PURDUE UNIVERSITY | Elmore Family School of Electrical and Computer Engineering

Engineering Faculty Document No. EFD 17-24
November 30, 2023

Memorandum

To: The Engineering Faculty

From: The Faculty of Elmore Family School of Electrical and Computer Engineering

Re: Course integration for IUPUI Realignment – BSEE and CMPE

As part of the IUPUI Realignment, the faculty of the Elmore Family School of Electrical and Computer Engineering has approved the adoption of IUPUI Undergraduate Courses for Electrical Engineering (BSEE) and Computer Engineering (CMPE) to be offered at Purdue University Indianapolis campus for teach-out purposes. This action is now submitted to the Engineering Faculty with a recommendation for approval.

TITLE:

ECE Course Integration for IUPUI Realignment – BSEE, CMPE

DESCRIPTION:

The purpose of this EFD is to formally adopt the BSEE and CMPE courses to be offered in Indianapolis so they can be included in the Purdue Course Catalog. In the attached Excel spreadsheet, recommended actions for the PWL – PIN course realignment and IUPUI BSEE and CMPE courses are listed. These actions include:

1. For courses that are already aligned between West Lafayette and Indianapolis, PIU (IUPUI) classification will be updated to PIN (Purdue Indianapolis). (Green on spreadsheet)
2. Current PWL courses that need to be offered at PIN (Purdue Indianapolis for the BSEE and CMPE degrees. (Yellow on spreadsheet)
3. Current PWL or PIU, only one needs to be archived and the other remains or gets updated to PIN. (Blue on spreadsheet).
4. PWL and/or PIU courses that need to be archived. (Red on spreadsheet).

T.S. Mithuna

Mithuna S. Thottethodi
Professor of Electrical and Computer Engineering and
Interim Associate Head of Teaching and Learning

ELMORE FAMILY SCHOOL OF ELECTRICAL AND COMPUTER ENGINEERING
Materials Sciences and Electrical Engineering Building, Room 140
501 Northwestern Avenue, West Lafayette, IN 47907
Office: 765-494-3390

Status	PIN	Short Title	Long Title	Credit	College	Sched Types	Attributes	Restrictions			Course Description
Archive	ECE19000	Introduction To ECE	Introduction To Electrical And Computer Engineering	1.0	School of Elec & Computer Engr	LEC	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. This course is intended to provide an introduction to electrical and computer engineering for students in their freshman year. A goal is to provide some historical background of the respective sub-areas within ECE, a description of analytical tools that will be developed throughout their curriculum, the motivation for the tools, and to inform students of elective courses in ECE.
						DIS		Campus	Include	PWL	
								College	Include	E	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE19595	Selected Topics In ECE	Selected Topics In Electrical And Computer Engineering	1.0 TO 5.0	School of Elec & Computer Engr	IND	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00 to 5.00. Topics vary. Permission of department required.
						DIS	Variable Title	Campus	Include	PWL	
						LAB		College	Include	EC	
						LEC		Schedule		DIS	
										IND	
										LAB	
										LEC	
Archive	ECE20000	Elec & Comptr Engr Sem	Electrical And Computer Engineering Seminar	0.0	School of Elec & Computer Engr	LEC	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 0.00. An introduction to the School of Electrical and Computer Engineering, ECE program objectives and outcomes, BSEE & BSCmpE degree requirements, and professional development.
						DIS		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE20001	Electrical Engr Fundamentals I	Electrical Engineering Fundamentals I	0.0 OR 3.0	School of Elec & Computer Engr	LEC	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. This course covers fundamental concepts and applications for electrical and computer engineers as well as for engineers who need to gain a broad understanding of these disciplines. The course starts by the basic concepts of charge, current, and voltage as well as their expressions with regards to resistors and resistive circuits. Essential concepts, devices, theorems, and applications of direct-current (DC),
						DIS		Area			
						REC		Campus	Include	PWL	
								College	Include	AB	
									Include	AE	
									Include	BE	
									Include	CE	
									Include	CH	
									Include	CN	
									Include	E	
									Include	EC	
									Include	EE	
									Include	EV	
									Include	ID	
									Include	IE	
									Include	ME	
									Include	MS	
									Include	NE	
								Schedule		DIS	
										LEC	
										REC	
Keep PWL - Offer at	ECE20002	Elect Engr Fundamental II	Electrical Engineering Fundamentals II	3.0	School of Elec & Computer Engr	DIS	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Continuation of Electrical and Computer Engineering Fundamentals I. The course addresses mathematical and computational foundations of circuit analysis (differential equations, Laplace Transform techniques) with a focus on application to linear circuits having variable behavior as a function of frequency, with emphasis on filtering. Variable frequency behavior is further considered for applications of electronic

