

Course Schedule - Fall 2004

Electrical and Computer Engineering

110 **Intro Elec & Comp Engrg** Credit: 4 hours.

(ECE 110) Integrated introduction to selected fundamental concepts and principles in electrical and computer engineering: circuits, electromagnetics, communications, electronics, controls, and computing. Laboratory experiments and lectures focus on a design and construction project, such as an autonomous moving vehicle. Prerequisite: Credit or registration in either MATH 220 or 235.

Students must register for one lab and one lecture section.

CRN	Type	Section	Time	Days	Location	Instructor
36778	laboratory	AB1	09:00 AM - 11:50 AM	M	room 146 Everitt Elec and Comp Engr Lab	Ramachandran, A; Uribe, R; Adekunle, O
36780	laboratory	AB2	09:00 AM - 11:50 AM	W	room 146 Everitt Elec and Comp Engr Lab	Uribe, R; Adekunle, O; Pawlowski, D
36781	laboratory	AB3	09:00 AM - 11:50 AM	F	room 146 Everitt Elec and Comp Engr Lab	Narla, D; Uribe, R; Pfeifferberger, J
36783	laboratory	AB4	08:00 AM - 10:50 AM	T	room 146 Everitt Elec and Comp Engr Lab	Uribe, R; Sylvester, L; Stears, D
36785	laboratory	AB5	11:30 AM - 02:20 PM	T	room 146 Everitt Elec and Comp Engr Lab	Uribe, R; Krishnan, B; Romer, M
36788	laboratory	AB6	11:30 AM - 02:20 PM	R	room 146 Everitt Elec and Comp Engr Lab	Nakka, N; Uribe, R; Romer, M
36789	lecture	AL1	03:00 PM - 03:50 PM	MWF	room 151 Everitt Elec and Comp Engr Lab	Franke, P; Brunet, M
36792	laboratory	BB1	02:00 PM - 04:50 PM	M	room 146 Everitt Elec and Comp Engr Lab	Ramachandran, A; Uribe, R; Longino, J
36794	laboratory	BB2	02:00 PM - 04:50 PM	W	room 146 Everitt Elec and Comp Engr Lab	Uribe, R; Young, M; Patel, A
36796	laboratory	BB3	02:00 PM - 04:50 PM	F	room 146 Everitt Elec and Comp Engr Lab	Uribe, R; Young, M; Longino, J
36798	laboratory	BB4	08:00 AM - 10:50 AM	R	room 146 Everitt Elec and Comp Engr Lab	Uribe, R; Pawlowski, D; Kuo, S
36800	laboratory	BB5	03:00 PM - 05:50 PM	T	room 146 Everitt Elec and Comp	Uribe, R; Stears, D; Narayanan, S

					Engr Lab	
36801	laboratory	BB6	03:00 PM - 05:50 PM	R	room 146 Everitt Elec and Comp Engr Lab	Uribe, R
36790	lecture	BL1	01:00 PM - 01:50 PM	MWF	room 151 Everitt Elec and Comp Engr Lab	Brunet, M; Srinivasa, S; Kuo, S

199 Undergraduate Open Seminar Credit: 1 to 5 hours.
(ECE 199) May be repeated. Approved for both letter and S/U grading.

CRN	Type	Section	Time	Days	Location	Instructor
31774	discussion-recitation	A	03:00 PM - 03:50 PM	M	room 241 Everitt Elec and Comp Engr Lab	Stratton, J
	lecture-discussion	A	02:00 PM - 02:50 PM	MWF	room 269 Everitt Elec and Comp Engr Lab	Hwu, W
: 4 hoursTopic: Introduction to Computing systems.						
31779	discussion-recitation	B	03:00 PM - 03:50 PM	W	room 241 Everitt Elec and Comp Engr Lab	Hwu, W
	lecture-discussion	B	02:00 PM - 02:50 PM	MWF	room 269 Everitt Elec and Comp Engr Lab	Hwu, W
: 4 hoursTopic: Introduction to Computing systems.						
31704	discussion-recitation	C	03:00 PM - 03:50 PM	F	room 241 Everitt Elec and Comp Engr Lab	Hwu, W
	lecture-discussion	C	02:00 PM - 02:50 PM	MWF	room 269 Everitt Elec and Comp Engr Lab	Hwu, W
: 4 hoursTopic: Introduction to Computing systems.						
31709	discussion-recitation	D	09:00 AM - 09:50 AM	T	room 169 Everitt Elec and Comp Engr Lab	Hwu, W
	lecture-discussion	D	02:00 PM - 02:50 PM	MWF	room 269 Everitt Elec and Comp Engr Lab	Hwu, W
: 4 hoursTopic: Introduction to Computing systems.						
39236	discussion-recitation	E	12:00 PM - 12:50 PM	R	room 163 Everitt Elec and Comp Engr Lab	Hanan, S

	lecture-discussion	E	02:00 PM - 02:50 PM	MWF	room 269 Everitt Elec and Comp Engr Lab	Hwu, W
: 4 hours Topic: Introduction to Computing systems.						

200 Seminar Credit: 0 hours.

(ECE 200) Discussions of educational programs, career opportunities, and other topics in electrical and computer engineering For ECE students. Approved for S/U grading only.

CRN	Type	Section	Time	Days	Location	Instructor
29836	lecture	SH	05:00 PM - 06:50 PM	W	room 151 Everitt Elec and Comp Engr Lab	
29836: This course does not meet the first two weeks of the semester.						

205 Intro Elec & Electr Circuits Credit: 3 hours.

(ECE 205) Basic principles of circuit analysis, transient analysis, AC steady-state analysis, introduction to semiconductor devices and fabrication, digital logic circuits, op-amps, and A/D and D/A conversion. ECE students may not receive credit for this course. Prerequisite: PHYS 212.

CRN	Type	Section	Time	Days	Location	Instructor
31717	lecture	A	08:00 AM - 08:50 AM	MWF	room 151 Everitt Elec and Comp Engr Lab	Bigelow, T
31720	lecture	F	02:00 PM - 02:50 PM	MWF	room 100 Materials Science and Eng Bld	Choi, H

206 Intro Elec & Electr Ckts Lab Credit: 1 hours.

(ECE 206) Laboratory instruments and basic measurement techniques, electric circuits, CMOS logic circuits, DTL and TTL circuits, and op-amps. ECE students may not receive credit for this course. Prerequisite: PHYS 212; concurrent registration in ECE 205.

CRN	Type	Section	Time	Days	Location	Instructor
36694	laboratory	F1	08:00 AM - 09:50 AM	M	room 268 Everitt Elec and Comp Engr Lab	Zhang, J; Lovitt, A
36836	laboratory	F10	06:00 PM - 07:50 PM	W	room 268 Everitt Elec and Comp Engr Lab	Zhang, J; Shostak, P
36834	laboratory	F11	06:00 PM - 07:50	R	room 268 Everitt	Zhang, J; Pandya, S

			PM		Elec and Comp Engr Lab	
36831	laboratory	F2	10:00 AM - 11:50 AM	M	room 268 Everitt Elec and Comp Engr Lab	Zhang, J; Disarro, J
36830	laboratory	F3	12:00 PM - 01:50 PM	M	room 268 Everitt Elec and Comp Engr Lab	Gao, R; Zhang, J
36828	laboratory	F4	08:00 AM - 09:50 AM	R	room 268 Everitt Elec and Comp Engr Lab	Zhang, J; Dobbs, D
36827	laboratory	F5	10:00 AM - 11:50 AM	R	room 268 Everitt Elec and Comp Engr Lab	Zhang, J; Disarro, J
36825	laboratory	F6	10:00 AM - 11:50 AM	W	room 268 Everitt Elec and Comp Engr Lab	Liu, Y; Zhang, J
36824	laboratory	F7	01:00 PM - 02:50 PM	W	room 268 Everitt Elec and Comp Engr Lab	Zhang, J; Jones, K
36822	laboratory	F8	06:00 PM - 07:50 PM	M	room 268 Everitt Elec and Comp Engr Lab	Zhang, J; Zhong, Y
36820	laboratory	F9	06:00 PM - 07:50 PM	T	room 268 Everitt Elec and Comp Engr Lab	Zhang, J; Hesford, A

210 Analog Signal Processing Credit: 4 hours.

(ECE 210) Introduction to analog signal processing, with an emphasis on underlying concepts from circuit and system analysis: linear systems, review of elementary circuit analysis, differential equation models of linear circuits and systems, Laplace transform, convolution, stability, phasors, frequency response, Fourier series, Fourier transform, active filters and AM radio. Prerequisite: ECE 110 and PHYS 212; credit or concurrent registration in MATH 385, 386, or 441.

