

### 3-Year ECE Course Rollout for Pittsburgh Students (updated 10/20/2011)

The department will make every effort to "stick to the plan".

All parts of the rollout are subject to updates, especially those in the "as needed" and "TBD" categories.

For course descriptions, please refer to <http://www.ece.cmu.edu/undergraduate/guide/appendix-f.html>

**Special Note:** we are expecting revisions starting F12 (not reflected in this rollout) to the 3/4/5/6/7/800 Signal Processing and Control area course offerings

**Special Note:** look for the newly proposed 3/4/500 courses in the energy area

Periodicity Legends:

**F/S** = every Fall and Spring

**F** = every Fall

**S** = every Spring

**F-~~{odd,even}~~** = Fall semesters on {odd,even} years

**S-~~{odd,even}~~** = Spring semesters on {odd,even} years

**as needed** = not regularly scheduled (e.g., special topics courses);

**crosslist** = based on availability in the course's home department

**TBD** = status to be decided

Course	Course Name	Periodicity	S12	F12	S13	F13	S14	F14
18100	Introduction to Electrical and Computer Engineering	F/S	OFFERED	OFFERED	OFFERED	OFFERED	OFFERED	OFFERED
18200	Emerging Trends in Electrical and Computer Engineering	F		OFFERED		OFFERED		OFFERED
18202	Mathematical Foundations of Electrical Engineering	F/S	OFFERED	OFFERED	OFFERED	OFFERED	OFFERED	OFFERED
18220	Electronic Devices and Analog Circuits	F/S	OFFERED	OFFERED	OFFERED	OFFERED	OFFERED	OFFERED
18240	Structure and Design of Digital Systems	F/S	OFFERED	OFFERED	OFFERED	OFFERED	OFFERED	OFFERED
18213	Introduction to Computer Systems	F/S	OFFERED	OFFERED	OFFERED	OFFERED	OFFERED	OFFERED
18290	Signals and Systems	F/S	OFFERED	OFFERED	OFFERED	OFFERED	OFFERED	OFFERED
18300	Fundamentals of Electromagnetics	F		OFFERED		OFFERED		OFFERED

18310	Fundamentals of Semiconductor Devices	S	OFFERED		OFFERED		OFFERED	
18320	Microelectronic Circuits	F		OFFERED		OFFERED		OFFERED
18340	Digital Computation	S	OFFERED		OFFERED		OFFERED	
18341	Logic Design Using Simulation, Synthesis, and Verification Techniques	S->F	OFFERED	OFFERED		OFFERED		OFFERED
18342	Fundamentals of Embedded Systems	F		OFFERED		OFFERED		OFFERED
18345	Introduction to Telecommunications Networks	S	OFFERED		OFFERED		OFFERED	
18348	Embedded Systems Engineering	S	OFFERED		OFFERED		OFFERED	
18349	Embedded Real-Time Systems	F		OFFERED		OFFERED		OFFERED
18370	Dynamic Systems and Control	F		OFFERED		OFFERED		OFFERED
18391	Noisy Signal Representation & Processing	S	OFFERED		OFFERED		OFFERED	
18401	Electromechanics	TBD						
18402	Applied Electrodynamics	S	OFFERED		OFFERED		OFFERED	
18411	Computational Techniques in Engineering	S-even	OFFERED				OFFERED	
18415	From Design to the Market for Deep Submicron Integrated Circuits	as needed	OFFERED					
18417	Power Electronics (proposed new course, tentative title)	S-even (starting S14)					OFFERED	
18418	Energy Systems	S-odd			OFFERED			
18419	Semiconductor Device Applications - Optoelectronics and Nanoelectronics	TBD						
18421	Analog Integrated Circuits I	S	OFFERED		OFFERED		OFFERED	
18422	Digital Integrated Circuits I	S	OFFERED		OFFERED		OFFERED	
18447	Introduction to Computer Architecture	S	OFFERED		OFFERED		OFFERED	
18450	Digital Communications	F		OFFERED		OFFERED		OFFERED
18472	Fundamentals of Electric Power Systems	F		OFFERED		OFFERED		OFFERED
18474	Embedded Control Systems	S	OFFERED		OFFERED		OFFERED	