PIN						LEC		Campus	Include	CEC	
									Include	PWL	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE20007	Elec Engr Fundamentals I Lab	Electrical Engineering Fundamentals I Lab	1.0	School of Elec & Computer Engr	LAB	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 1.00. This is an introduction course in electronic measurement and circuit modeling, simulation and design techniques. These skills are developed through a variety of laboratory experiments ranging from voltage, current, and frequency, to resistors, inductors, capacitors, and operational amplifiers. When possible, the experiments develop practical skills through small design and soldering tasks. Finally, the course
						DIS	Lower Division	Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
Keep PWL - Offer at PIN	ECE20008	Elec Engr Fundamentals II Lab	Electrical Engineering Fundamentals II Lab	1.0	School of Elec & Computer Engr	LAB	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 1.00. This is a course in electronic measurement, circuit modeling, simulation and design techniques. These skills are developed through a variety of laboratory experiments including discrete semiconductor measurement, transistor amplifiers, motor control, and operational amplifier internals. The experiments develop practical skills through small design and soldering tasks. Finally, the course culminates in
						DIS	Lower Division	Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
Keep	ECE20100	Linear Circuit Anly I	Linear Circuit Analysis I	3.0	School of Elec & Computer Engr	DIS	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Volt-ampere characteristics for circuit elements; independent and dependent sources; Kirchhoff's laws and circuit equations. Source transformations; Thevenin's and Norton's theorems; superposition, step response of 1st order (RC, RL) and 2nd order (RLC) circuits. Phasor analysis, impedance calculations, and computation of sinusoidal steady state responses. Instantaneous and average power, complex power, power factor correction, and maximum power transfer. Instantaneous and average power.
						LEC	Dept Credit	Area			
							Exempt	Campus	Include	PFW	
							Lower Division		Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	AB	
									Include	AE	
									Include	BE	
									Include	CE	
									Include	CH	
									Include	CN	
									Include	E	
									Include	EC	
									Include	ID	
									Include	IE	
									Include	ME	
									Include	MS	
									Include	NE	
								Schedule		DIS	
										LEC	
Archive at PWL, Keep at PIN	ECE20200	Linear Circuit Anly II	Linear Circuit Analysis II	3.0	School of Elec & Computer Engr	LEC	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Continuation of ECE 20100. Use of Laplace Transform techniques to analyze linear circuits with and without initial conditions. Characterization of circuits based upon impedance, admittance, and transfer function parameters. Determination of frequency response via analysis of poles and zeros in the complex plane. Relationship between the transfer function and the impulse response of a circuit. Use of continuous
						DIS	Lower Division	Campus	Include	PFW	
									Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	