Students must register for one lab and one lecture section. You will receive a TIME CONFLICT ERROR when registering for this course. Please contact the M&IE Undergraduate Programs Office, 154 MEB, 217-333-0366, ahouser@uiuc.edu to receive the necessary override to register for the course.

CRN	Type	Section	Time	Days	Location	Instructor
36863	laboratory	AB1	10:00 AM - 11:50 AM	M	room 234 Everitt Elec and Comp Engr Lab	Mlekodaj, S; Patel, T; Riswanto, R
36891	laboratory	AB2	10:00 AM - 11:50 AM	M	room 234 Everitt Elec and Comp Engr Lab	Mlekodaj, S; Patel, T; Riswanto, R
36867	laboratory	AB3	12:00 PM - 01:50 PM	M	room 234 Everitt Elec and Comp Engr Lab	Mlekodaj, S; Benavi, A

36874	laboratory	AB4	12:00 PM - 01:50 PM	M	room 234 Everitt Elec and Comp Engr Lab	Mlekodaj, S; Benavi, A
36875	laboratory	AB5	02:00 PM - 03:50 PM	M	room 234 Everitt Elec and Comp Engr Lab	Widikdo, E; Benavi, A
36881	laboratory	AB6	02:00 PM - 03:50 PM	M	room 234 Everitt Elec and Comp Engr Lab	Widikdo, E; Benavi, A
36878	laboratory	AB7	04:00 PM - 05:50 PM	M	room 234 Everitt Elec and Comp Engr Lab	Mlekodaj, S; Widikdo, E
36888	laboratory	AB8	04:00 PM - 05:50 PM	M	room 234 Everitt Elec and Comp Engr Lab	Mlekodaj, S; Widikdo, E
36883	laboratory	AB9	06:00 PM - 07:50 PM	T	room 234 Everitt Elec and Comp Engr Lab	Mlekodaj, S; Patel, T
36709	laboratory	ABA	06:00 PM - 07:50 PM	W	room 234 Everitt Elec and Comp Engr Lab	Riswanto, R; Benavi, A
36717	laboratory	ABB	06:00 PM - 07:50 PM	W	room 234 Everitt Elec and Comp Engr Lab	Riswanto, R; Benavi, A
36696	lecture	AL1	09:00 AM - 09:50 AM	MTWF	room 269 Everitt Elec and Comp Engr Lab	Basar, T
36702	lecture	AL2	10:00 AM - 10:50 AM	MTWF	room 269 Everitt Elec and Comp Engr Lab	Hasegawa-Johnson, M
36706	lecture	AL3	01:00 PM - 01:50 PM	MTWF	room 269 Everitt Elec and Comp Engr Lab	Mitofsky, A

211 Topics Analog Ckts & Systems Credit: 2 hours.

(ECE 211) Introduction to concepts from circuit and system analysis: linear systems, review of elementary circuit analysis, op amps, transient analysis, differential equation models of linear circuits and systems, Laplace transform. Students may not receive credit for both ECE 211 and 210. Prerequisite: ECE 110 and PHYS 212; credit or concurrent registration in MATH 385, 386, or 441

CRN	Type	Section	Time	Days	Location	Instructor
31722	lecture	B	09:00 AM - 09:50 AM	MTWF	room 269 Everitt Elec and Comp Engr Lab	Basar, T
31722: Meets 25-Aug-04 - 15-Oct-04.						
31723	lecture	C	10:00 AM - 10:50 AM	MTWF	room 269 Everitt	Hasegawa-Johnson

			AM		Elec and Comp Engr Lab	M
31723: Meets 25-Aug-04 - 15-Oct-04.						
31725	lecture	E	01:00 PM - 01:50 PM	MTWTF	room 269 Everitt Elec and Comp Engr Lab	Mitofsky, A
31725: Meets 25-Aug-04 - 15-Oct-04.						

290 Computer Engineering, I Credit: 3 hours.

(ECE 290) Introduction to digital logic and computer systems. Representation of information, combinational network analysis and design, sequential network analysis and design, computer organization and control. Laboratory for design and simulation of digital systems. Credit is not given for both ECE 290 and CS 231. Prerequisite: One of CS 101, 125, or ECE 110.

Students must register for one discussion and one lecture section.

CRN	Type	Section	Time	Days	Location	Instructor
36928	discussion- recitation	AD2	09:00 AM - 09:50 AM	R	room 269 Everitt Elec and Comp Engr Lab	Brown, D; Gupta, S; Nicol, D
36925	discussion- recitation	AD3	10:00 AM - 10:50 AM	R	room 269 Everitt Elec and Comp Engr Lab	Brown, D; Gupta, S; Nicol, D
36922	discussion- recitation	AD4	11:00 AM - 11:50 AM	R	room 269 Everitt Elec and Comp Engr Lab	Brown, D; Knox, A; Nicol, D
36919	discussion- recitation	AD5	12:00 PM - 12:50 PM	R	room 269 Everitt Elec and Comp Engr Lab	Brown, D; Knox, A; Nicol, D
36917	discussion- recitation	AD6	01:00 PM - 01:50 PM	R	room 269 Everitt Elec and Comp Engr Lab	Brown, D; Miller, B; Nicol, D
36914	discussion- recitation	AD7	02:00 PM - 02:50 PM	R	room 269 Everitt Elec and Comp Engr Lab	Brown, D; Miller, B; Nicol, D
36895	discussion- recitation	AD8	03:00 PM - 03:50 PM	R	room 269 Everitt Elec and Comp Engr Lab	Brown, D; McClain, M; Nicol, D
36719	lecture	AL1	09:00 AM - 09:50 AM	MW	room 228 Natural History Bldg	Brown, D; Nicol, D

316 Engineering Ethics Credit: 3 hours.

(ECE 216) Ethical issues in the practice of engineering: safety and liability, professional responsibility to clients and employers, whistle-blowing, codes of ethics, career choice, legal obligations; case studies. Same as PHIL 316. Prerequisite: Junior standing; RHET 105.

This course satisfies the General Education Criteria for a Advanced Composition, and Hist&Philosoph Perspect course.

CRN	Type	Section	Time	Days	Location	Instructor
36862	discussion-recitation	E2	09:00 AM - 10:20 AM	TR	room 57 Everitt Elec and Comp Engr Lab	Hillmer, P
36862: Advanced Composition, and Hist&Philosoph Perspect course.						
36869	discussion-recitation	E3	01:00 PM - 02:20 PM	TR	room 170 Everitt Elec and Comp Engr Lab	Hillmer, P
36869: Advanced Composition, and Hist&Philosoph Perspect course.						

317 **Intro ECE Tech & Management** Credit: 3 hours.

(ECE 217) The goal of this course is to equip non-engineering business-oriented students with the technical skills to become competitive as businesspersons in a technology-driven market. To accomplish this goal, this course will aim to provide a basic understanding of electrical and computer engineering concepts. An incomplete list of topics includes: basic circuit components, dc fundamentals, ac fundamentals, semiconductors, operational amplifiers, device fabrication, power distribution, digital devices, and computer architecture (including microprocessors). A relatively low level of mathematical ability (first term calculus) is assumed. This course is designed for the Business Majors in the Technology and Management program. Credit is not given to students enrolled in Electrical or Computer Engineering. Prerequisite: MATH 234 or 220 or consent of instructor

CRN	Type	Section	Time	Days	Location	Instructor
29838	lecture	G	03:30 PM - 04:50 PM	MW	room 106B6 Engineering Hall	Frizzell, L

329 **Intro Electromagnetic Fields** Credit: 3 hours.

(ECE 229) Elementary electromagnetic field theory as summarized in Maxwell's equations for time-varying fields in integral and differential forms; energy storage; static and quasistatic fields; and time-domain analysis of waves. Prerequisite: ECE 205 or 210

CRN	Type	Section	Time	Days	Location	Instructor
31726	discussion-recitation	A	08:00 AM - 08:50 AM	MWF	room 269 Everitt Elec and Comp Engr Lab	Dunn, E; Cunningham, B
31727	discussion-recitation	C	10:00 AM - 10:50 AM	MWF	room 260 Everitt Elec and Comp Engr Lab	Bernhard, J; Dunn, E
31729	discussion-recitation	E	01:00 PM - 01:50 PM	MWF	room 245 Everitt Elec and Comp Engr Lab	Dunn, E
31732	discussion-recitation	X	12:00 PM - 12:50 PM	MWF	room 269 Everitt Elec and Comp Engr Lab	Dunn, E

385 Digital Systems Laboratory Credit: 2 hours.

(ECE 249) Introduction to the experimental analysis and synthesis of digital networks, including the use of a microcomputer as a controller. Prerequisite: ECE 110 and 290.

