

Term	Spring, 2021 (2021A)	Enrollment	22	School	ENGINEERING & APPLIED SCIENCE
Activity Type	LEC	Eligible	22	Division	-
Cross Listed Sections	-	Responses	20	Department	ELECTRICAL & SYSTEMS ENGINEERING
		Response Rate	91%	Subject	ELECTRIC & SYSTEMS ENGINEERING

Question and Scale	Average Ratings					This Instructor Only Worst Rating...Best Rating					Responses
	Instructor	Section	Course	-	0	1	2	3	4		
<b>1 Overall quality of the instructor.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	3.63	3.63	3.63	-	0%	0%	5%	26%	68%	19	
<b>2 Overall quality of the course.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	3.61	3.61	3.61	-	0%	0%	6%	28%	67%	18	
<b>3 Please rate the difficulty of the course.</b> <i>Scale: 0 to 4: Easy, Somewhat Easy, Neutral, Somewhat Difficult, Difficult</i>	3.00	3.00	3.00	-	0%	0%	31%	38%	31%	16	
<b>4 Instructor was appropriately accessible outside of class time.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	3.69	3.69	3.69	-	0%	0%	6%	19%	75%	16	
<b>5 Overall quality of the TA(s), if applicable.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	2.00	2.00	2.00	-	6%	31%	31%	19%	13%	16	
<b>6 Instructor's ability to communicate the subject matter.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	3.50	3.50	3.50	-	0%	0%	13%	25%	63%	16	
<b>7 Instructor's ability to stimulate student interest.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	3.44	3.44	3.44	-	0%	6%	6%	25%	63%	16	
<b>8 Value of assigned readings.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	2.88	2.88	2.88	-	0%	6%	25%	44%	25%	16	
<b>9 Amount learned from this course in terms of knowledge, concepts, skills and thinking ability.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	3.75	3.75	3.75	-	0%	0%	6%	13%	81%	16	
<b>10 Please rate the amount of work required for this course.</b> <i>Scale: 0 to 4: Very Little, Little, Neutral, Much, Very Much</i>	3.31	3.31	3.31	-	0%	0%	6%	56%	38%	16	
<b>11 Would you recommend this course to a major?</b> <i>Scale: 0 to 4: No, May Not, Would Consider, Yes, Strongly</i>	3.50	3.50	3.50	-	0%	0%	13%	25%	63%	16	
<b>12 Would you recommend this course to a non-major?</b> <i>Scale: 0 to 4: No, May Not, Would Consider, Yes, Strongly</i>	2.75	2.75	2.75	-	0%	6%	31%	44%	19%	16	
<b>24 To your knowledge, has there been cheating in this course?</b> <i>Scale: 0 to 1: Yes, No</i>	1.00	-	-	-	0%	100%	-	-	-	13	

**Comment Suggestion**

Learned so much. a lot of work to do though.

It is a "learn it by doing" type of course which makes it fun to learn

Course is very good since students get practical experience in development. The PCBs arrive quite late, but it is understandable considering the manufacturing time. Wish the course does not extend beyond last day of class because of this reason though.

Very practical. Very interesting. Good project to write on a resume.

**Instructor Comment**

He is passionate and wants to teach us a lot!

Clear engaging and very available!

A wonderful professor who helps students above and beyond.

Excellent class plan and very good delivery by the Professor. He always was there to help students in troubleshooting the problem, I loved his patience. The teaching was quite practical and has direct use for electronics engineers.

Prof. Garcia has been very approachable and friendly throughout the semester even at odd times of the day when students have questions about the assignment/project. He offered flexibility with the assignment submission, encouraging students to learn the concepts at its entirety. He devotes a lot on individual group projects to help students implement their ideas into hardware and software.

While the instructor is experienced and knows the material, the lectures lack preparation. Too often there are trip-ups on live demonstrations. Lectures can also be more engaging as most of the lecture is just read off the slides. Assignments often have important details left-out that is only rectified after students spent hours trying to fix it.

Great instructor who has profound knowledge and an industry background. He can provide guidance from an industrial perspective.