								College	Include	EC	
									Include	ID	
								Schedule		DIS	
										LEC	
Archive at PIN	ECE20400	Int Elec & Electr Circ	Introduction To Electrical And Electronic Circuits	4.0	Regional Campus Only	LEC	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. Students will learn basics of electrical and electronic circuits including introduction to analog and digital electronic circuits. Measurement of electrical signals using meters, probes, and oscilloscopes are covered in the laboratory component of the course. Circuits are designed for minimum hardware with emphasis on understanding analog and digital electronics with particular use of digital and analog microchips. Non-ECE majors who complete this course can continue the digital course sequence offered by the ECE department including microprocessor systems and interfacing, and digital signal processing. No credit will be given for ECE majors.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Archive at PIN	ECE20500	Int Elec & Electr Circ	Introduction To Electrical And Electronic Circuits	3.0	Regional Campus Only	LEC	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Students will learn basics of electrical and electronic circuits including introduction to analog and digital electronic circuits. Circuits are designed for minimum hardware with emphasis on understanding analog and digital electronics with particular use of digital and analog microchips. Non-ECE majors who complete this course can continue the digital course sequence offered by the ECE department including microprocessor systems and interfacing, and digital signal processing. No credit will be given for ECE majors.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Archive at PIN	ECE20501	Intro Elec Circs, Sens, Motors	Introduction To Electrical Circuits, Sensors, And Motors Lect	0.0 OR 3.0	Regional Campus Only	DIS	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. The basics of electrical circuit analysis using Kirchhoff's laws, node voltage, mesh current, superposition, the maximum power theorem; transient analysis of RL / RC circuits; Bipolar Junction Transistor DC analysis; basics of simple sensors; basic operation of rotating electric machines; basics of digital logic circuits. Non-ECE majors only.
						LEC		Campus	Include	PIU	
						REC		Schedule		DIS	
										LEC	
										REC	
Archive at PIN	ECE20502	Intro Elec Cir,Sen,& Motor Lab	Introduction To Electrical Circuits, Sensors, And Motors Lab	1.0	Regional Campus Only	DIS	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Students will learn the basics of electrical signal measurements using meters, probes, oscilloscopes; basic measurements using simple sensors; basic measurements as applied to motors. Circuits are designed for basic hardware with emphasis on understanding analog and digital electronics with practical use of digital and analog-interface microcontrollers. Non-ECE majors only.
						LAB		Campus	Include	PIU	
								Schedule		DIS	
										LAB	
Archive for PWL and PUI: ECE 20007 is replacement course	ECE20700	Elect Measur Technique	Electronic Measurement Techniques	1.0	School of Elec & Computer Engr	LAB	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Experimental exercises in the use of laboratory instruments. Voltage, current, impedance, frequency, and wave form measurements. Frequency and transient response. Elements of circuit modeling and design.
						DIS	Dept Credit	Campus	Include	PFW	
							Lower Division		Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
									Include	ME	
								Schedule		DIS	
										LAB	
Archive for PWL and PUI: ECE 20008 is replacement course	ECE20800	Electron Dev & Des Lab	Electronic Devices And Design Laboratory	1.0	School of Elec & Computer Engr	DIS	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Laboratory experiments in the measurement of electronic device characteristics. Design of biasing networks, small signal amplifiers, and switching circuits.
						LAB	Lower Division	Campus	Include	PFW	
									Include	PIU	
									Include	PWL	
								College	Include	EC	
									Include	ID	

								Schedule		DIS	
										LAB	
Keep PWL - Offer at PUI	ECE20875	Python For Data Science	Python For Data Science	3.0	School of Elec & Computer Engr	DIS	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. This course will introduce Python programming to students through data science problems. Students will learn Python concepts as well as introductory data science topics, and will use their knowledge of Python (and prior programming experience) to implement data analyses.
						LEC		Campus	Include	CEC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Archive for PIN: ECE 209401 is replacement course	ECE21000	ECE Sophomore Seminar	Electrical And Computer Engineering Sophomore Seminar	1.0	Regional Campus Only	LEC	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 1.00. An introduction to the School of Electrical and Computer Engineering, ECE program objectives and outcomes, BSEE and BSCmpE degree requirements, and professional development.
						DIS	Lower Division	Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Archive for PWL and PIN: ECE 20001 and 20002 are replacement courses	ECE25500	Intr Electron Anly Des	Introduction To Electronic Analysis And Design	3.0	School of Elec & Computer Engr	DIS	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Diode, bipolar transistor, and FET circuit models for the design and analysis of electronic circuits. Single and multistage analysis and design; introduction to digital circuits. Computer-aided design calculations, amplifier operating point design, and frequency response of single and multistage amplifiers. High-frequency and low-
						LEC		Campus	Include	PFW	
									Include	PIU	
									Include	PWL	
								College	Include	EC	
									Include	ID	
								Schedule		DIS	
										LEC	
Archive at PIN	ECE26100	Engineering Programming Lab	Engineering Programming Lab	1.0	Regional Campus Only	LAB	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Introduction to problem solving using software tools, in particular the C programming language.
						DIS	Lower Division	Campus	Include	PIU	
						DIS	Lower Division	Campus	Include	PIU	
								Schedule		DIS	
										LAB	
Archive at PIN, CS 15900 is replacement	ECE26200	Program For Engineers	Programming For Engineers	0.0 OR 4.0	Regional Campus Only	LEC	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. Introduction to programming, problem solving and the C programming language.
						DIS		Campus	Include	PIU	
						LAB		Schedule		DIS	
										LAB	
										LEC	
Archive at PIN	ECE26300	Intro Computing In Elect Engr	Introduction To Computing In Electrical Engineering	3.0	Regional Campus Only	LEC	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 3.00. An introductory course in computing programming with an emphasis on program decomposition and program structure. The objective of the course is to introduce the student to problem solving using high-level languages. The students are also introduced to number concepts fundamental in electrical engineering. Programming will be in "C" in order to develop a structured approach to problem solving. Problems
						DIS	Lower Division	Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Keep at both campuses	ECE26400	Advanced C Programming	Advanced C Programming	3.0	School of Elec & Computer Engr	LEC	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Continuation of a first programming course. Topics include files, structures, pointers, and the proper use of dynamic data structures. A basic knowledge of the UNIX operating system and an introductory C programming course; C
						DIS	Lower Division	Campus	Include	CEC	
									Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	BE	
									Include	EC	
								Schedule		DIS	