Students must register for one lab and one lecture section.

CRN	Type	Section	Time	Days	Location	Instructor
36843	laboratory	AB1	12:00 PM - 02:50 PM	W	room 234 Everitt Elec and Comp Engr Lab	Newman, M
36856	laboratory	AB2	03:00 PM - 05:50 PM	W	room 234 Everitt Elec and Comp Engr Lab	Bray, N
36821	laboratory	AB3	03:00 PM - 05:50 PM	R	room 234 Everitt Elec and Comp Engr Lab	Stone, S
36823	laboratory	AB4	08:00 AM - 10:50 AM	R	room 234 Everitt Elec and Comp Engr Lab	Mehta, V
36826	laboratory	AB5	11:30 AM - 02:20 PM	R	room 234 Everitt Elec and Comp Engr Lab	Kothari, L
36835	laboratory	AB6	12:00 PM - 02:50 PM	W	room 234 Everitt Elec and Comp Engr Lab	Fettinger, A
36829	laboratory	AB7	03:00 PM - 05:50 PM	W	room 234 Everitt Elec and Comp Engr Lab	Chen, L
36838	laboratory	AB8	03:00 PM - 05:50 PM	R	room 234 Everitt Elec and Comp Engr Lab	Mehta, V
36860	laboratory	AB9	08:00 AM - 10:50 AM	R	room 234 Everitt Elec and Comp Engr Lab	Fettinger, A
36728	laboratory	ABA	11:30 AM - 02:20 PM	R	room 234 Everitt Elec and Comp Engr Lab	Shah, N
36737	laboratory	ABB	03:00 PM - 05:50 PM	T	room 234 Everitt Elec and Comp Engr Lab	Stone, S
36773	laboratory	ABC	03:00 PM - 05:50 PM	T	room 234 Everitt Elec and Comp Engr Lab	Newman, M
36803	laboratory	ABD	08:00 AM - 10:50 AM	T	room 234 Everitt Elec and Comp Engr Lab	Sanghavi, S

36805	laboratory	ABE	11:30 AM - 02:20 PM	T	room 234 Everitt Elec and Comp Engr Lab	Kothari, L
36806	laboratory	ABF	11:30 AM - 02:20 PM	T	room 234 Everitt Elec and Comp Engr Lab	Shah, N
36720	lecture	AL1	04:00 PM - 04:50 PM	M	room 151 Everitt Elec and Comp Engr Lab	Patel, J

390 Computer Engineering, II Credit: 3 hours.

(ECE 291) Design and development of assembly language programs; input-output, interrupts, multitasking; introduction to data structures and graphics; ethical and social issues in computing; laboratory assignments on real-time data acquisition and device control. Credit is not given for both ECE 390 and CS 232. Prerequisite: ECE 290 or CS 231.

Students must register for one lab and one lecture section.

CRN	Type	Section	Time	Days	Location	Instructor
29843	laboratory	AB1	ARRANGED			Loui, M
29845	lecture	AL1	10:30 AM - 11:50 AM	TR	room 151 Everitt Elec and Comp Engr Lab	Loui, M

395 Adv Digital Projects Lab Credit: 2 to 3 hours.

(ECE 246) Planning, designing, executing, and documenting a microcomputer based project. Hardware is emphasized but the special projects required of student may also require an equal emphasis on software. Prerequisite: ECE 385 or consent of instructor.

CRN	Type	Section	Time	Days	Location	Instructor
29852	laboratory	A	ARRANGED			Bernsee, S
	lecture	A	11:00 AM - 11:50 AM	F	room 261 Everitt Elec and Comp Engr Lab	Uribe, R
: Topic: Digital Projects						

396 Honors Project Credit: 1 to 4 hours.

(ECE 296) Special project or reading course for James Scholars in engineering. Prerequisite: James Scholar in engineering; consent of instructor.

CRN	Type	Section	Time	Days	Location	Instructor
10013	independent study		ARRANGED			

10013: Instructor Approval Required						
41554	independent study	SR	ARRANGED			Srikant, R
41554: Instructor Approval Required						

397 Individual Study in ECE Credit: 0 to 4 hours.

(ECE 272) Prerequisite: Approved written application to department as specified by department or instructor

CRN	Type	Section	Time	Days	Location	Instructor
10010	independent study		ARRANGED			
10010: Instructor Approval Required						
42692	independent study	BC	ARRANGED			Cunningham, B

398 Special Topics in ECE Credit: 0 to 4 hours.

(ECE 271) Prerequisite: As specified for each topic offering; see Schedule or departmental course information.

CRN	Type	Section	Time	Days	Location	Instructor
31735	lecture	MM	02:00 PM - 02:50 PM	MWF	room 241 Everitt Elec and Comp Engr Lab	Carney, P; Ghrist, R
31735: 3 hours Topic: Mathematical Methods in ECE. Prerequisite: Math 242. Corequisites: Math 385.						
40679	lecture	SSL	10:30 AM - 11:45 AM	TR	room 225A Talbot Laboratory	Lumetta, S
40679: 3 hours Topic: Computer Systems Engineering. Prerequisite: ECE 290 or CS 231; ECE 190 encouraged.						

402 Electronic Music Synthesis Credit: 3 hours.

(ECE 302) Historical survey of electronic and computer music technology; parameters of musical expression and their codification; analysis and synthesis of fixed sound spectra; time-variant spectrum analysis/synthesis of musical sounds; algorithms for dynamic sound synthesis. Prerequisite: MUS 103 or equivalent; ECE 290 and 410.

CRN	Type	Section	Time	Days	Location	Instructor
29932	discussion-recitation	L	08:30 AM - 09:50 AM	TR	room 245 Everitt Elec and Comp Engr Lab	Haken, L

410 Digital Signal Processing, I Credit: 4 hours.

(ECE 310) Introduction to discrete-time systems and digital signal processing: discrete-time linear systems, difference equations, z-transform, discrete convolution, stability, discrete-time Fourier transform, analog-to-digital and digital-to-analog conversion, interpolation and decimation, digital filter design, discrete Fourier transform, fast Fourier transform, spectral analysis, applications of digital signal processing. Prerequisite: ECE 210 or consent of instructor

CRN	Type	Section	Time	Days	Location	Instructor
31741	lecture	E	01:00 PM - 01:50 PM	M	room 165 Everitt Elec and Comp Engr Lab	Shinagawa, Y
	lecture	E	01:00 PM - 02:20 PM	WF	room 165 Everitt Elec and Comp Engr Lab	Shinagawa, Y
31743	lecture	G	03:00 PM - 03:50 PM	M	room 165 Everitt Elec and Comp Engr Lab	Kamalabadi, F
	lecture	G	03:00 PM - 04:20 PM	WF	room 165 Everitt Elec and Comp Engr Lab	Kamalabadi, F
42029	online	ONL	ARRANGED			Kamalabadi, F
42029: Academic Outreach restrictions and assessments apply, see http://www.outreach.uiuc.edu ; Please see http://online.engr.uiuc.edu/descriptions/fall2004.htm for details on this course. OnlineAO Tuition 608, and AO Fees 36.00 dollars.						

411 Comp Organization & Design Credit: 4 hours.

(ECE 312) Basic computer organization and design, computer arithmetic, control design and microprogramming, memory organization, I/D design, reliability/performance evaluation; laboratory for computer design implementation, simulation, and layout. Credit is not given toward graduate degrees in Electrical Engineering. Prerequisite: ECE 390 or CS 232.

Students must register for one lab and one discussion section.

CRN	Type	Section	Time	Days	Location	Instructor
29937	laboratory	AB1	ARRANGED			Patel, S
29942	discussion-recitation	AD1	03:00 PM - 04:20 PM	MW	room 269 Everitt Elec and Comp Engr Lab	Patel, S

412 Microcomputer Laboratory Credit: 3 hours.

(ECE 311) Design, construction, and use of a small general purpose computer with a micro-processor CPU; MSI and LSI circuits used extensively; control panel, peripheral controllers, control logic, central processor, and programming experiments; and open lab format. Prerequisite: ECE 385; ECE 390 or CS 232. Recommended: credit or concurrent registration in ECE 411

CRN	Type	Section	Time	Days	Location	Instructor
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29945	laboratory	AB1	ARRANGED			Carter, N
29947	lecture	AL1	03:00 PM - 03:50 PM	TR	room 260 Everitt Elec and Comp Engr Lab	Carter, N

413 Probability with Engrg Applic Credit: 3 hours.

(ECE 313) Introduction to probability theory with applications to engineering problems such as the reliability of circuits and systems and to statistical methods for hypothesis testing, decision making under uncertainty, and parameter estimation. Credit is not given toward graduate degrees in Electrical Engineering. Prerequisite: ECE 210.