Term	Spring, 2020 (2020A)	Enrollment	28	School	ENGINEERING & APPLIED SCIENCE
Activity Type	LEC	Eligible	28	Division	-
Cross Listed Sections	-	Responses	22	Department	ELECTRICAL & SYSTEMS ENGINEERING
		Response Rate	79%	Subject	ELECTRIC & SYSTEMS ENGINEERING

Question and Scale	Average Ratings				This Instructor Only Worst Rating...Best Rating					Responses
	Instructor	Section	Course	-	0	1	2	3	4	
<b>1 Overall quality of the instructor.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	3.41	3.41	3.41	-	0%	9%	9%	14%	68%	22
<b>2 Overall quality of the course.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	3.23	3.23	3.23	-	0%	9%	9%	32%	50%	22
<b>3 Please rate the difficulty of the course.</b> <i>Scale: 0 to 4: Easy, Somewhat Easy, Neutral, Somewhat Difficult, Difficult</i>	2.40	2.40	2.40	-	5%	10%	45%	20%	20%	20
<b>4 Instructor was appropriately accessible outside of class time.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	3.65	3.65	3.65	-	5%	0%	5%	5%	85%	20
<b>5 Overall quality of the TA(s), if applicable.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	2.85	2.85	2.85	-	5%	15%	10%	30%	40%	20
<b>6 Instructor's ability to communicate the subject matter.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	3.40	3.40	3.40	-	0%	5%	10%	25%	60%	20
<b>7 Instructor's ability to stimulate student interest.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	3.26	3.26	3.26	-	5%	0%	21%	11%	63%	19
<b>8 Value of assigned readings.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	3.00	3.00	3.00	-	11%	0%	16%	26%	47%	19
<b>9 Amount learned from this course in terms of knowledge, concepts, skills and thinking ability.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	3.10	3.10	3.10	-	5%	10%	15%	10%	60%	20
<b>10 Please rate the amount of work required for this course.</b> <i>Scale: 0 to 4: Very Little, Little, Neutral, Much, Very Much</i>	2.55	2.55	2.55	-	5%	0%	50%	25%	20%	20
<b>11 Would you recommend this course to a major?</b> <i>Scale: 0 to 4: No, May Not, Would Consider, Yes, Strongly</i>	3.10	3.10	3.10	-	10%	5%	10%	15%	60%	20
<b>12 Would you recommend this course to a non-major?</b> <i>Scale: 0 to 4: No, May Not, Would Consider, Yes, Strongly</i>	2.25	2.25	2.25	-	20%	5%	30%	20%	25%	20
<b>24 To your knowledge, has there been cheating in this course?</b> <i>Scale: 0 to 1: Yes, No</i>	1.00	-	-	-	0%	100%	-	-	-	17

**Comment Suggestion**

If ESE 519 is an enforced prerequisite, this class would be more rewarding. There is too much overlap in knowledge with ESE 519 (e.g. C, scheduling, embedded hardware) that makes this class not as valuable as I expected. The instructor should communicate to know what is covered in each class to balance the load and knowledge. I find the class easier than I expected. I wish the pace of lecture is faster, but I guess a lot of the other students have not taken ESE 519.

Interesting course that allows us to get hand on experience on projects. It was unfortunate that the COVID situation forced a change of plan, but it was still fun nonetheless. I feel like the first half of the course could be faster in pace. A faster ramp up would give more time on the actual works on the projects

Great course with proper hands on experience. Would surely recommend someone.

Very interesting, highly recommend for people want a course that combine software with hardware, embedded development.

Class is too easy, we could learn more with harder assignments

**Instructor Comment**

2 hours of dedicated office hour would help, instead of staying after class. I wish the lecture is faster paced. Thank you for making the online transition in a short amount of time!

Friendly, accomodating and knowledgable on the subject matter of the course.

Great faculty with profound knowledge of the industrial applications. Good to talk and interact with. Had put in a lot of effort to setup the course inspite the shutdown and switching it to online mode.

Knowledgeable, accessable, humble.

Garcia is one of the best prefessors I have ever met. I really value his conscientiousness and responsibleness. He would stay in the lab after class and answer all the questions we have for assignments group by group even until midnight. And his responses in piazza are fast, patient and specific.

Whenever I struggled to understand concepts that we learned in class or having a difficult time with my assignments, professor Eduardo was always available and he would always answer my question within an hour or two. He is a great teacher.

Eduardo Garcia was a great instructor. Given the circumstances with Covid19, he was able to spin the final project in a way that made use of the skills we acquired through the class, as well as challenge us to make a polished end product.