										LEC	
Archive PIN: ECE 27000 is replacement course	ECE26600	Digital Logic Design	Digital Logic Design	3.0	Regional Campus Only	LEC	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Introduction to logic design, with emphasis on practical design techniques and circuit implementation. Topics include Boolean algebra; theory of logic functions; mapping techniques and function minimization; logic equivalent circuits and symbol transformations; transistor-transistor-logic (TTL)/metal oxide semi-conductor (MOS) logic into gate implementations; electrical characteristics; propagation delays; signed number notations and arithmetic; binary and decimal arithmetic logic circuits; theory of sequential circuits; timing diagrams; analysis and synthesis of SR-, D-, T-, and JK-based sequential circuits; clock generation circuits; algorithmic state machine method of designing sequential circuits.
						DIS	Lower Division	Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Archive PIN: ECE 27000 is replacement course	ECE26700	Dig Logic Design Lab	Digital Logic Design Laboratory	1.0	Regional Campus Only	LAB	Credit By Exam	Type	Include/Exclude	Restriction	
						DIS	Lower Division	Campus	Include	PIU	
								Schedule		DIS	
										LAB	
Keep at both campuses	ECE27000	Intro Digitl Sys Desgn	Introduction To Digital System Design	0.0 OR 4.0	School of Elec & Computer Engr	LAB	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 4.00. An introduction to digital system design and hardware engineering, with an emphasis on practical design techniques and circuit implementation.
						LEC	Lower Division	Campus	Include	PFW	
						DIS			Include	PIU	
						LE1			Include	PWL	
						REC		College	Include	EC	
								Schedule		DIS	
										LAB	
										LE1	
										LEC	
										REC	
Archive PWL: VIP 27920 is replacement course	ECE27900	Soph Part In VIP In ECE	Sophomore Participation In Vertically Integrated Projects In	0.0 TO 2.0	School of Elec & Computer Engr	LAB	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00 or 2.00. This course provides an opportunity for undergraduate students to explore and develop comprehensive applications of electrical and computer engineering technologies, especially as they relate to active research areas of Purdue faculty members. Students will learn about the underlying research, and will work on
						LEC		Campus	Include	PWL	
						DIS		Classification	Include	03	
									Include	04	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Archive at PIN	ECE28200	UNIX Program For Engrs	UNIX Programming For Engineers	1.0	Regional Campus Only	LAB	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Introduction to the UNIX operating system, including the UNIX file system, UNIX tools, and utilities. Introduction to Shell programming. The emphasis will be on how these tools/utilities are utilized in the Computing Engineering field.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LAB	
Keep PWL - Offer at PIN	ECE29199	Cooperative Experience I	Cooperative Experience I	0.0	School of Elec & Computer Engr	EX	Coop	Type	Include/Exclude	Restriction	Credit Hours: 0.00. Professional experience in electrical and/or computer engineering. Program coordinated by school with cooperation of participating employers. Students submit summary report and company evaluation. Professional Practice students only.
							Full-Time Privileges	Campus	Include	PWL	
							Lower Division	Classification	Include	03	
									Include	04	
								College	Include	EC	
								Schedule		EX	
Keep PWL - Offer at PIN	ECE29299	Cooperative Experience II	Cooperative Experience II	0.0	School of Elec & Computer Engr	EX	Coop	Type	Include/Exclude	Restriction	Credit Hours: 0.00. Professional experience in electrical and/or computer engineering. Program coordinated by school with cooperation of participating employers. Students submit summary report and company evaluation. Professional Practice students only.
							Full-Time Privileges	Campus	Include	PWL	
							Lower Division	College	Include	EC	
								Schedule		EX	

