

There were: 65 possible respondents.

	Question Text	N	Top Two	Avg	MAE Avg	MAE SD	Sch Avg	Sch SD	Gen Ed Req	Maj/Prog Req	Interest	Instructor	Fits Schedule	Advisor Rec	Friend Rec	Other					
1	Primary reasons for taking course	52							48%	85%	12%	4%	13%	2%	0%	0%					
									Not At All - 1	2	3	4	Completely - 5	N/A							
3	Covered objectives	52	90%	4.6	4.4	0.9	4.5	0.9	0%	6%	4%	19%	71%	0%							
									Lectures	Discussions	Clickers	Activities	Homework	Labs	Project/Folio	Teamwork	Presentations	Guest Lecturers	Fieldwork/Trips	Writing	Other
4	Contributed to learning	52							98%	8%	0%	15%	83%	0%	0%	4%	0%	2%	0%	0%	0%
									Yes	No											
6	Academically prepared	51	92%	0.9	0.8	0.4	0.8	0.4	92%	8%											
									1 Hour Or Less	1-2 Hours	3-4 Hours	5-6 Hours	7-8 Hours	9-10 Hours	11-13 Hours	13-15 Hours	15+ Hours				
7	Time on coursework outside of class	52							0%	0%	19%	13%	17%	21%	15%	6%	8%				
									Memorizing	Applying Basic	Synthesizing	Judgments	Applying New	Solve Problems	Thinking	Teamwork	Reading	Presentation	Lab	Writing	Other
8	Significant aspects	52							29%	69%	29%	15%	54%	98%	33%	0%	13%	0%	0%	2%	4%
									Not At All - 1	2	3	4	Very - 5	N/A							
10	Intellectual challenge	52	98%	4.6	3.9	1.0	3.9	1.0	0%	0%	2%	38%	60%	0%							
									Little - 1	2	3	4	Lot - 5	N/A							
11	How much learned	52	75%	4.2	3.9	1.1	4.0	1.1	0%	8%	17%	21%	54%	0%							
									Str Disagr - 1	2	3	4	Str Agr - 5								
12	Did best work possible	52	88%	4.5	4.1	0.9	4.2	0.9	0%	0%	12%	23%	65%								
									Str Disagr - 1	2	3	4	Str Agr - 5	N/A							
15	Derive equations of motion	52	90%	4.4	4.5	0.7	4.5	0.7	0%	2%	8%	35%	56%	0%							
16	Properties of transient, steady-rate, free, and forced responses	52	65%	4	4.1	0.9	4.1	0.9	2%	8%	25%	23%	42%	0%							
17	Convert between frequency and time domains	52	77%	4.2	4.2	0.9	4.2	0.9	2%	0%	21%	29%	48%	0%							

18	Analytical and computational solutions for linear systems	51	71%	4	4.1	0.9	4.1	0.9	4%	2%	24%	31%	39%	0%						
19	Compute transient and steady-rate responses	51	78%	4.2	4.2	0.9	4.2	0.9	2%	4%	16%	31%	47%	0%						
20	Compute frequency response	51	76%	4.2	4.2	0.9	4.2	0.9	2%	4%	18%	27%	49%	0%						
									Not At All - 1	2	3	4	Very - 5	N/A						
21	Knowledgeable (Kulumani)	52	96%	4.7	4.6	0.8	4.6	0.8	0%	2%	2%	17%	79%	0%						
									Low - 1	2	3	4	High - 5	N/A						
22	Enthusiasm (Kulumani)	52	75%	4	4.3	1.1	4.4	1.0	2%	6%	17%	37%	38%	0%						
									Str Disagr - 1	2	3	4	Str Agr - 5	N/A						
23	Treats students with respect (Kulumani)	52	63%	3.8	4.4	1.0	4.5	0.9	6%	6%	25%	31%	33%	0%						
									Not Fair - 1	2	3	4	Very Fair - 5	N/A						
24	Fair grading (Kulumani)	52	58%	3.6	4.2	1.1	4.3	1.0	6%	8%	29%	33%	25%	0%						
									Not At All - 1	2	3	4	Excellent - 5	N/A						
25	Feedback (Kulumani)	52	46%	3.2	4.1	1.1	4.2	1.1	6%	25%	23%	40%	6%	0%						
									Poor - 1	2	3	4	Excellent - 5							
26	Overall rating of instructor (Kulumani)	52	67%	3.7	4.0	1.1	4.1	1.1	10%	12%	12%	37%	31%							

Text Responses

Question: If you selected Other as significant aspect of effort, please comment.

