

ABET Review: Communications Spring 2024

Course Offerings & Enrollments

Class	Title	Aut'22	Win'23	Spr'23	Aut'23	Win'24	Spr'24
EE 400	Special Topics: TinyML (4)						55
EE 416	Random Signals for Communications & Signal Processing (4)	36			20		
EE 417/506	Modern Wireless Communications (4)		17			8	
EE 418	Network Security & Cryptography (4)	53			53		
EE 419	Introduction to Computer-Communication Networks (4)			33			50

- Overall numbers and trends are very healthy and up from 2021-22 and before.
- EE 418 credits raised from 3 to 4 to better reflect level of work.
- EE 420 (capstone) folded into ENGINE – numbers had been down past few years.
- EE 400 (TinyML) should become a regular course – significant student interest.
- Two new grad special topics courses (Gadre) in Spr'24 (Agriculture & Urban IoT Networks) and Spr'23 (Space & Millimeter Wave Networks).

Course Offerings & Enrollments

- New course being offered now (Spr'24, Trivedi, enrollment: 50):
 - **EE 391**, 4 credits, Probability for Information and Communication Engineering, covers probabilistic concepts for ECE majors with applications to information/data science, signal processing, and communication systems. Includes accompanying Python labs.
 - Sufficient for satisfying the STAT 390, or STAT 391 prerequisite requirement (e.g., for EE 419).

End of Course Reports

- No missing End of Quarter Reports
- **EE 416**
 - TA availability issues due to family COVID.
 - Students appearing with different backgrounds and pre-reqs due to the new curriculum.
 - Should do more signal processing in class to cover for weak pre-req preparation.
 - Introduced new projects on Huffman coding and PCA using Jupyter notebooks.
- **EE 417**
 - Preparation of the students was weak on fundamentals of signal processing and Fourier.
 - Quiz-based review at the start of the quarter based on ET&L recommendation.
 - New projects using Jupyter notebooks.

End of Course Reports

- **EE 418**
 - Increased the amount of time dedicated to problem-solving in class.
 - Teams of students worked the problems for 10 minutes before groups were called to come up to the board and explain their approach to solving a problem.
 - Added a course project on security vulnerability analysis of the RFID protocol family.
 - Homework and projects required only Python programming-based code submission.
 - Added more quiz problems that enabled more interaction and discussion-based problem-solving in class.
 - Revised homework assignments to have more of a computational component.

ABET Outcomes

Course	Offering	Faculty		SO1	SO2	SO3	SO4	SO5	SO6	SO7
EE 416	Aut'22	Ritcey	EE	1/1/4/0					2/2/2/0	
	Aut'23	Ritcey	EE ECE	0/0/0/3 0/0/0/2					0/1/0/2 0/0/0/2	
EE 417	Win'23	Ritcey	EE		1/1/1/0					
	Win'24	Ritcey		<i>no</i>	<i>ABET</i>	<i>detail</i>	<i>assign.</i>	<i>for</i>	<i>this</i>	<i>offering</i>
EE 418	Aut'22	Poovendran	EE				0/0/3/6	0/0/3/6		0/2/3/4
	Aut'23	Poovendran	EE ECE				0/1/1/1 0/2/2/2	0/0/1/3 0/0/3/4		0/0/1/2 0/2/2/2
EE 419	Spr'23	Hameed	EE	1/1/1/3					1/1/2/2	
	Spr'24	Hameed		<i>course</i>	<i>in</i>	<i>progress</i>				

Novice/Developing/Competent/Exemplary

Student Outcomes

SO1: Solve Problems. SO2: Apply Design Considering Constraints. SO3: Communication. SO4: Ethics. SO5: Teams. SO6: Experiment & Analyze Data. SO7: Learning

Student Course Evaluations

Class	Instructor	Quarter	Responses	Summative Median	Adjusted Combined Median	Challenge Engagement Index	Average Hours/Credit
EE 416	Ritcey	Aut'23	5/20	4.7/4.7/4.7/4.7	4.3	5.7	2
EE 417/506	Ritcey	Win'24	3/8	4.8/4.2/4.8/4.8	4.2	5.5	2.1
EE 418	Poovendran	Aut'23	27/53	4.6/4.7/4.9/4.8	4.7	5.3	2.4
EE 419	Hameed	Spr'23	5/34	4.9/4.7/4.9/4.9	4.5	5.1	2.1

Thoughts

- **EE 391:** Offer twice a year?
- **EE 417:** Poor signal processing background of students despite 242 being in the core – review sessions at start of quarter? Review material before each class? Videos?
- **EE 417:** This is a theory-heavy course with a theory-heavy prerequisite (EE 416). Maybe give students hardware experience with wireless systems (perhaps starting in EE 371 with off-the-shelf prepackaged modules)?