CRN	Type	Section	Time	Days	Location	Instructor
31745	discussion-recitation	C	10:00 AM - 10:50 AM	MWF	room 106B3 Engineering Hall	Basar, M; Koetter, R
31818	discussion-recitation	D	11:00 AM - 11:50 AM	MWF	room 106B6 Engineering Hall	Basar, M; Koetter, R

414 Biomedical Instrumentation Credit: 3 hours.

(ECE 314) Introduction to engineering aspects of the detection, acquisition, processing, and display of signals from living systems; biomedical transducers for measurements of biopotentials, ions and gases in aqueous solution, force, displacement, blood pressure, blood flow, heart sounds, respiration, and temperature; and therapeutic and prosthetic devices. Same as BIOE 414. Prerequisite: ECE 205 or 210 or consent of instructor.

CRN	Type	Section	Time	Days	Location	Instructor
39237	lecture	B	02:00 PM - 03:20 PM	TR	room 66 Library - Main	Fish, R

420 Digital Signal Processing Lab Credit: 2 hours.

(ECE 320) Development of real-time digital signal processing (DSP) systems using a DSP microprocessor; several structured laboratory exercises, such as sampling and digital filtering, followed by an extensive DSP project of the student's choice. Prerequisite: ECE 410.

CRN	Type	Section	Time	Days	Location	Instructor
31821	laboratory	AB1	02:00 PM - 03:50 PM	T	room 251 Everitt Elec and Comp Engr Lab	Yin, Z; Frutiger, M
31826	laboratory	AB2	02:00 PM - 03:50 PM	R	room 251 Everitt Elec and Comp Engr Lab	Yin, Z; Frutiger, M
31829	laboratory	AB3	02:00 PM - 03:50 PM	W	room 251 Everitt Elec and Comp Engr Lab	Yin, Z; Frutiger, M
31833	laboratory	AB4	03:00 PM - 04:50	F	room 251 Everitt	Yin, Z; Frutiger, M

			PM		Elec and Comp Engr Lab	
31840	lecture	AL1	02:00 PM - 02:50 PM	M	room 165 Everitt Elec and Comp Engr Lab	Jones, D

425 Intro VLSI System Design Credit: 3 hours.

(ECE 325) Complementary Metal-Oxide Semiconductor (CMOS) technology and theory; CMOS circuit and logic design; layout rules and techniques; circuit characterization and performance estimation; CMOS subsystem design; Very-Large-Scale Integrated (VLSI) systems design methods; VLSI Computer Aided Design (CAD) tools; laboratory experience in custom VLSI chip design on workstations using concepts of cell hierarchy; final project involving specification, design and evaluation of a VLSI chip or VLSI CAD program; and written report and oral presentation on the final project. Same as CS 435 and CSE 433. Prerequisite: ECE 385 and 411; or CS 232.

CRN	Type	Section	Time	Days	Location	Instructor
36897	lecture	R	01:00 PM - 02:20 PM	TR	room 260 Everitt Elec and Comp Engr Lab	Wong, M

428 Distributed Systems Credit: 3 hours.

(ECE 328) Same as CS 425 and CSE 424. See CS 425.

CRN	Type	Section	Time	Days	Location	Instructor
36102	lecture- discussion	P	11:00 AM - 12:15 PM	TR	room 1105 Siebel Center for Comp Sci	Wah, B

430 Power Ckts & Electromechanics Credit: 3 hours.

(ECE 330) Network equivalents, power and energy fundamentals, resonance, mutual inductance, three-phase power concepts, forces and torques of electric origin in electromagnetic and electrostatic systems, energy conversion cycles, principles of electric machines, transducers, relays, laboratory demonstration. Credit is not given toward graduate degrees in Electrical Engineering. Prerequisite: ECE 210.

CRN	Type	Section	Time	Days	Location	Instructor
31846	discussion- recitation	C	10:00 AM - 10:50 AM	MWF	room 106B8 Engineering Hall	Krein, P; Overbye, T
31849	discussion- recitation	N	10:00 AM - 11:20 AM	TR	room 165 Everitt Elec and Comp Engr Lab	Overbye, T

438 Communication Networks Credit: 3 hours.

(ECE 338) Same as CS 438 and CSE 425. See CS 438.

CRN	Type	Section	Time	Days	Location	Instructor
36066	lecture-discussion	X	10:00 AM - 10:50 AM	MWF	room 1310 Digital Computer Laboratory	Polychronopoulos, C; Hou, J

440 Solid State Electronic Devices Credit: 3 hours.

(ECE 340) Semiconductor materials and their electronic properties and applications to electronic devices; p-n junctions; transistors; junction field effect transistors and MOS devices; and introduction to integrated circuits. Credit is not given toward graduate degrees in Electrical Engineering. Prerequisite: PHYS 214; credit or concurrent registration in ECE 329.

CRN	Type	Section	Time	Days	Location	Instructor
36942	discussion-recitation	B	09:00 AM - 09:50 AM	MWF	room 163 Everitt Elec and Comp Engr Lab	Feng, M
36932	discussion-recitation	D	11:00 AM - 11:50 AM	MWF	room 163 Everitt Elec and Comp Engr Lab	Tucker, J
36939	discussion-recitation	E	01:00 PM - 01:50 PM	MWF	room 163 Everitt Elec and Comp Engr Lab	Kim, K
36934	discussion-recitation	F	02:00 PM - 02:50 PM	MWF	room 245 Everitt Elec and Comp Engr Lab	Cheng, K
36944	discussion-recitation	G	03:00 PM - 03:50 PM	MWF	room 260 Everitt Elec and Comp Engr Lab	Hsieh, K
36937	discussion-recitation	X	12:00 PM - 12:50 PM	MWF	room 165 Everitt Elec and Comp Engr Lab	Hsieh, K

442 Electronic Circuits Credit: 3 hours.

(ECE 342) Analysis and design of analog and digital electronic circuits using MOS field effect transistors and bipolar junction transistors, with an emphasis on the study of amplifiers in integrated circuits. Credit is not given toward graduate degrees in Electrical Engineering. Credit is not given for both ECE 442 and PHYS 404. Prerequisite: ECE 210 and 440.

CRN	Type	Section	Time	Days	Location	Instructor
29950	lecture	D	11:00 AM - 11:50 AM	MWF	room 269 Everitt Elec and Comp Engr Lab	Zhang, J

443 Electronic Circuits Laboratory Credit: 1 hours.

(ECE 343) Laboratory to accompany ECE 442. Credit is not given toward graduate degrees in Electrical

Engineering. Credit is not given for both ECE 443 and PHYS 404. Prerequisite: Concurrent registration in ECE 442.

CRN	Type	Section	Time	Days	Location	Instructor
31856	laboratory	M	09:00 AM - 11:50 AM	T	room 268 Everitt Elec and Comp Engr Lab	Wang, X; Zhang, J
31857	laboratory	N	12:00 PM - 02:50 PM	T	room 268 Everitt Elec and Comp Engr Lab	Zhang, J; Byrd, E
31859	laboratory	O	03:00 PM - 05:50 PM	T	room 268 Everitt Elec and Comp Engr Lab	Zhang, J; Rahurkar, M
31862	laboratory	P	12:00 PM - 02:50 PM	R	room 268 Everitt Elec and Comp Engr Lab	Zhang, J; Byrd, E
31864	laboratory	Q	03:00 PM - 05:50 PM	M	room 268 Everitt Elec and Comp Engr Lab	Zhang, J; Chelliyil, R

444 IC Device Theory & Fabrication Credit: 4 hours.

(ECE 344) Laboratory and lecture course on the physical theory, design, and fabrication of devices suitable for integrated circuitry; includes the electrical properties of semiconductors and techniques (epitaxial growth, oxidation, photolithography diffusion, ion implantation, metallization, characterization) for fabricating integrated circuit devices such as p-n junction diodes, bipolar transistors, and field effect transistors. Prerequisite: ECE 440.