Searching for more complicated examples that were not in the text book.

Using simpler concepts learned in class and applying them to sometimes overly difficult problems.

Question: Use this space for comments on strengths of the course.

It was well organized and we learned a lot of useful techniques and their applications.

This course has strengths of: teaching students how to analyze linear systems, how to solve linear systems for specific specifications that need to be met, and simplifying complicated systems into mathematical representations and models.

Well structured

Organized lectures with very clear expectations, could not have asked for a better course

The professor seems to be steadily improving in his teaching skills despite being somewhat new to teaching. Lectures remained interesting despite the fact that the focus was on really complicated math.

Very helpful. It feels like the days that we covered the most material, we learned the most. Spending too much time on any one topic ends up backfiring with this particular group of students, myself included.
Good background for control systems
Lectures were good Homework was challenging but helpful Posting lecture notes online was very helpful
The teacher is smart
Shankar is a good professor. He explains things well and the course moves at a reasonable pace. The TA, Evan, was great!
Shankar is an amazing professor! Structured and treats students and their questions with respect...
After completing this course, I feel comfortable doing upper level math needed for linear systems. The course notes were clear and outlined well.
The pace of the course was extremely manageable. We were not rushing to finish material at the end but we weren't going so slowly throughout the year where it dragged on.
Shankar Kulumani is a fantastic instructor, and is the most challenging, yet rewarding instructor I have had at GW thus far. Homework and Midterm exam were difficult, but fair. This is a class where the question: But how will I use this in the real world? never occurred for me to ask, which is rare.
A really great class which was structured very well to aid in students learning. Shankar is a great teacher
I thought the class/professor/TA did a fantastic job introducing complicated concepts at the right pace; it wasn't too hard to keep up, but you definitely needed to be paying attention in class and keeping up with homework to avoid falling behind. I also thought the lectures were engaging (in class and recitation), and struck a great balance between keeping the class moving forward into new material and making sure students had solid understandings of all the topics covered. Despite the difficulty of some of the homework and exams, this has been one of my favorite classes I've taken at GW so far- both in content and the way it was taught. Good luck with your PhD!
N/A
This course is very challenging specially that homeworks are 40% of your grade.
While this was an extremely difficult course, Shankar was always available to help and was extremely patient and helpful during office hours
Professor cared to teach students
If people are paying a lot of tuition is to get qualified professors, Shankar is great and smart person may perform as an engineer but totally not as a professor, he really does not care about students concerns. He only wanna s\make the course harder by steping into contents from next courses. I wish GWU save upcoming mae students through avoiding giving important courses to phd candidates all of the ones I have seen they are lacking the pedagogy a professor should have(he does nt have to be smart but aware of his responsibilities toward students) exams are not couple of jokes to write about Elon, there is a structure how an exam is made. shankar seems not caring about this.
Question: Use this space to provide suggestions on how to improve this course.
Sometimes the homeworks were unnecessarily long.
Lots of students in this course had very poor algebra skills, perhaps briefly reviewing specific algebra skills (particularly with complex numbers) would be beneficial.
Gage the amount of time it takes to do the homework better
The homework assignments were too long. I think 3 of the assignments I spent 30+ hours on
Examples done in class and homework problems should be more closely correlated, such that examples covered in class give students the ability to put a decent dent in the homework. A lot of people ran into trouble solving problems involving complicated electrical systems, which would have been averted slightly had an example of the same complexity been covered in class.
More, less-demanding homework assignments
The course touched on coding, but didn't follow up often enough. I wish there were more of a focus on the actual process of coding.
-homeworks and exams are far too lengthy and complicated in comparison to how the class is taught -recitations and lectures teach different methods, which is confusing -professor kulumani can be very rude when a student asks a question in class, which discourages students from asking questions
Group work during recitation. More easier problems on homeworks rather than really hard ones.
Homework and midterm included problems much more difficult than what was covered in lecture. This impacted the time it took to complete my homework and my midterm grade. Homeworks were too long and required a significant amount of time to complete. It was manageable but only because other classes were not assigning as much. The curve only benefits the people that would do well without the curve as you need a 93% to qualify. Textbook could be better with more relevant examples.
He knows the information but can not properly convey the information, which is why grad students should not be teaching upper level classes. Everything learned in this class was from the text book.
Shankar fails to assess his students in a manner proportional to how he teaches us. Homework and exams are SIGNIFICANTLY more difficult than examples done in class or recitation. Additionally, the homeworks need to be graded faster. Shankar should provide his grader with a solution guide in the future so that things can be graded and returned in a timely manner.