Term	Fall, 2019 (2019C)	Enrollment	8	School	ENGINEERING & APPLIED SCIENCE						
Activity Type	LEC	Eligible	8	Division	-						
Cross Listed Sections	-	Responses	8	Department	ELECTRICAL & SYSTEMS ENGINEERING						
		Response Rate	100%	Subject	ELECTRIC & SYSTEMS ENGINEERING						
					This Instructor Only						
					Worst Rating...Best Rating						
					Responses						
Question and Scale		Instructor	Section	Course	-	0	1	2	3	4	
<b>1 Overall quality of the instructor.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>		3.88	3.88	3.88	-	0%	0%	0%	13%	88%	8
<b>2 Overall quality of the course.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>		3.75	3.75	3.75	-	0%	0%	0%	25%	75%	8
<b>3 Please rate the difficulty of the course.</b> <i>Scale: 0 to 4: Easy, Somewhat Easy, Neutral, Somewhat Difficult, Difficult</i>		2.75	2.75	2.75	-	0%	0%	25%	75%	0%	8
<b>4 Instructor was appropriately accessible outside of class time.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>		3.88	3.88	3.88	-	0%	0%	0%	13%	88%	8
<b>5 Overall quality of the TA(s), if applicable.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>		2.88	2.88	2.88	-	0%	13%	25%	25%	38%	8
<b>6 Instructor's ability to communicate the subject matter.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>		3.63	3.63	3.63	-	0%	0%	0%	38%	63%	8
<b>7 Instructor's ability to stimulate student interest.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>		3.88	3.88	3.88	-	0%	0%	0%	13%	88%	8
<b>8 Value of assigned readings.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>		3.38	3.38	3.38	-	0%	0%	13%	38%	50%	8
<b>9 Amount learned from this course in terms of knowledge, concepts, skills and thinking ability.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>		3.63	3.63	3.63	-	0%	0%	13%	13%	75%	8
<b>10 Please rate the amount of work required for this course.</b> <i>Scale: 0 to 4: Very Little, Little, Neutral, Much, Very Much</i>		3.50	3.50	3.50	-	0%	0%	0%	50%	50%	8
<b>11 Would you recommend this course to a major?</b> <i>Scale: 0 to 4: No, May Not, Would Consider, Yes, Strongly</i>		3.88	3.88	3.88	-	0%	0%	0%	13%	88%	8
<b>12 Would you recommend this course to a non-major?</b> <i>Scale: 0 to 4: No, May Not, Would Consider, Yes, Strongly</i>		2.63	2.63	2.63	-	0%	0%	63%	13%	25%	8
<b>24 To your knowledge, has there been cheating in this course?</b> <i>Scale: 0 to 1: Yes, No</i>		1.00	-	-	-	0%	100%	-	-	-	6

**Comment Suggestion**

Challenging course that anyone in the same major should consider taking if wanting to enter industry

This is one of the best courses I've taken at Penn and would recommend this course to anybody who wants to develop IoT embedded systems, also professor Eduardo Garcia is an extremely good professor for this course.

**Instructor Comment**

Very understanding with desire to help students understand and succeed

He is very accessible outside the classroom and is extremely helpful and considerate. He has a wealth of knowledge from the industry which he regularly shares and it is invaluable.

Term	Spring, 2019 (2019A)	Enrollment	32	School	ENGINEERING & APPLIED SCIENCE
Activity Type	LEC	Eligible	32	Division	-
Cross Listed Sections	-	Responses	30	Department	ELECTRICAL & SYSTEMS ENGINEERING
		Response Rate	94%	Subject	ELECTRIC & SYSTEMS ENGINEERING

Question and Scale	Average Ratings				This Instructor Only Worst Rating...Best Rating					Responses
	Instructor	Section	Course	-	0	1	2	3	4	
<b>1 Overall quality of the instructor.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	3.32	3.28	3.28	-	0%	4%	11%	36%	50%	28
					0	1	3	10	14	
<b>2 Overall quality of the course.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	3.21	3.21	3.21	-	0%	7%	18%	21%	54%	28
					0	2	5	6	15	
<b>3 Please rate the difficulty of the course.</b> <i>Scale: 0 to 4: Easy, Somewhat Easy, Neutral, Somewhat Difficult, Difficult</i>	2.96	2.96	2.96	-	0%	0%	29%	46%	25%	24
					0	0	7	11	6	
<b>4 Instructor was appropriately accessible outside of class time.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	3.67	3.21	3.21	-	0%	0%	4%	25%	71%	24
					0	0	1	6	17	
<b>5 Overall quality of the TA(s), if applicable.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	2.96	2.96	2.96	-	4%	13%	8%	33%	42%	24
					1	3	2	8	10	
<b>6 Instructor's ability to communicate the subject matter.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	3.21	2.98	2.98	-	0%	4%	17%	33%	46%	24
					0	1	4	8	11	
<b>7 Instructor's ability to stimulate student interest.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	3.13	2.98	2.98	-	0%	4%	25%	25%	46%	24
					0	1	6	6	11	
<b>8 Value of assigned readings.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	2.88	2.88	2.88	-	0%	13%	21%	33%	33%	24
					0	3	5	8	8	
<b>9 Amount learned from this course in terms of knowledge, concepts, skills and thinking ability.</b> <i>Scale: 0 to 4: Poor, Fair, Good, Very Good, Excellent</i>	3.46	3.46	3.46	-	0%	0%	17%	21%	63%	24
					0	0	4	5	15	
<b>10 Please rate the amount of work required for this course.</b> <i>Scale: 0 to 4: Very Little, Little, Neutral, Much, Very Much</i>	2.96	2.96	2.96	-	0%	0%	33%	38%	29%	24
					0	0	8	9	7	
<b>11 Would you recommend this course to a major?</b> <i>Scale: 0 to 4: No, May Not, Would Consider, Yes, Strongly</i>	3.63	3.63	3.63	-	0%	0%	8%	21%	71%	24
					0	0	2	5	17	
<b>12 Would you recommend this course to a non-major?</b> <i>Scale: 0 to 4: No, May Not, Would Consider, Yes, Strongly</i>	2.46	2.46	2.46	-	8%	21%	21%	17%	33%	24
					2	5	5	4	8	
<b>24 To your knowledge, has there been cheating in this course?</b> <i>Scale: 0 to 1: Yes, No</i>	0.95	-	-	-	5%	95%	-	-	-	20
					1	19	-	-	-	