Keep PWL - Offer at PIN	ECE29401	ECE Sophomore Seminar	Electrical And Computer Engineering Sophomore Seminar	1.0	School of Elec & Computer Engr	DIS	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. An introduction to the School of Electrical and Computer Engineering, the program's objectives, and outcomes, BSEE and BSCmpE degree requirements, professional writing and multicultural and professional development.
						LEC		Campus	Include	PWL	
								Program	Include	COMPENGR-BSE	
									Include	ECE-BSE	
								Schedule		DIS	
										LEC	
Archive PIN: ECE 29595 is replacement course	ECE29500	Sel Topics Elec/Comp Engr I	Selected Topics In Electrical And Computer Engineering I	0.0 TO 4.0	Regional Campus Only	DIS	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 0.00 to 4.00. Variable topic and experimental courses appropriate at the sophomore level, as approved by the ECE Curriculum Committee at IUPUI.
						LEC	Variable Title	Campus	Include	PIU	
						IND		Schedule		DIS	
										IND	
										LEC	
Keep PWL - Offer at PIN	ECE29595	Selected Topics In ECE	Selected Topics In Electrical And Computer Engineering	1.0 TO 5.0	School of Elec & Computer Engr	IND	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00 to 5.00. Topics vary. Permission of department required.
						DIS	Variable Title	Campus	Include	PFW	
						LEC			Include	PWL	
						LAB		College	Include	EC	
								Schedule		DIS	
										IND	
										LAB	
										LEC	
Keep PWL - Offer at PIN	ECE29600	Electrical & Comp Eng Projects	Electrical And Computer Engineering Projects	0.0 TO 18.0	School of Elec & Computer Engr	IND	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 0.00 to 18.00. Projects in Electrical and Computer Engineering. Permission of Department required.
						DIS	Variable Title	Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										IND	
Keep PWL - Offer at PIN	ECE30010	Intro To Mach Learn & Pat Rec	Introduction To Machine Learning And Pattern Recognition	3.0	School of Elec & Computer Engr	IND	Upper Division	Type	Include/Exclude	Restriction	
								Campus	Include	PWL	
								Schedule		IND	
Keep at both campuses	ECE30100	Signals And Systems	Signals And Systems	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Classification, analysis and design of systems in both the time- and frequency-domains. Continuous-time linear systems: Fourier Series, Fourier Transform, bilateral Laplace Transform. Discrete-time linear systems: difference equations, Discrete-Time Fourier Transform, bilateral Z-Transform. Sampling, quantization, and discrete-time processing of continuous-time signals. Discrete-time nonlinear systems: median-type filters, threshold decomposition. System design examples such as the compact disc player and AM radio.
						DIS		Campus	Include	CEC	
									Include	PFW	
									Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	BE	
									Include	EC	
									Include	ID	
								Schedule		DIS	

										LEC	
Keep at both campuses	ECE30200	Probabilistic Methods	Probabilistic Methods In Electrical And Computer Engineerin	3	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. An introductory treatment including probability of events, discrete and continuous random variables, multiple random variables, sums of random variables
						DIS		Campus	Include	CEC	
						LAB			Include	PFW	
									Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Keep PWL - Offer at PIN	ECE30411	Electromagnetics I	Electromagnetics I	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. This course is a continued study of vector calculus, electrostatics, magnetostatics, and Maxwell's Equations. It serves as an introduction to electromagnetic waves and transmission lines, which is continued in ECE 30412.
						LEC		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE30412	Electromagnetics II	Electromagnetics II	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Electromagnetics II builds on Electromagnetics I (ECE 31100) and emphasizes time-varying electromagnetic fields. Both fundamental understanding and an appreciation for applications that span all technologies related to electrical and computer engineering are emphasized. The topics covered include: Maxwell's equations, plane
						LEC		Campus	Include	PWL	
								Major	Include	CMPE	
									Include	ECEB	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE30414	Elmt Fiber Opt/Lasers/Optoelec	Elements Of Fiber Optics, Lasers And Optoelectronics	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Fundamental of photonics, guided-wave optics, optical fibers, lasers, photon detectors, integrated optical components, optical information processing, devices in communication and sensor applications. Topics include generation, transformation, modulation and detection of laser beams and their applications.
						LEC		Area		ECE30414	
								Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE30415	Fiber Optics And Lasers Lab	Fiber Optics And Lasers Laboratory	1.0	School of Elec & Computer Engr	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. This laboratory course exercises in lasers, modulation of laser beams, fiber components and systems. It covers some simple optical measurements like Power and beam spot measurement of Gaussian beams. Students learn about lens-
						DIS		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
Keep PWL - Offer at PIN	ECE30416	Basics Of Engineering Optics	Basics Of Engineering Optics	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Basic control over propagation, reflection, refraction of optical radiation are covered. Applications to optical instrumentation such as microscopy, polarization optics such as wave plates, thin films, and holography are discussed. Geometrical optics including lenses, mirrors, prisms; Huygens' principle, Fermat principle;
						LEC		Area		ECE30416	
								Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE30417	Engineering Optics Laboratory	Engineering Optics Laboratory	1.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. A set of laboratory experiments dealing with fundamentals and basic applications of geometrical optics, beams, polarization optics, wave optics and Fourier optics. Permission of instructor required.
						LAB		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	