CRN	Type	Section	Time	Days	Location	Instructor
36808	laboratory	AB1	02:00 PM - 04:50 PM	F	room 50M Everitt Elec and Comp Engr Lab	Sievers, D; Chan, C
36809	laboratory	AB2	08:00 AM - 10:50 AM	T	room 50M Everitt Elec and Comp Engr Lab	Sievers, D; Fai, A
36819	laboratory	AB3	12:00 PM - 02:50 PM	T	room 50M Everitt Elec and Comp Engr Lab	Woodruff, M; Sievers, D
36817	laboratory	AB4	02:00 PM - 04:50 PM	W	room 50M Everitt Elec and Comp Engr Lab	Woodruff, M; Sievers, D
36816	laboratory	AB5	09:00 AM - 11:50 AM	R	room 50M Everitt Elec and Comp Engr Lab	Alvey, G; Sievers, D
36814	laboratory	AB6	02:00 PM - 04:50 PM	M	room 50M Everitt Elec and Comp Engr Lab	Alvey, G; Sievers, D

41682	laboratory	AB7	02:00 PM - 04:50 PM	R	room 50M Everitt Elec and Comp Engr Lab	Chen, G; Sievers, D
36813	discussion-recitation	AD1	09:00 AM - 09:50 AM	MWF	room 245 Everitt Elec and Comp Engr Lab	Coleman, J
36811	discussion-recitation	AD2	10:00 AM - 10:50 AM	MWF	room 245 Everitt Elec and Comp Engr Lab	Lyding, J

445 Senior Design Project Lab Credit: 2 hours.

(ECE 345) Individual design projects in various areas of electrical and computer engineering; projects are chosen by students with approval of the instructor; a written report, prepared to journal publication standards, and an oral presentation are required. Credit is not given toward graduate degrees in Electrical Engineering. Prerequisite: Senior standing in ECE.

Additional Laboratory time to be arranged in 246 Everitt Laboratory.

CRN	Type	Section	Time	Days	Location	Instructor
29951	laboratory	H	04:00 PM - 04:50 PM	W	room 151 Everitt Elec and Comp Engr Lab	Swenson, G

448 Intro Artificial Intelligence Credit: 3 or 4 hours.

(ECE 348) Same as CS 440. See CS 440.

CRN	Type	Section	Time	Days	Location	Instructor
36055	lecture-discussion	Q3	12:30 PM - 01:45 PM	TR	room 1404 Siebel Center for Comp Sci	Dejong, G
36055: 3 hours						
36059	lecture-discussion	Q4	12:30 PM - 01:45 PM	TR	room 1404 Siebel Center for Comp Sci	Dejong, G
36059: 4 hours						

450 Lines, Fields, and Waves Credit: 3 hours.

(ECE 350) General plane wave solution of Maxwell's equations; reflection and transmission of plane waves; transmission lines; impedance matching; waveguides and cavities; and radiation. Credit is not given toward graduate degrees in Electrical Engineering. Prerequisite: ECE 329.

CRN	Type	Section	Time	Days	Location	Instructor
31866	discussion-	D	11:00 AM - 11:50 AM	MWF	room 260 Everitt	Cangellaris, A

	recitation		AM		Elec and Comp Engr Lab	
31868	discussion-recitation	X	12:00 PM - 12:50 PM	MWF	room 163 Everitt Elec and Comp Engr Lab	Cangellaris, A

451 Adv Microwave Measurements Credit: 3 hours.

(ECE 351) Manual and computer controlled laboratory analysis of circuits at microwave frequencies. Prerequisite: ECE 450.

CRN	Type	Section	Time	Days	Location	Instructor
31870	laboratory	AB1	09:00 AM - 11:50 AM	T	room 249 Everitt Elec and Comp Engr Lab	Mekonnen, Y
31874	laboratory	AB2	02:00 PM - 04:50 PM	T	room 249 Everitt Elec and Comp Engr Lab	Mekonnen, Y
31878	laboratory	AB3	01:00 PM - 03:50 PM	R	room 249 Everitt Elec and Comp Engr Lab	Mekonnen, Y
31881	laboratory	AB4	08:00 AM - 10:50 AM	R	room 249 Everitt Elec and Comp Engr Lab	Mekonnen, Y
31885	lecture	AL1	12:00 PM - 12:50 PM	MWF	room 169 Everitt Elec and Comp Engr Lab	Schutt-Aine, J

453 Radio Communication Circuits Credit: 4 hours.

(ECE 353) Design of a radio system for transmission of information; types of receivers, matching techniques, receiver and antenna noise, types of modulation, high-frequency circuitry, and point-to-point and satellite communications. Prerequisite: ECE 442; credit or concurrent registration in ECE 450

CRN	Type	Section	Time	Days	Location	Instructor
39244	laboratory	AB1	09:00 AM - 11:50 AM	T	room 251 Everitt Elec and Comp Engr Lab	Hagen, C
39245	laboratory	AB2	03:00 PM - 05:50 PM	T	room 251 Everitt Elec and Comp Engr Lab	Hagen, C
39246	laboratory	AB3	09:00 AM - 11:50 AM	R	room 251 Everitt Elec and Comp Engr Lab	Schlachter, S
39243	lecture	AL1	11:00 AM - 11:50 AM	MWF	room 101 Transportation	Franke, S

					Bldg	
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455 Optical Electronics Credit: 3 or 4 hours.

(ECE 355) Optical beams and cavities; semiclassical theory of gain; characteristics of typical lasers (gas, solid state, and semiconductor); and application of optical devices. 3 undergraduate hours. 4 graduate hours. Prerequisite: ECE 450 or PHYS 436 or consent of instructor.

CRN	Type	Section	Time	Days	Location	Instructor
29956	discussion-recitation	A	08:30 AM - 09:50 AM	MW	room 241 Everitt Elec and Comp Engr Lab	Eden, J

459 Communications, I Credit: 3 hours.

(ECE 359) Introduction to analog and digital modulation techniques, random processes, and power spectral density. Effects of noise on, and bandwidth requirements of, different modulation schemes. Prerequisite: ECE 413 or equivalent

CRN	Type	Section	Time	Days	Location	Instructor
29959	lecture-discussion	R	01:30 PM - 02:50 PM	TR	room 165 Everitt Elec and Comp Engr Lab	Hadjicostis, C

460 Optical Imaging Credit: 3 hours.

(ECE 360) Introduction to visible and infrared imaging systems covering fields, optical elements, electronic sensors, and embedded processing systems. Lectures and labs cover active and passive illumination, ranging, holography, polarization, coherence, spectroscopy and sampling with an emphasis on electronic optomechanical control and data acquisition. Prerequisite: ECE 329; credit or concurrent registration in ECE 413 or STAT 400.

CRN	Type	Section	Time	Days	Location	Instructor
39248	laboratory	AB1	ARRANGED			Lytle, D
39249	laboratory	AB2	ARRANGED			Lytle, D
39250	laboratory	AB3	ARRANGED			Lytle, D
39247	lecture	AL1	01:00 PM - 02:50 PM	F	room 57 Everitt Elec and Comp Engr Lab	Bishop, S

461 Communications, II Credit: 3 hours.

(ECE 361) Digital communication systems, modulation, demodulation, channel models, bit error rate, spectral occupancy, synchronization, equalization, and trellis-coded modulation. Prerequisite: ECE 459

CRN	Type	Section	Time	Days	Location	Instructor
29961	discussion-recitation	R	01:30 PM - 02:50 PM	TR	room 163 Everitt Elec and Comp Engr Lab	Srikant, R

464 Power Electronics Credit: 3 hours.

(ECE 364) Switching functions and methods of control such as pulse-width modulation, phase control, and phase modulation; dc-dc, ac-dc, dc-ac, and ac-ac power converters; power components, including magnetic components and power semiconductor switching devices. Prerequisite: ECE 442

CRN	Type	Section	Time	Days	Location	Instructor
29963	discussion-recitation	B	09:00 AM - 09:50 AM	MWF	room 260 Everitt Elec and Comp Engr Lab	Chapman, P

469 Power Electronics Laboratory Credit: 2 hours.

(ECE 369) Laboratory study of circuits and devices used for switching power converters, solid-state motor drives, and power controllers, including dc-dc, ac-dc, and dc-ac converters and applications; high-power transistors and magnetic components; design considerations, including heat transfer. Prerequisite: ECE 443 or consent of instructor; credit or concurrent registration in ECE464

CRN	Type	Section	Time	Days	Location	Instructor
31888	laboratory	AB1	10:00 AM - 12:50 PM	T	room 50 Everitt Elec and Comp Engr Lab	Sorchini, Z
31891	laboratory	AB2	12:00 PM - 02:50 PM	W	room 50 Everitt Elec and Comp Engr Lab	Nee, B
31893	lecture	AL1	12:00 PM - 12:50 PM	M	room 260 Everitt Elec and Comp Engr Lab	Chapman, P

470 Introduction to Robotics Credit: 4 hours.

(ECE 370) Fundamentals of robotics, rigid motions, homogeneous transformations, forward and inverse kinematics, velocity kinematics, motion planning, trajectory generation, sensing, vision, and control. Same as CS 443, GE 421, and ME 445. Prerequisite: Math 415 or 418; ECE 210 or GE 320; or consent of instructor.