SO MUCH HOMEWORK. Also exams are usually pretty confusing
The textbook for this course was not very helpful. I would have liked to see more examples in class and during recitation that were more like the homework problems.
The recitation and lecture were slightly disjointed. For example, the TA would teach different techniques than the professor and there was confusion on how we would be graded, according to the TA's methods or the professor's
If all material was presented in one programming language/format that would be nice. Proofs on an exam are also a bit ridiculous.
Derivations do not belong on exams.
-Integrate a textbook into the class a bit more by referencing readings - Cut your homework in half and assign them weekly. Aim for 3 hours long to do them, not 12... - Make your tests shorter. I felt as though I knew the material for the midterm very well, but just didn't finish and ended with a 99% on the problems I completed but a 69% on the overall grade.
The work is very challenging, and the lecture and recitation aren't synched up so we get different methods of doing problems, which is very confusing. The homework and exams are also excessively challenging. I think that I would learn the same amount of stuff without everything being so difficult and tedious.
- Level of proficiency in problem solving was often unclear. The level of proficiency should be clearly stated. - Homework and exam problems should closely match what is in the textbook, and lecture.
Some of the homeworks were a bit aggressive in length, but they were always assigned over a week out so honestly you would only run out of time if you didn't plan well or had too many other responsibilities (like other classes or clubs and stuff, although I thought the professor was always good about moving deadlines when the students were really busy). Also maybe just me, but I thought some of the homework problems were a bit too much (looking at you, massive polynomial fractions), but that could very well just have been me messing up the problems/how to approach them and having my answer spiral out of control.
1) Shankar openly was planning on leaving GWU after this semester. This - in addition to the controversy surrounding his previous semester's LSD class - Led to him being ruthless and not care about his students. He did not care about bad reviews or about students not being able to keep up due to lack of previous knowledge or other reasons. Overall he just didn't care and, it seemed to many of us, that he had a chink in the shoulder which he was taking out on his students. Then, late in the semester, he was all-of-a-sudden staying at GW. All of a sudden he flipped 180 degrees and started trying to make up for the terrible semester and realized that he had to prevent students from doing so poorly so that it wouldn't reflect badly on him. This can be illustrated by simply looking at his communications/blackboard. He had no care or regard until late April - when all of a sudden he announces final validation and dropping lowest homework grade. He plays it off as though this were according to plan, and refers to them as final rewards - but it is painfully obvious that he is backed into a corner and did this last minute. Dro pping the lowest homework came in a combination with a bonus assignment grade entered into blackboard which was neither mentioned nor explained - and the scores differed wildly when comparing with other students. I must stress - there was no bonus assignment, it was just a number entered into the blackboard. If, perhaps, it was a composite of average homework grades then : a) it should have been mentioned at the beginning of the year. b) since (a) did not occur, we should have been given an actual assignment in order to have control and fairness over earning a grade on this bonus assignment. c) assuming this was a composite of average homework grades, all it did was further increase the gap between students (namely those with either Matlab knowledge or the ability to have a friend help them plagiarize). Students with high grades received even higher homework grades, while students who needed help and struggled were further pushed down to lower grades. This bonus assignment was a contributor to the unfairness of the second final reward which was final validation. Students who had an average over 93% were not required to take the final exam. I will now include a direct quote from blackboard: Many of you may feel cheated on not earning the final exam validation. But remember just 2 weeks ago everyone was taking the exam and you would not be feeling this way unless I offered this opportunity. This final exam validation was unannounced, unplanned, and greatly skewed towards benefitting the students who had Matlab knowledge, or those who had friends who helped them cheat/plagiarize. [I want to note that the existence of this is an openly talked about subject amongst peers] SO, this final validation removes the risk of scoring lower than 93% on the final exam for students who are hard workers like much of the class - but came in with extensive background knowledge which was not taught or required or recommended beforehand. It means that students below 93 now are at risk of scoring lower than their current average on the final, further bringing down their grade. And worst of all it impacts all the other classes we are taking with the same classmates. final validation students now have much more time and less pressure than the rest of us to focus on other classes such as methods of engineering experimentation. ----- 2) Exam problems were vastly different from homework and recitations. As engineering students, we are used to being challenged during exams by novel questions which require critical thinking, and novel applications of our intuition. Shankar's exams 3) Have Shankar actually communicate with the TA, actually care about recitations usefulness, and not assign terrible homework which the TA has to decipher (because no one has a clue how to do it). After which homework are graded sloppily, with no regard to plagiarism. As a class, we conversed about how the TA was visibly becoming more frustrated and worn down by the class and Shankar. He would often get angry at us because we would ask him so many questions and complaints, which he had no answer to (not his fault - shankars fault) 4) Keep the curriculum to LSD not controls systems. Many of us went to older engineers and asked for help (we even went to last year's TA!! through the engineering fraternity) and they had no clue how to help us or would be amazed by the fact that we were learning concepts from a more advanced class - while skimming through required LSD knowledge. 5) His office hours were lazily scheduled inside restricted access research area in SEH. We had to waste time knocking on windows in SEH and begging busy researchers to let us in. Many times wasting upwards of 20 minutes trying to get to his office.
Perfect class but really challenging.I really liked this course and I liked the professor a lot. He is really helpful in office hours. His homeworks are really LONG but if you do them you really understand the concept. THANKS a lot professor Shankar.
This was definitely the most challenging course I've ever taken. The professor moved very quickly during class and would not do many practice problems. If we had slowed down a little and did more practice problems, the course would've been a lot less frustrating. The homework assignments also didn't always reflect what we did during class, which was extremely frustrating.
This course was the most challenging course I have taken. It required more time than any other course and required a complete understanding of everything we learned and more to solve problems.
Find a course textbook that provide clear examples of questions we have worked on and step by step method of solving such questions.
shankar is great just make him understand some responsibilities and caring as a professor. He standardize the class...
Question: You indicated that you were academically prepared to take this course, what prepared you for this class (which prior courses, which topics)?
Dynamics
Linear algebra, dynamics, calculus (all), differential equations, circuit theory, engineering electronics
Prior courses. Physics and Dynamics