Keep at both campuses	ECE30500	Semiconductor Devices	Semiconductor Devices	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Introduces and explains terminology, models, properties, and concepts associated with semiconductor devices. Provides detailed insight into the internal workings of the "building-block" device structures such as the pn-junction diode,
						DIS		Campus	Include	CEC	
									Include	PIU	
									Include	PWL	
								College	Include	BE	
									Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE30600	Circuits & Systems Lab	Electronic Circuits And Systems Laboratory	1.0	School of Elec & Computer Engr	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Experiments in electronic circuits and systems, including spectral analysis techniques, sampling, distortion measurements, random signals, signal-to-noise
						DIS		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
Keep PWL - Offer at PIN	ECE30653	Intro To Nano, Qntm Sci & Tech	Introduction To Nanotechnology And Quantum Science & Te	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. This interdisciplinary course offers an introduction to nanotechnology and quantum science and technology for undergraduate students in science and engineering. The students will develop understanding of interdisciplinary nature of these fields and utilize concepts in physics, chemistry and mechanics to describe and analyze
						LEC		Campus	Include	PWL	
								Major	Include	CMPE	
									Include	ECEB	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE30700	Fields & Waves Lab	Electromagnetic Fields And Waves Laboratory	1.0	School of Elec & Computer Engr	LAB	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Experimental exercises illustrating concepts in electric and magnetic fields, transmission lines, electromagnetic fields, simple waveguides, and antennas.
						DIS	Upper Division	Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
Keep PWL - Offer at PIN	ECE30800	Sysm Simul & Contr Lab	Systems Simulation And Control Laboratory	1.0	School of Elec & Computer Engr	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Instruction and laboratory exercises in the solution of differential equations that arise in the modeling of physical systems. Instruction in the principles of
						DIS		Campus	Include	PFW	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
Keep PWL - Offer at PIN	ECE30834	Fund Of Computer Graphics	Fundamentals Of Computer Graphics	0.0 OR 3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Fundamental principles and techniques of computer graphics. The course covers the basics of going from a scene representation to a raster image using OpenGL. Specific topics include coordinate manipulations, perspective, basics of illumination and shading, color models, texture maps, clipping and basic raster algorithms, fundamentals of scene constructions. Permission of department required.
						LEC		Campus	Include	PWL	
						PSO		College	Include	EC	
								Schedule		DIS	
										LEC	
										PSO	
Keep PWL - Offer at PIN	ECE30862	Obj Orient Prog C++ &Java	Object-Oriented Programming In C++ And Java	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. C++ and Java programming languages, including classes, inheritance, encapsulation, polymorphism, class derivation, abstract classes, interfaces, static class members, object construction and destruction, namespaces, exception handling, function, overloading and overriding, function name overload resolution, container classes, and template classes.
						DIS		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
	ECE30864	Software Engineering Tools	Software Engineering Tools	0.0 OR 1.0	School of Elec & Computer Engr	DIS	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 1.00. This course will acquaint students with the toolkit of the modern software engineer. Students will learn the tools surrounding the software application itself, e.g., tools for software process, software construction, and software deployment.