**Cheating Comment**

n/a

NA

**Comment Suggestion**

This course was very insightful but also very difficult and time consuming. I was not familiar with the type of C used most prominently in this course, but over time I gained valuable skills. I feel much stronger in my ability to understand IoT systems and to prototype effectively. In the future I would begin Altium design much earlier, pushing the programming to a latter portion of the course.

It could be better if instructor pushes the students a little bit more.

Highly recommend.

I thought this course was a lot of fun, and it doesn't overlap with any other courses I have had or likely will have at Penn. It was especially valuable to me to send out a board to a manufacturer with assembly included I have always had to hand solder PCBs before and it was good to get exposure to the kinds of additional inputs needed for assembly. This course is a lot of work most of the way through; however, there was a very significant delay in getting our hardware designs out to the manufacturer and getting them accepted by the manufacturer, and that made this course brutally heavy at the end as we had to try to accelerate board bringup and write application firmware at the same time. I think that this was mostly due to bad luck, but I hope that things go more smoothly next year now that some of the manufacturer's constraints are better known. One thing I would suggest is having students fill out forms saying how they felt the work was divided between teammates and take that into account for grading. I have done this for other large projects, although I realize it is harder for a two person team than for a larger group. (If one person says they did 80% of the work and the other days it was 50 50, who do you believe?) There were a few groups where the work was not evenly distributed at all, and having that be taken into account during grading might at least take some of the frustration about that kind of situation away.

Amazing class. So happy I had the opportunity to work on a project like this. Everyone should have this opportunity.

It was a really good course. The professor was accessible at all times and I am really glad I took this course.

This course helps me to find a job in IoT. I have learned how to do a project from both hardware and software. Also, thank you all TAs. They are competitive and devoted. I like this course. I learn a lot from faults I did. Thank you all.

Lots of learning and practical experience about IOT device design and development. It was practicum course. One of the best course in Penn Engineering.

This course should be offered in every cycle. students can benefit from this industry grade course and can get ready for any possible opportunities in future.

**Instructor Comment**

Professor Garcia taught in an excellent way and handled troubling logistics very well, especially when PCB NG gave us issues. He was also very receptive to the students' requests to delay assignment deadlines, which goes a long way in building interest in a course and with sustaining interest in material.

He is one of the best instructors that I have met!!

The best instructor I have ever met!

I appreciated how helpful and thorough Eduardo was. He did a lot of work in providing starter designs and programs for us to use in assignments, which made the course run much smoother. He is obviously passionate about product development and was very interested in helping the class succeed. He did not seem particularly confident as an instructor at the beginning of the class, but that improved as the semester progressed.

He did an excellent job, especially considering it was his first time teaching. He would thrive if he taught again. Big fan of Professor Garcia!

He was an amazing instructor!

He is such a good teacher that I have ever met. I highly praise his patience and devoted. Instant response on piazza helps me a lot. Once our team has come across an issue and ask for help, he download our pcb project and find out the trouble. Also, every day after class, he stayed so late with us to answer our questions. I really appreciate his work and effort.



He is a very skilled professor and patiently answered every questions we had. Very responsible teacher.

The instructor is very patient in explaining students doubts, and the knowledge he has is amazing

Very Hard working and works with students on every step. Is considerate about his student's conditions and helps them with anything possible.