

Major Teaching Assignments at Purdue University

Year	Fall			Spring		
	Course	Enrollment	Evaluations	Course	Enrollment	Evaluations
2005–06	ECE440	25	3.04/3.03	ECE440	26	4.63/4.01
2004–05	Sabbatical leave at MIT					
2003–04	ECE440	35	3.28/3.11	ECE440	27	3.76/3.14
2002–03	ECE402	60	2.97/3.16	ECE301	80	3.40/3.16
2001–02	ECE440	50	3.53/2.98	ECE301	84	3.41/3.11
				ECE301	85	3.19/3.11
2000–01	ECE440	34	3.33/3.03	ECE440	35	3.34/3.03
1999–00	ECE695D	9	3.59/3.29	ECE440	23	3.62/3.06
1998–99	ECE440	44	3.42/2.99	ECE440	38	3.44/2.96
1997–98	ECE440	60	3.22/3.02	ECE440	41	3.35/2.94
1996–97	ECE201	126	2.89/3.05	ECE201	153	3.18/3.01
				ECE645	27	3.59/3.42
1995–96	ECE301	100	3.29/2.97	ECE440	42	3.51/3.07
	ECE301	99	3.35/2.97			
1994–95	ECE301		3.19/3.08	ECE440	34	3.27/3.05
1993–94	ECE440		3.6	ECE201		3.9
1992–93	ECE301		3.2	ECE440		3.8
1991–92	ECE201		3.3	ECE440		3.6
1990–91	ECE201		3.0	ECE643		3.2

Multiple rows associated with one academic year in the previous table means that I was responsible for multiple courses during one semester (e.g., Spring 1996–97) or multiple sections of one course during one semester (e.g., Spring 2001–02). Starting in Fall 1994–95 the School of Electrical and Computer Engineering reported School-wide averages on its evaluation forms, which are the denominators in the previous table, and used a 4 point scale from Fall 1994–95 through Fall 2005–06 and a 5 point scale starting in Spring 2005–06. Before Fall 1994–95 the School did not report School-wide averages on its evaluation forms and used a 5 point scale. Brief descriptions of the courses are:

ECE440 Transmission of Information: This is a senior-level course which covers both analog and digital communication systems at primarily the physical-layer level and which emphasizes the computation of SNRs in analog systems and bit error probabilities in digital systems. It makes extensive use of the prerequisites which are *ECE301 Signals and Systems* and *ECE302 Probabilistic Methods in Electrical and Computer Engineering*. I have written class notes and new laboratories are under development.

ECE301 Signals and Systems: This is a junior-level course on deterministic signals and, primarily, linear systems which emphasizes transform methods (continuous-time Fourier, discrete-time Fourier, bilateral Laplace, and Z transforms) and examines a variety of applications especially sampling and noise-free analog communication systems.

ECE201 Linear Circuit Analysis I: This is a sophomore-level course on linear circuits including circuit elements such as resistors, capacitors, inductors, independent and dependent sources, and operational amplifiers; circuit laws, i.e., Kirchoff's current and voltage laws; organized ways to write equations describing circuits, i.e., nodal and mesh methods; and the behavior of standard circuits such as RC and serial and parallel RLC circuits.

ECE402 EE Design Projects: This is a senior-level one-semester course in which teams of students design a project, which varies each semester, and it focuses both on process and on end result.

ECE643 Stochastic Processes in Information Systems: This is a second-level graduate course which concerns basic stochastic process ideas and applications to Markov chains and processes, point processes, etc.

ECE645 Estimation Theory: This is a second-level graduate course which concerns fundamental detection and estimation theory with communication and signal processing applications.

ECE695D Advanced Biomedical System Identification: This is a second-level graduate special topics course that concerned the theory of dynamical system identification and its application to biomedical problems.