Keep PWL - Offer at PIN						LBP	Upper Division	Campus	Include	PFW	
						LAB			Include	PWL	
								College	Include	BE	
									Include	EC	
								Schedule		DIS	
										LAB	
										LBP	
Keep PWL - Offer at PIN	ECE31032	Power Systems Engineering	Power Systems Engineering	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Introduction to the economic operation of power systems, three-phase circuit analysis, modeling of transformers and transmission lines, steady-state
						LEC		Area		ECE31032	
								Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE31033	Power Electronics	Power Electronics	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Introduction to the fundamental operating principles of power conditioning circuits that are currently being used to effect power flow from AC to DC and vice versa. Emphasis is on the relationship between form and function of these circuits. Circuits discussed will include AC/DC line-commutated converters, DC/DC
						LEC		Campus	Include	PWL	
								College	Include	EC	
								Program	Include		
								Schedule		DIS	
										LEC	
Archive PWL and PIN: ECE 30411 is replacement course	ECE31100	Elec & Magnetic Fields	Electric And Magnetic Fields	3.0	School of Elec & Computer Engr	LEC	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Continued study of vector calculus, electrostatics, and magnetostatics, and Maxwell's equations. Introduction to electromagnetic waves, transmission lines, and radiation from antennas.
						DIS	Upper Division	Campus	Include	PFW	
						LAB			Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	BE	
									Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Archive PIN	ECE31500	Fund Electrical Energy Engr	Fundamentals Of Electrical Energy Engineering	3.0	Regional Campus Only	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Resistive circuit analysis with controlled sources. Sinusoidal frequency response, filters and Bode plots. Complex power in AC circuits, ideal transformers and three-phase power. Power electronic circuits including diodes, transistor switches, rectifiers and AC-DC converters. Magnetic circuits, magnetic materials and B-H curves. Transformer equivalent circuit models. No credit will be given for ECE majors.
						LEC		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Keep at both campuses	ECE32100	Electromech Motion Dev	Electromechanical Motion Devices	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. The general theory of electromechanical motion devices relating electric variables and electromagnetic forces. The basic concepts and operational behavior of DC, induction, brushless DC, and stepper motors used in control applications are presented.
						DIS		Campus	Include	CEC	
									Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
	ECE32300	Elec-Mech Mot Dev Lab	Electromechanical Motion Devices and Systems Laboratory	1.0	School of Elec & Computer Engr	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Experiments closely coordinated with ECE 32100 involving measurement of fundamental parameters of various electromechanical devices using
						DIS		Campus	Include	PNC	

Keep PWL - Offer at PIN									Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
Keep PIN as ME is keeping it and controls this course	ECE32600	Engineering Project Managemen	Engineering Project Management	3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. (ME 32600) Project management is an important skill that is needed in the private and public sectors as well as specialty businesses. This course will explore the challenges facing today's project managers and will provide a broad understanding of the project management environment focused on multiple aspects of the project.
						DIS		Campus	Include	PIU	
								Classification	Exclude	01	
									Exclude	02	
								Schedule		DIS	
										LEC	
Keep PIN as ME is keeping it and controls this course	ECE32700	Engineering Economics	Engineering Economics	3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. (ME 32700) Engineering Economics is designed as an overview of economics with a focus on how it relates to the practice of engineering. Topics include interest formulas, rate of return, life cost analysis, depreciation, taxes, and cash flow.
						DIS		Campus	Include	PIU	
								Classification	Exclude	01	
									Exclude	02	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE33700	ASIC Design Lab	ASIC Design Laboratory	0.0 OR 2.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 2.00. Introduction to standard cell design of Application Specific Integrated Circuits (ASICs) using modern hardware description languages (HDLs). Emphasis on how to write HDL code that will map readily to hardware. Laboratory experiments using commercial grade computer-aided design (CAD) tools for HDL based design, logic simulation, automatic placement and routing, timing analysis and
						LAB		Campus	Include	PWL	
						LEC		College	Include	EC	
						PSO		Schedule		DIS	
										LAB	
										LEC	
										PSO	
Keep at PIN	ECE34000	Simu Modeling & Ident	Simulation, Modeling, and Identification	0.0 OR 3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Investigation and evaluation of design problems through simulation of systems described by ordinary differential and difference equations. Development of simulation models from physical parameters and from experimental data. Topics include continuous, discrete, and hybrid models of electrical, mechanical, and biological systems. Laboratory experiences demonstrate concepts studied in text and lecture.
						LAB		Campus	Include	PIU	
						DIS		Schedule		DIS	
										LAB	
										LEC	
Archive at PIN	ECE35900	C And Data Structures	C And Data Structures	0.0 OR 3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. An introductory level course on C, a general purpose high-level language with features to facilitate such tasks as systems programming and structuring of data. Students becoming proficient in C language programming will learn techniques of structured programming data structures and how to develop programs that are used regularly in many applications.
						DIS		Campus	Include	PFW	
						REC			Include	PIU	
								Schedule		DIS	
										LEC	
										REC	

