry talks about each concept in the PowerPoint, but sometimes does not touch on everything, so coming prepared with questions is extremely helpful to understand the path. Second, make sure to re-do all tests and quizzes to better understand what was done incorrectly.

   - Follow the path. There is no other way. Take the time to solve problems on your own time and truly TRY to grasp the concepts. Attending lectures without practice will not be enough.

   - Make sure to do the homework problems the night of the lecture and review constantly with others to understand the lecture material. Following the path will lead you to the solution, but a deeper understanding of what each variable means and why we apply what we do is very important for this class and especially the ones following.

   - FOLLOW THE PATH. Its that simple.

   - The material it's self is not that difficult, ultimately you learn how to apply concepts on a wide variety to problems. Your ability to analyze the problem, what is needed, what you have and the best way to solve for what you don't know is what will be tested in this class.

   - Stick to the fundamentals, understand what exactly momentum is, what is volumetric flow rate and mass flow rate, understand what conservation of energy is. You can only learn how to solve a problem if you understand the principles.

   - I would suggest to follow Dr. Berry's path of problem solving. As well as also remember this path while solving any other homework problems.

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3. What advice would you provide to MECH-322/420 Fluid/Heat Transfer students in Dr. Berry's class to enhance their success and performance?

   - ALWAYS do the homework, it is a long tedious process, but it is well worth it in the end when it comes time to look at tests and quizzes. You will better understand the path to do each problem this way.

   - Follow the path. There is no other way. Take the time to solve problems on your own time and truly TRY to grasp the concepts. Attending lectures without practice will not be enough.

   - Read the textbook, do the homework, and work with other students constantly to understand the lecture material. MECH-322 ramps up quickly and builds upon itself. Problems take a while to solve, and if you don't know exactly what you're doing finishing the exams won't be possible. Units are a very useful way to double check your work. If you're not sure if you're doing it right, units will let you know if you're mixing up anything.

   - Dr. Berry will show you the path. Follow it, and you will succeed.

   - It sounds cliché but, listen to Doctor Berry, he knows what he's talking about and although the path may seem to disappear on you, he will be more than willing to get you back on and be successful so long as you put effort in.

   - When taking 322 or 420 with Prof Berry, the regular 1 to 2 hour ratio of in class time versus study time is far from enough. In order to perform well in this class, you need to make the time ratio 1 to 16, or 1 to 8 at the bare minimum. Any problems or obstacles you might encounter here can be fixed with sheer dedication of time and effort. This is the only way you may do well in this class and there is absolutely no excuse for laziness. **If you can conquer Prof Berry's MECH 322 or 420, there will be nothing in life that you can't handle.** When you feel like giving up, don't, keep pushing; when you feel like solving a problem regarding this class, stick to it and take it all the way to the end. Do not give up.

   - To make sure you are successful in the class you need to study the notes he gives in class as well as do all of the homework problems with the problem solving methods he has given you.

4. Considering that you passed the course, do you feel that your understanding of the subject material was enhanced and why?

    - Yes, I feel like my understanding of the subject greatly developed over the course of the class. I understood the definitions first, which is a main component of the completion of problems. This helped me understand where to go for each problem dependent on the definition.

    - I feel that this course has helped me understand what concepts to apply when posed a problem. I think that this is important, because the hardest part to solving many problems is determining what process should be followed to find a solution.

    - My understanding of MECH-420 was incredibly enhanced given the amount of work I put in both inside and outside of the classroom. It's not an easy course, and I was able to learn quite a bit.

    - Yes. This course has greatly enhanced my understanding of the material. I came into the course with little to no knowledge, but now I feel that I have at least a basic understanding.

    - Over the course of the term understanding was definitely enhanced. While I may not have immediately conformed to the path, looking back I can definitely see how some of the concepts I struggled with were simpler than I made them out to be.

    - I knew nothing about fluid dynamics before, and now I know things like head loss and conservation of energy. I also learned things like applying manometry or drag and lift forces.

    - I do believe my understanding of the subject of was exponentially enhanced. I did not know anything about fluids until I took this class.

5. What was the single most important skill set taught that will hopefully assist your career as a practicing engineer and why?

    - The most important skill set from this class, for me, would have been fluid flow through a straight pipe. This relates to my current field of engineering in plastic engineering and injection molding.

    - Engineers should always try use the information that they know to solve problems while also Developing their skillsets to solve even more complex problems in the future.

    - The emphasis on solutions in terms of parametric will help extensively in my career as an engineer. Even in my experience as a co-op it's very rare that I'm given a problem with a set solution of plug and chug and rather that I must design around certain parameters. Getting an experience of that in MECH-322 will help when I move onto further classes and my engineering career.

    - Looking at the engineering is important and will lead to a logical solution if you follow the path.

    - The most important skill was not necessarily the concepts covered but the way we approached each problem and how we think critically about each problem we approach. It isn't very often in my co-op that I actually work problems, but I have seen how the concepts we learn apply setting which allows me to make educated decisions and how the perseverance we need in class corresponds to a work setting.

    - The skill to navigate through complex challenges.

    - The most important skill taught in this class is to trust your units. If units are not working out in the problem you are trying to solve that is because you did something wrong in the problem.