CRN	Type	Section	Time	Days	Location	Instructor
36913	laboratory	AB1	01:00 PM - 02:50 PM	T	room 316 Transportation Bldg	Holm, J
36943	laboratory	AB2	01:00 PM - 02:50 PM	R	room 316 Transportation	Holm, J

					Bldg	
41536	laboratory	AB3	03:00 PM - 04:50 PM	T	room 316 Transportation Bldg	Holm, J
36956	lecture	AL1	11:30 AM - 12:50 PM	TR	room 260 Everitt Elec and Comp Engr Lab	Hutchinson, S

473 Fund of Engrg Acoustics Credit: 3 or 4 hours.

(ECE 373) Development of the basic theoretical concepts of acoustical systems; mechanical vibration, plane and spherical wave phenomena in fluid media, lumped and distributed resonant systems, and absorption phenomena and hearing. Same as TAM 413. 3 undergraduate hours. 3 or 4 graduate hours. Prerequisite: MATH 385 or equivalent.

CRN	Type	Section	Time	Days	Location	Instructor
36985	discussion- recitation	G4	02:00 PM - 02:50 PM	MWF	room 163 Everitt Elec and Comp Engr Lab	O'Brien, W
36985: 4 hours						
36973	discussion- recitation	U3	02:00 PM - 02:50 PM	MWF	room 163 Everitt Elec and Comp Engr Lab	O'Brien, W

476 Power System Analysis Credit: 3 hours.

(ECE 376) Examines the development of power system equivalents, per phase network analysis, load flow, symmetrical components, sequence networks, fault analysis, and digital simulation. Prerequisite: ECE 430.

CRN	Type	Section	Time	Days	Location	Instructor
41801	online	ONL	ARRANGED			Overbye, T
41801: Academic Outreach restriction and assessments apply, see http://www.outreach.uiuc.edu ; Please see http://online.engr.uiuc.edu/descriptions/fall2004.htm for more details on this course. OnlineAO Tuition 608, AO Tuition 608, AO Fees 36, and AO Fees 36.00 dollars.						
29964	discussion- recitation	R	01:00 PM - 02:20 PM	TR	room 245 Everitt Elec and Comp Engr Lab	Overbye, T

482 Digital IC Design Credit: 3 hours.

(ECE 382) Bipolar and MOS field effect transistor characteristics; VLSI fabrication techniques for MOS and bipolar circuits; calculation of circuit parameters from the process parameters; and design of VLSI circuits such as logic, memories, charge-coupled devices, and A/D and D/A converters. Prerequisite: ECE 290 and 442

CRN	Type	Section	Time	Days	Location	Instructor
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29966	discussion-recitation	G	03:00 PM - 03:50 PM	MWF	room 245 Everitt Elec and Comp Engr Lab	Rosenbaum, E
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486 Control Systems Credit: 4 hours.

(ECE 386) Analysis and design of control systems with emphasis on modeling, state variable representation, computer solutions, modern design principles, and laboratory techniques. Prerequisite: ECE 210 or consent of instructor.

CRN	Type	Section	Time	Days	Location	Instructor
31775	laboratory	AB1	03:00 PM - 05:50 PM	R	room 235 Everitt Elec and Comp Engr Lab	Perkins, W; Herring, D
31777	laboratory	AB2	03:00 PM - 05:50 PM	T	room 235 Everitt Elec and Comp Engr Lab	Perkins, W; Sundaram, S
31778	laboratory	AB3	09:00 AM - 11:50 AM	R	room 235 Everitt Elec and Comp Engr Lab	Perkins, W; Herring, D
31772	discussion-recitation	AD1	10:00 AM - 10:50 AM	MWF	room 163 Everitt Elec and Comp Engr Lab	Perkins, W

487 Intro Quantum Electr for EEs Credit: 3 hours.

(ECE 387) Application of quantum mechanical concepts to electronics problems; detailed study of a calculable two-state laser system; and incidental quantum ideas bearing on electronics. Prerequisite: PHYS 485 or consent of instructor.

CRN	Type	Section	Time	Days	Location	Instructor
29968	discussion-recitation	C	10:00 AM - 10:50 AM	MWF	room 169 Everitt Elec and Comp Engr Lab	Timp, G

491 Intro to Numerical Analysis Credit: 3 or 4 hours.

(ECE 391) Same as CS 450, CSE 401, and MATH 450. See CS 450.

CRN	Type	Section	Time	Days	Location	Instructor
36027	lecture-discussion	B3	09:00 AM - 09:50 AM	MWF	room 1310 Digital Computer Laboratory	Heath, M
36027: 3 hours						
36036	lecture-	B4	09:00 AM - 09:50	MWF	room 1320 Digital	Heath, M

	discussion		AM		Computer Laboratory	
36036: 4 hours						

497 Senior Research Project Credit: 2 hours.

(ECE 298) Individual research project under the guidance of a faculty member: for example, mathematical analysis, laboratory experiments, computer simulations, software development, circuit design, or device fabrication. Preparation of a written research proposal, which includes preliminary results. 2 undergraduate hours. No graduate credit. Prerequisite: Senior standing; RHET 105; and consent of instructor.

This course satisfies the General Education Criteria for a Advanced Composition course.

This course is intended for Honors students and Chancellor Scholars.

CRN	Type	Section	Time	Days	Location	Instructor
10016	independent study		ARRANGED			
10016: Advanced Composition course. Instructor Approval Required						
10016: 2 hours						
41556	independent study	RS	ARRANGED			Srikant, R
41556: Advanced Composition course. Instructor Approval Required						
41555	independent study	SR	ARRANGED			Srikant, R
41555: Advanced Composition course. Instructor Approval Required						

498 Special Topics in ECE Credit: 0 to 4 hours.

(ECE 371) Lectures and discussions relating to new areas of interest. May be repeated. Prerequisite: As specified for each topic offering; see Schedule or departmental course information.

CRN	Type	Section	Time	Days	Location	Instructor
40255	lecture	NV	10:30 AM - 11:45 AM	MW	room 168 Everitt Elec and Comp Engr Lab	Vaidya, N
40255: 3 hours Topic: Wireless Networks. Prerequisite: ECE/CS 338, and either ECE 313 or Math 361, or instructor's approval.						
40680	lecture	SB	10:00 AM - 11:20 AM	TR	room 106B6 Engineering Hall	Boppart, S
40680: Topic: Biophotonics. Prerequisites: ECE 229 or Physics 371 (Light) or consent of instructor. A course in biology or physiology is recommended. 3 or 4 hours.						
40681	laboratory	SBL	ARRANGED			Boppart, S
40681: 1 hours This is optional with ECE 498SB. Lecture must be taken in order to take this lab section.						

499 Senior Thesis Credit: 2 hours.

(ECE 299) Completion of the research project begun under ECE 497. Preparation and oral presentation of a written thesis that reports the results of the project. 2 undergraduate hours. No graduate credit. Prerequisite: ECE 497 and consent of instructor.

This course satisfies the General Education Criteria for a Advanced Composition course.

CRN	Type	Section	Time	Days	Location	Instructor
10018	independent study		ARRANGED			
10018: Advanced Composition course.Instructor Approval Required						
41557	independent study	RS	ARRANGED			Srikant, R
41557: Advanced Composition course.Instructor Approval Required						

500 Graduate Seminar Credit: 0 hours.

(ECE 400) Required of all graduate students. Approved for S/U grading only.

CRN	Type	Section	Time	Days	Location	Instructor
29981	lecture	U	04:00 PM - 04:50 PM	R	room 151 Everitt Elec and Comp Engr Lab	
41517	lecture	U2	04:00 PM - 04:50 PM	R	room 151 Everitt Elec and Comp Engr Lab	
41517: Sections U2 meets in 151 Everitt Lab.						
41518	lecture	U3	04:00 PM - 04:50 PM	R	room 151 Everitt Elec and Comp Engr Lab	
41518: Sections U3 meets in 151 Everitt Lab.						

511 Computer Architecture Credit: 4 hours.

(ECE 412) Advanced concepts in computer architecture; design, management, and modeling of memory hierarchies, stack-oriented processors, associative processors, pipelined computers, and multiple processor systems; and focuses on hardware alternatives in detail and their relation to system performance/cost. Same as CSE 521. Prerequisite: ECE 411 or CS 433 or consent of instructor

CRN	Type	Section	Time	Days	Location	Instructor
37011	discussion-recitation	F	02:00 PM - 03:20 PM	MW	room 153 Mechanical Engineering Bldg	Frank, M

513 Signal & Spectral Analysis Credit: 4 hours.

(ECE 413) Fundamentals of linear least squares estimation of discrete-time signals and their spectra; minimum-norm least squares and total least squares solutions; singular value decomposition; Wiener and Kalman filtering; autoregressive spectral analysis; and the maximum entropy method. Prerequisite: ECE 410, 413, MATH 418 or equivalent; or consent of instructor

CRN	Type	Section	Time	Days	Location	Instructor
41439	lecture	D	03:00 PM - 03:50 PM	MWF	room 170 Everitt Elec and Comp Engr Lab	Do, M

41439: Prerequisites: ECE 410, ECE 413, and Math 418; or equivalents; or consent of instructor.