18482	Telecommunications: Technology, Policy and Management	crosslist	OFFERED					
18487	Introduction to Computer & Network Security & Applied Cryptography	F		OFFERED		OFFERED		OFFERED
18491	Fundamentals of Signal Processing	F		OFFERED		OFFERED		OFFERED
18492	Special Topics: Speech Processing	crosslist						
18493	Electroacoustics	F-even		OFFERED				OFFERED
18496	Introduction to Biomedical Imaging and Image Analysis	crosslist						
18510	Sensor Systems Design	S	OFFERED		OFFERED		OFFERED	
18513	Antenna Design for Wireless Communications	TBD						
18525	Integrated Circuit Design Project	F (starting F14)						OFFERED
18540	Rapid Prototyping of Computer Systems	S	OFFERED		OFFERED		OFFERED	
18545	Advanced Digital Design Project	F		OFFERED		OFFERED		OFFERED
18549	Embedded Systems Design	S	OFFERED		OFFERED		OFFERED	
18551	Digital Communications and Signal Processing Systems Design	S	OFFERED		OFFERED		OFFERED	
18571	Energy Capstone (Proposed new course, tentative title)	F (starting F13)				OFFERED		OFFERED
18578	Mechatronic Design	S	OFFERED		OFFERED		OFFERED	
18601	Entrepreneurship and Innovation in Technology	F		OFFERED		OFFERED		OFFERED
18603	Leadership for Engineers	F		OFFERED		OFFERED		OFFERED
18605	Innovation in Science and Engineering - Theory and Fundamentals	as needed						
18606	Innovation in Science and Engineering - Applications	as needed						
18610	Fundamentals of Modern CMOS Devices	F		OFFERED		OFFERED		OFFERED
18614	Microelectromechanical Systems	F		OFFERED		OFFERED		OFFERED
18615	Micro/nanofabrication	S	OFFERED		OFFERED		OFFERED	

18616	Information Storage Devices and Systems	F-even		OFFERED				OFFERED
18618	Smart Grids and Future Electric Energy Systems	S->F-odd	OFFERED			OFFERED		
18622	Digital Integrated Circuits II	F		OFFERED		OFFERED		OFFERED
18623	Analog Integrated Circuits II	F		OFFERED		OFFERED		OFFERED
18625	System on Chip Design	F (starting F13)				OFFERED		OFFERED
18630	Introduction to Security and Policy	S (starting S13)			OFFERED		OFFERED	
18631	Introduction to Information Security	crosslist						
18639A	Special Topics: Intrusion Tolerance	crosslist						
18639B	Special Topics: Mobile Security	crosslist						
18639D	Special Topics: wireless network security	crosslist						
18639F	Special Topics: Browser Security	crosslist						
18639SV	Special Topics: Intrusion Tolerance	crosslist						
18645	How to Write Fast Code	as needed						
18645SV	How to Write Fast Code	as needed						
18648	Introductory Embedded Systems	F		OFFERED		OFFERED		OFFERED
18649	Distributed Embedded Systems	F		OFFERED		OFFERED		OFFERED
18650	Policies of Wireless Systems and the Internet	crosslist						
18660	Numerical Methods for Engineering Design and Optimization	F		OFFERED		OFFERED		OFFERED
18667	Design of Integrated Embedded Systems	F		OFFERED		OFFERED		OFFERED
18669A	Special Topics in CAD 1: Computing and Biology	as needed						
18699A	Special Topics in Neural Signal Processing	S (starting S13)			OFFERED		OFFERED	
18703	Managing and Leading Research and Development	F		OFFERED		OFFERED		OFFERED
18712	Elements of Photonics for Communication Systems	F		OFFERED		OFFERED		OFFERED

18715	Applied Magnetism and Magnetic Materials	S-even (starting S14)		Cancelled		Cancelled	OFFERED	Cancelled
18716	Magnetic Devices (proposed new course)	F-even		OFFERED				OFFERED
18721	Mixed-Signal Integrated Circuits	F->S		OFFERED			OFFERED	
18723	RF Integrated Circuit Design and Implementation	S->F	OFFERED		OFFERED	OFFERED		OFFERED
18725	Advanced Digital IC Design	as needed						
18730	Introduction to Computer Security	F		OFFERED		OFFERED		OFFERED
18731	Network Security	F		OFFERED		OFFERED		OFFERED
18732	Secure Software Systems	S	OFFERED		OFFERED		OFFERED	
18733	Applied Cryptography	S	OFFERED		OFFERED		OFFERED	
18739A	Special Topics in Security: Foundations of Security and Privacy	as needed						
18739C	Special Topics in Security: Vulnerability, Defenses, and Malware Analysis	as needed						
18739SV	Special Topics in Security: Foundations of Security and Privacy	as needed						
18740	Computer Architecture	F		OFFERED		OFFERED		OFFERED
18742	Parallel Computer Architecture	F-even		OFFERED				OFFERED
18743	Energy Aware Computing	F		OFFERED		OFFERED		OFFERED
18745	Rapid Prototyping of Computer Systems	S	OFFERED		OFFERED		OFFERED	
18746	Advanced Storage Systems	S	OFFERED		OFFERED		OFFERED	
18748	Wireless Sensor Networks	S	OFFERED		OFFERED		OFFERED	
18751	Applied Stochastic Processes	F		OFFERED		OFFERED		OFFERED
18752	Estimation, Detection and Identification	S-odd			OFFERED			
18753	Information Theory	S-even	OFFERED				OFFERED	
18756	Packet Switching and Computer Networks	F		OFFERED		OFFERED		OFFERED
18757	Network Management and Control	S-odd			OFFERED			
18759	Wireless Networks	S	OFFERED		OFFERED		OFFERED	
18760	VLSI CAD: Logic to Layout	S	OFFERED		OFFERED		OFFERED	