Major Teaching Assignments at Cornell University

Year	Fall		Spring	
	Course	Enrollment	Course	Enrollment
2018-19	BME 2000/ENGRD 2202	64	ECE 2200/ENGRD 2220	84
	ENGRG 1050	21		
2017-18	BME 2000/ENGRD 2202	65	BME 4020	31
			ECE 2200/ENGRD 2220	95
			BME 5010	88
2016-17	ECE 3950	22	BME 4020	33
	ENGRG 1050	22	ECE 2200/ENGRD 2220	88
			BME 5010	71
2015-16	No assignment in anticipation of Spring double assignment		BME 4020	5
			ECE 2200/ENGRD 2220	52
			BME 5010/BEE 5010	54
2014-15	ECE 2200	41	BME 4020	29
	BME 5010	100	BME 5010	72
	ENGRG 1050	19		
2013-14	Sabbatical leave		BME 4020	40
			BME 5010	69
2012-13	BME 7310	32	BME 7130	15
2011-12	BME 7310	37	ECE 2200	52
	ENGRG 1050	20		
2010-11	BME 7310	31	ECE 2200	96
2009-10	BME 7310	24	BME 5010	
	ENGRG 1050	20		
2008-09	BME 731	28	BME 501	
2007-08	BME 731	25	ECE 320	69
	ENGRI 150	20		
2006-07	BME 731	13	NA	

Multiple rows associated with one academic year in the previous table means that I was responsible for multiple courses during one semester (e.g., Fall 2007) or multiple sections of one course during one semester. I had no class assignment during Spring 2007 as a part of moving to Cornell.

BME731 BME7310 Advanced Biomedical Engineering Analysis of Biological Systems: A 3 credit entry graduate-level course which covers the fundamentals of quantitative analysis of biological systems especially with respect to evolution over time and to uncertainty which is required of all BME Graduate Field Ph.D. students. It illustrates analytical methods applicable to a variety of biological systems, ranging from molecular to cellular to organ to application of whole-body systems.

BME7130 Core Concepts in Disease: A 3 credit Ph.D.-level course taught in collaboration with faculty at Weill Cornell Medical College and funded by the Howard Hughes Medical Institute (HHMI) which is required of all BME Graduate Field Ph.D. students. The goal is to describe disease mechanisms in preparation for the students' clinical exposure in BME 7160 *Immersion Experience in Medical Research and Clinical Practice* usually taking during the summer following the first year of graduate school. Most diseases emerge due to a relative small number of biological effects, including mechanisms like infection, inflammation, neoplasia, genetic mutation, protein

misfolding, and metabolic dysregulation. Students learn about disease-state biology by focusing on these broad disease pathways. The course consists of several modules, each focused on one broad class of disease mechanism, and includes both a discussion of the underlying biology of the disease pathway as well as examples of specific diseases that involve those mechanisms. This course complements the training in fundamental normal-state biology students are already receiving by providing a mechanism-centered view of disease development.

BME501 BME50010 Bioengineering Seminar: A seminar focused on BME Masters of Engineering students with primarily speakers from industrial BME organizations.

ENGR150 ENGR1050 Engineering Seminar: A 1 credit course for entering freshmen engineers which is the mechanism by which the College of Engineering advises entering freshmen both with respect to career issues and with respect to the details of being a successful student at Cornell. The students are my advisees until they affiliate with a department sometime during their sophomore year.

BME4020 Electrical and Chemical Physiology: A 3 credit course listed at the 4000 level though it has no prerequisites and can be taken in any order with BME3010, BME3020, and BME4010. The course is required for BME undergraduate majors. Many undergraduate students taking the BME minor and many BME M.Eng. students take the course.

BME2000 Biomedical Transport Phenomena: A 3 credit sophomore-level course on transport phenomena, fluid mechanics and diffusion, which covers Chapters 1, 2, 3, 6, 7, and 10 of George A. Truskey, Fan Yuan, and David F. Katz, "Transport Phenomena in Biological Systems", Second Edition, Pearson Prentice Hall, 2009. The course is required for BME undergraduate majors.

ECE320 Signals, Systems, and Networks: A 3 credit junior-level course seeking to integrate and extend students understanding of the analytical and computational tools used in the design and representation of complex networks and systems. Topics include state-space techniques, finite state machines, graph-theoretic approaches to network design and analysis, complexity, phase transitions in complex systems, and scalability.

ECE 3950 Special Topic in ECE: This was a single-time offering of a 3 credit junior-level course on bio-ECE focused on the nervous system.

ECE2200 Signals and Systems: A 3 credit sophomore-level course in signals and linear systems.