515 Control Syst Theory & Design Credit: 4 hours.

(ECE 415) Synthesis of feedback control systems to meet design specifications, including sensitivity; multivariable systems; introduction to systems with random inputs; state variable techniques; and nonlinear systems. Prerequisite: ECE 486 or equivalent, or consent of instructor

CRN	Type	Section	Time	Days	Location	Instructor
29983	discussion-recitation	N	11:30 AM - 12:50 PM	TR	room 103 Transportation Bldg	Liberzon, D

517 Nonlinear & Adaptive Control Credit: 4 hours.

(ECE 417) Studies design of nonlinear control systems based on stability considerations; examines Lyapunov and hyperstability approaches to analysis and design of model reference adaptive systems; identifiers, observers, and controllers for unknown plants. Prerequisite: ECE 515.

CRN	Type	Section	Time	Days	Location	Instructor
30430	discussion-recitation	P	12:00 PM - 01:20 PM	TR	room 169 Everitt Elec and Comp Engr Lab	Kumar, P

520 EM Waves & Radiating Systems Credit: 4 hours.

(ECE 420) Fundamental electromagnetic theory with applications to transmission lines, waveguides, and antennas; introduction to the solution of advanced problems in static electric and magnetic fields. Prerequisite: ECE 452.

CRN	Type	Section	Time	Days	Location	Instructor
29985	discussion-recitation	D	11:00 AM - 12:20 PM	MW	room 170 Everitt Elec and Comp Engr Lab	Chew, W

532 Compound Semiconductors Credit: 4 hours.

(ECE 432) Properties of III-V and II-VI compound semiconductors and the devices which are unique to these materials; emphasis on materials such as GaAs, Ga(AsP), GaP, CdSe, Cd(SeS), etc., and on luminescence, semiconductor lamps, and semiconductor lasers. Prerequisite: Graduate standing in electrical engineering with some background in modern physics; elementary quantum mechanics; elementary semiconductor theory or equivalent

CRN	Type	Section	Time	Days	Location	Instructor
29987	discussion-recitation	C	10:00 AM - 10:50 AM	MWF	room 241 Everitt Elec and Comp Engr Lab	Coleman, J

534 Random Processes Credit: 4 hours.

(ECE 434) Basic concepts of random processes; linear systems with random inputs; Markov processes; spectral analysis; Wiener and Kalman filtering; applications to systems engineering. Prerequisite: One of ECE 413, MATH 461, STAT 400; or consent of instructor

CRN	Type	Section	Time	Days	Location	Instructor
29989	discussion-recitation	C	10:00 AM - 11:20 AM	MW	room 165 Everitt Elec and Comp Engr Lab	Hajek, B

535 Theory Semicond & Devices Credit: 4 hours.

(ECE 435) Introductory quantum mechanics of semiconductors; energy bands; dynamics of Bloch electrons in static and high-frequency electric and magnetic fields; equilibrium statistics; transport theory, diffusion, drift and thermoelectric effects; and characteristics of p-n junctions, heterojunctions, and transistor devices. Same as PHYS 565. Prerequisite: Senior-level course in quantum mechanics or atomic physics

CRN	Type	Section	Time	Days	Location	Instructor
37127	discussion-recitation	E	01:00 PM - 01:50 PM	MWF	room 260 Everitt Elec and Comp Engr Lab	Ravaioli, U

537 Speech Processing Credit: 4 hours.

(ECE 437) Introduction to the theory and techniques in speech processing and recognition; includes speech production model, spectral analysis, pattern comparison techniques, hidden Markov models (HMM), and HMM-based automatic speech recognition; also includes computer laboratory. Prerequisite: ECE 410 and 534, experience with C programming and UNIX systems

CRN	Type	Section	Time	Days	Location	Instructor
29993	lecture	E	01:00 PM - 01:50 PM	MWF	room 169 Everitt Elec and Comp	Allen, J

					Engr Lab	
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540 Computational Electromagnetics Credit: 4 hours.

(ECE 440) Course will cover basic computational techniques for numerical analysis of electromagnetics problems, including the finite difference, finite element, and moment methods. Emphasis will be placed on the formulation of physical problems into mathematical boundary-value problems, numerical discretization of continuous problems into discrete problems, and development of rudimentary computer codes for simulation of electromagnetic fields in engineering problems using each of these techniques. Same as CSE 530. Prerequisite: ECE 520 or concurrent registration in ECE 520; CS 257 or equivalent; or consent of instructor.

CRN	Type	Section	Time	Days	Location	Instructor
39251	lecture-discussion	R	01:30 PM - 02:50 PM	TR	room 241 Everitt Elec and Comp Engr Lab	Jin, J

541 Computer System Analysis Credit: 4 hours.

(ECE 441) Same as CS 541 and CSE 524. See CS 541.

CRN	Type	Section	Time	Days	Location	Instructor
35928	lecture-discussion	B	09:30 AM - 10:50 AM	MW	room 106B1 Engineering Hall	Sanders, W

545 Advanced Physical Acoustics Credit: 4 hours.

(ECE 445) Advanced topics in acoustics including physical properties of a fluid; linear propagation phenomena; nonlinear phenomena such as radiation force, streaming, and harmonic generation; cavitation; and absorption and dispersion. Same as TAM 515. Prerequisite: One of ECE 473, 520, TAM 518 or equivalent; or consent of instructor

CRN	Type	Section	Time	Days	Location	Instructor
40637	lecture-discussion	A	01:00 PM - 01:50 PM	MWF	room 168 Everitt Elec and Comp Engr Lab	Frizzell, L; O'Brien, W

547 Topics in Image Processing Credit: 4 hours.

(ECE 447) Examines fundamental concepts, techniques, and directions of research in image processing; topics include two-dimensional Fourier transform and filtering, image digitization, coding, restoration, reconstruction, analysis, and recognition. Same as CSE 543. Prerequisite: ECE 410 and 413; or equivalent

CRN	Type	Section	Time	Days	Location	Instructor
37129	discussion-recitation	O	11:30 AM - 12:50 PM	TR	room 165 Everitt Elec and Comp Engr Lab	Huang, T

549 Computer Vision Credit: 4 hours.

(ECE 449) Examines information processing approaches to computer vision, and algorithms and architectures for artificial intelligence and robotics systems capable of vision: inference of three-dimensional properties of a scene from its images, such as distance, orientation, motion, size and shape, acquisition and representation of spatial information for navigation and manipulation in robotics. Same as CS 543. Prerequisite: ECE 448 or CS 225, or consent of instructor

CRN	Type	Section	Time	Days	Location	Instructor
37131	lecture-discussion	A	12:30 PM - 01:45 PM	TR	room 1304 Siebel Center for Comp Sci	Ponce, J

551 Digital Signal Processing II Credit: 4 hours.

(ECE 451) Reviews basic concepts of digital signals and systems; examines computer-aided digital filter design, quantization effects, decimation and interpolation, fast algorithms for convolution and the DFT; and introduces adaptive signal processing. Same as CSE 542. Prerequisite: ECE 410 and 413; or equivalent

CRN	Type	Section	Time	Days	Location	Instructor
37133	discussion-recitation	F	03:00 PM - 04:50 PM	T	room 165 Everitt Elec and Comp Engr Lab	Moulin, P
	discussion-recitation	F	03:00 PM - 03:50 PM	R	room 165 Everitt Elec and Comp Engr Lab	Moulin, P

552 Numerical Circuit Analysis Credit: 4 hours.

(ECE 452) Formulation of circuit equations; sparse matrix algorithms for the solution of large systems, AC, DC, and transient analysis of electrical circuits; sensitivity analysis; decomposition methods. Same as CSE 532. Prerequisite: MATH 415 and ECE 210.

CRN	Type	Section	Time	Days	Location	Instructor
37135	discussion-recitation	F	02:00 PM - 02:50 PM	MWF	room 260 Everitt Elec and Comp Engr Lab	Wong, M

556 Coding Theory Credit: 4 hours.

(ECE 456) General discussion on coding theory with emphasis on the algebraic theory of cyclic codes using finite field arithmetic, decoding of BCH and RS codes, finite field Fourier transform and algebraic geometry codes, convolutional codes and trellis decoding algorithms. Same as CS 577, and MATH 579. Prerequisite: MATH 417 or equivalent, or consent of instructor

CRN	Type	Section	Time	Days	Location	Instructor
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37137	discussion-recitation	L	08:30 AM - 09:50 AM	TR	room 169 Everitt Elec and Comp Engr Lab	Sarwate, D
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559 Topics in Communications Credit: 4 hours.