18762	Circuit Simulation: Theory and Practice	S12->F14	OFFERED					OFFERED
18764	In Between Design & Manufacturing of Submicron Integrated Circuits	F->S		Cancelled	OFFERED	Cancelled	OFFERED	Cancelled
18765	Digital System Testing and Testable Design	F		OFFERED		OFFERED		OFFERED
18769	Design for Manufacturability in Nanometer Era	S (no S13)	OFFERED		Cancelled		OFFERED	
18771	Linear Systems	F		OFFERED		OFFERED		OFFERED
18777	Complex Large-Scale Dynamic Systems	F-even		OFFERED				OFFERED
18781	Speech Recognition and Understanding	crosslist						
18781S	Speech Recognition and Understanding	crosslist						
18791	Medical Imaging	as needed	OFFERED					
18792	Advanced Digital Signal Processing	S	OFFERED		OFFERED		OFFERED	
18794	Pattern Recognition Theory	F		OFFERED		OFFERED		OFFERED
18795	Bioimage Informatics	S	OFFERED		OFFERED		OFFERED	
18797	Machine Learning for Signal Processing	crosslist						
18798	Image, Video, and Multimedia	F		OFFERED		OFFERED		OFFERED
18799B	Special Topics in Signal Processing: Nonlinear Optimization	as needed						
18799D	Special Topics in Signal Processing: Design Implementation of Speech Recognition Systems	crosslist						
18799G	Special Topics in Signal Processing: Wavelets and Multiresolution Techniques	as needed						
18799H	Special topics in Signal Processing: Network Science: Modeling and Inference	as needed	OFFERED					
18799I	Special Topics in Signal Processing: Statistical Discovery and Learning	as needed						

18799K	"Special Topics in Signal Processing: Cognitive Video	S	OFFERED		OFFERED		OFFERED	
18799S	Special Topics in Signal Processing: Statistical Discovery and Learning	as needed						
18817	Applied Physics: Fund. of Semiconductors and Nanostructures	S-odd			OFFERED			
18842	Distributed Systems	S	OFFERED		OFFERED		OFFERED	
18843	Mobile Computing Systems and Applications	F		OFFERED		OFFERED		OFFERED
18843S	Mobile Computing Systems and Applications	S	OFFERED		OFFERED		OFFERED	
18845	Internet Services	S	OFFERED		OFFERED		OFFERED	
18847W	Special Topics in Computer Systems: Mobile Hardware for Software Engineers	F		OFFERED		OFFERED		OFFERED
18848C	Special Topics in Embedded Systems: Networked Cyber-Physical Systems	as needed						
18869D	Special Topics in CAD: Wild and Crazy Ideas in Electrical and Computer Engineering	as needed	OFFERED					
18875	Engineering and Economics for Future Electric Energy Systems	S	OFFERED		OFFERED		OFFERED	
18879A	Special Topics in Systems and Controls: Computer Control Engineering	as needed						
18879H	Special Topics in Systems and Controls: Advanced Linear Systems and Control	as needed						
18879K	Special Topics in Systems and Controls: Neural Network Control of Nonlinear Systems...	as needed	OFFERED					
18879L	Special Topics in Systems and Control: Hybrid Systems Analysis and Theorem Proving	as needed						

18879M	Special Topics in Systems and Control: Optimization in Energy Networks	S (starting S13)			OFFERED		OFFERED	
18879S	Special Topics in Systems and Control: Networked Control	as needed						
18879SV	Special Topics in Signal Processing: Stochastic Optimization	as needed						
18879T	Special Topics in Systems and Control: Nonlinear Control Systems	as needed						
18879U	Special Topics in Signal Processing: Stochastic Optimization	as needed						
18882A	Special Topics in Energy Systems: Power Electronics	as needed						