General math things
Dynamics, Differential Equations, Linear Algebra, Physics 1, 2
Calc
-css -dsp -dynamics
APSC 2058, APSC 2113
Most of our Math classes that are required-- and Linear Algebra, but our year of Linear Algebra was very bad, so not much knowledge besides matrix operations was withheld.
Dynamics and Calculus III.
Dynamics
All previous math courses, physics 1, Dynamics (APSC 2058).
Differential Equations
Math courses
APSC 2058
Calculus, Linear Algebra, Differential Equations
prior required MAE classes
Linear Algebra Dynamics Differential Equations
Dynamics
All math related courses
Differential Equations Circuit Theory Physics
Calc classes/ Diff Eq and Dynamics courses
Calculus I, II, III, Linear Algebra, High school math, Dynamics
Calculus 2/3 and Linear Algebra
Ordinary Differential Equations, Digital Signal Processing, Dynamics
N/A
Differential Equations, Dynamics, Linear Algebra, Calculus I and II
Circuit theory, differential equations.
I completed the pre-requisites.
Calculus 1 through 3, Circuit Theory, Physics, Statics, Dynamics, Differential Equations
ECE 2215 and APSC 2058
differential equations and dynamics
Engineering Computation and Algebra
the first two years
Question: You indicated that you were not academically prepared to take this course, please comment on issues with prerequisite courses, or what could have been done differently so that a future student like yourself would be better prepared to take this course?
Better linear algebra and dynamics review before the course would have been helpful as well as differential equations review.

It had been a whole year and a half since we learned studied differential equations and Calc 3. This course would be much more manageable had we taken the course in sophomore year of the Mechanical Engineering Curriculum. A significant amount of time was spent on reviewing math rules.

This class covered material that was beyond its scope and rushed through the required material. I googled many of the homework questions and found that they were taken directly from a textbook for control systems . That is like if we were covering material for Calculus 3 during a calculus 2 class (While rushing through calculus 2). To reference and prove this, see Homework #5, where problems were taken from the textbook: Norman S. Nise, Control Systems Engineering, Sixth Edition ISBN-13: 978-0470917695 ISBN-10: 0470917695 To be academically prepared for this course we would have needed: 1) Needed a massive deal of previous knowledge about LaGrange functions (Shankar spent 1 week on this, previous instructor [Santiago Solares] spend multiple weeks!). 2) Needed previous knowledge of Matlab or python. Shankar required programming to be used in most assignments (even though he asked our class at the beginning of the semester if we knew python/Matlab and we said no). The class followed a similar path to Engineering Computations from Fall 2016 wherein the highest scorers are students with extensive Matlab/Python backgrounds. The next score bracket is those who have close friends who would cheat and send them their code for graphs/charts/calculations. The last bracket - where I fell - were students sincerely attempting to learn these programs simultaneously with this and other classes, and who don't have friends who help them cheat. I got absolutely destroyed in many activities and assignments simply because I didn't know how to use Matlab for graphics or for shortcuts.