(ECE 459) Lectures and discussion related to advanced topics and new areas of interest in the theory of communication systems, including information theory, coding theory, and communication network theory. May be repeated in the same term as topics vary, to a maximum of 12 graduate hours; may be repeated in separate terms as topics vary, to a maximum of 16 graduate hours. Two or more sections of this course may be offered in a term with different outlines. Students registering in more than one section should receive credit separately for each section. Students will not receive additional credit toward a degree from multiple offerings of this course if those offerings have significant overlap, as determined by the Electrical and Computer Engineering department. Prerequisite: Specified each semester or consent of instructor. (It is expected that each offering will have a 500-level course as a prerequisite or co-requisite)

CRN	Type	Section	Time	Days	Location	Instructor
29995	lecture-discussion	RB	08:00 AM - 09:20 AM	TR	room 260 Everitt Elec and Comp Engr Lab	Blahut, R
29995: Topic: Two-Dimensional Informational Theory. Prerequisite: ECE 451, ECE 458 and ECE 463. Recommended: Credit or registration in ECE 563.						

563 Information Theory Credit: 4 hours.

(ECE 463) Mathematical models for channels and sources; entropy, information, data compression, channel capacity, Shannon's theorems, rate-distortion theory. Same as CS 578 and STAT 563. Prerequisite: MATH 466 or ECE 534, or consent of instructor

CRN	Type	Section	Time	Days	Location	Instructor
37140	discussion-recitation	A	01:30 PM - 02:50 PM	MW	room 112 Transportation Bldg	Viswanath, P

569 Diffraction, Coherence & Info Credit: 4 hours.

(ECE 469) Analysis of information encoding, transmission and decoding in spatially complex optical systems. Analysis of digital and analog imaging, holography, and interferometry. Analysis of physical and electronic transformations in imaging systems. Discussion of multiplex imaging and imaging transformations. Prerequisite: ECE 460 or consent of instructor

CRN	Type	Section	Time	Days	Location	Instructor
29999	discussion-recitation	S	02:30 PM - 03:50 PM	TR	room 196 Lincoln Hall	Carney, P

577 Advanced Antenna Theory Credit: 4 hours.

(ECE 477) Selected topics from recent engineering literature on antennas supplemented by advanced topics in

electromagnetic theory needed for comprehension; current techniques for analysis of wire, slot, horn, frequency independent, quasi-optical, and array antennas. Prerequisite: ECE 520

CRN	Type	Section	Time	Days	Location	Instructor
41722	discussion-recitation	B	09:00 AM - 10:20 AM	MW	room 57 Everitt Elec and Comp Engr Lab	Michielssen, E

588 Electricity Resource Planning Credit: 4 hours.

(ECE 488) Techniques in electricity resource planning including methodologies for reliability evaluation and assessment, production costing, marginal costing, supply-side and demand-side planning, integrated planning, and planning under competition. Prerequisite: MATH 415, ECE 413, and 476; or consent of instructor

CRN	Type	Section	Time	Days	Location	Instructor
39252	discussion-recitation	L	08:30 AM - 09:50 AM	TR	room 163 Everitt Elec and Comp Engr Lab	Gross, G
41802	online	ONL	ARRANGED			Gross, G

41802: Academic Outreach restrictions and assessments apply, see <http://www.outreach.uiuc.edu>; Please see <http://online.engr.uiuc.edu/descriptions/fall2004.htm> for more details on this course. OnlineAO Tuition 608, and AO Fees 36.00 dollars.

590 Grad Sem in Special Topics Credit: 0 to 2 hours.

(ECE 490) Lectures and discussions on current research and literature on advanced topics in electrical engineering. May be repeated. Approved for S/U grading only. Prerequisite: Advanced standing; consent of instructor.

CRN	Type	Section	Time	Days	Location	Instructor
36950	lecture	B	04:00 PM - 05:20 PM	T	room 269 Everitt Elec and Comp Engr Lab	Chew, W
36950: Topic: Antennas, Electromagnetics and Coherent Optics.						
36946	lecture	D	04:00 PM - 04:50 PM	T	room 3269 Beckman Institute	Frizzell, L
36946: Topic: Bioacoustics.						
36952	lecture	G	04:00 PM - 04:50 PM	W	room B2 Coordinated Science Lab	Lyding, J
36952: Topic: Microelectronics II.						
36955	lecture	H	ARRANGED			Eden, J

36955: Topic: Gaseous Electronics.						
36953	lecture	I	04:00 PM - 04:50 PM	M	room 50 Everitt Elec and Comp Engr Lab	Gross, G
36953: Topic: Power Systems.						
36957	lecture	P	04:00 PM - 05:20 PM	W	room 2269 Beckman Institute	Do, M
36957: Topic: Signal and Image Processing.						
37015	lecture	X	04:00 PM - 05:20 PM	T	room B2 Coordinated Science Lab	Vaidya, N
37015: Topic: Computer Systems Seminar.						

596 *Master's Project* Credit: 1 to 8 hours.

(ECE 496) Graduate-level individual or team projects in electrical and computer engineering emphasizing advanced engineering analysis and design. May be repeated to a maximum of 16 hours. Only one unit of ECE 496 can be included in the 8 units required for the M. S. degree in Electrical Engineering. Credit in ECE 496 cannot be included in the 16 post-M. S. units required for the Ph.D. degree in Electrical Engineering. Prerequisite: Graduate standing in ECE. Students with deferred credit for ECE 599 may not register in ECE 596 without consent of the ECE department.

CRN	Type	Section	Time	Days	Location	Instructor
10020	independent study		ARRANGED			
10020: Instructor Approval Required						
42799	independent study	MS	ARRANGED			Spong, M

597 *Individual Study in ECE* Credit: 1 to 8 hours.

(ECE 498) Individual projects. Prerequisite: Consent of instructor.

CRN	Type	Section	Time	Days	Location	Instructor
10023	independent study		ARRANGED			
10023: Instructor Approval Required						

598 *Special Topics in ECE* Credit: 0 to 4 hours.

(ECE 497) Lectures and discussions relating to new areas of interest. May be repeated. Prerequisite: As specified for each topic offering; see Schedule or departmental course information.

CRN	Type	Section	Time	Days	Location	Instructor
40259	lecture	GG	10:00 AM - 11:20 AM	TR	room 260 Everitt Elec and Comp Engr Lab	Gross, G
40259: 4 hours Topic: Analysis Techniques for Large-Scale Electrical Systems. Prerequisites: Math 315 or equivalent: credit or registration in ECE 415.						
37027	lecture	NA	01:30 PM - 02:50 PM	TR	room 169 Everitt Elec and Comp Engr Lab	Ahuja, N
37027: Topic: Pattern Recognition. Prerequisite: Math 415 or equivalent; ECE 413, Math 461 or Stat 400 or equivalent; and CS 225, ECE 390 or equivalent programming experience.						
40258	lecture	RS	02:00 PM - 03:20 PM	MW	room 168 Everitt Elec and Comp Engr Lab	Sproat, R
40258: 4 hours Topic: Speech Synthesis. Prerequisites: LING 400 or equivalent general introduction to linguistics; an introductory-level programming course; introduction to digital signal processing an asset but not required. ECE 310, ECE 313 or consent of instructor.						
40257	lecture	SM	01:30 PM - 02:50 PM	TR	room 206 Transportation Bldg	Meyn, S
40257: 4 hours Topic: Control Techniques for Complex Networks. Prerequisites: ECE 415, and ECE 434 or Math 366 or consent of instructor.						
40256	lecture	YM	02:30 PM - 03:50 PM	TR	room 245 Everitt Elec and Comp Engr Lab	Ma, Y
40256: 4 hours Topic: An Invitation to 3-D Vision: From Images to Geometric Models. Prerequisites: The essential prerequisite is linear algebra (Math 318, Math 381, or ECE 415). Some familiarity with geometry (Math 423 or Math 424), linear systems theory (ECE 415), estimation theory (ECE 461) and rigid-body kinematics (ECE 389/Ge 389) would increase the appreciation but not crucial.						

599 **Thesis Research** Credit: 0 to 16 hours.
(ECE 499) May be repeated. Approved for S/U grading only.

CRN	Type	Section	Time	Days	Location	Instructor
10025	independent study		ARRANGED			
10025: Instructor Approval Required						