Keep PWL - Offer at PIN	ECE36200	Micropro Sys & Intrfac	Microprocessor Systems And Interfacing	0.0 OR 4.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. An introduction to basic computer organization, microprocessor instruction sets, assembly language programming, and microcontroller peripherals.
						LAB		Campus	Include	PFW	
						DIS			Include	PIU	
						LE1			Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LE1	
										LEC	
Archive PIN: ECE 30864 is replacement course	ECE36400	Sftwr Engr Tools Lab	Software Engineering Tools Laboratory	0.0 OR 1.0	Regional Campus Only	LAB	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 1.00. To acquaint the students with a variety of current software engineering tools, scripting languages, and application programming languages. Students are expected to use their previous programming experience to design and test software programs using the techniques learned in this course.
						LBP	Upper Division	Campus	Include	PIU	
						DIS		College	Include	BE	
									Include	EC	
								Schedule		DIS	
										LAB	
										LBP	
Archive at PIN	ECE36500	Digital Comp Design	Introduction To The Design Of Digital Computers	3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. The hardware organization of computer systems including the following topics: instruction set selection, arithmetic/logic unit design, hard-wired and microprogrammed control schemes, memory organization, IO interface design. The course will involve computer simulation of digital systems.
						DIS		Campus	Include	PFW	
									Include	PIU	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE36800	Data Structures	Data Structures	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Provides insight into the use of data structures. Topics include stacks, queues and lists, trees, graphs, sorting, searching, and hashing.
						DIS		Campus	Include	CEC	
									Include	PFW	
									Include	PWL	
								College	Include	BE	
									Include	EC	
								Schedule		DIS	
										LEC	
Change to ECE 20869 now that merge will not prevent	ECE36900	Disc Math For Comp Eng	Discrete Mathematics For Computer Engineering	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. This course introduces discrete mathematical structures and finite-state machines. Students will learn how to use logical and mathematical formalisms to formulate and solve problems in computer engineering. Topics include formal logic, proof techniques, recurrence relations, sets, combinatorics, relations, functions, algebraic structures, and finite-state machines.
						DIS		Campus	Include	PFW	
									Include	PIU	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
CSCI will teach	ECE37200	Principals Of Software Design	Principles Of Software Design	3.0	Regional Campus Only	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. (CSCI 36300) This course is designed to teach students best practices in designing and implementing object-oriented systems of high quality. To accomplish this task, we start with an overview of software design patterns and their role in developing high-quality software. We then begin surveying different design-level
						LEC		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
	ECE37900	Junior Part In VIP In ECE	Junior Participation In Vertically Integrated Projects (VIP) In	0.0 TO 2.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00 or 2.00. This course provides an opportunity for undergraduate students to explore and develop comprehensive applications of electrical and computer engineering technologies, especially as they relate to active research areas of Purdue faculty members. Students will learn about the underlying research, and will work on

Archive PWL: VIP 37920 is replacement						LAB		Campus	Include	PWL	
						LEC		Classification	Include	05	
									Include	06	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Keep PWL - Offer at PIN	ECE38199	Prof Practice Co-Op I	Professional Practice Co-Op I	0.0	School of Elec & Computer Engr	EX	Coop	Type	Include/Exclude	Restriction	Credit Hours: 0.00. To obtain professional practice with qualified employers within industry, government, or small business. Permission of department required.
							Full-Time Privileges	Campus	Include	PWL	
							Upper Division	Classification	Include	05	
									Include	06	
								College	Include	EC	
								Schedule		EX	
Keep at both campuses	ECE38200	Fdbk Sys Anly & Design	Feedback System Analysis And Design	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. In this course, classical concepts of feedback system analysis and associated compensation techniques are presented. In particular, the root locus, Bode diagram, and Nyquist criterion are used as determinants of stability.
						DIS		Campus	Include	PFW	
									Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE38299	Prof Practice Co-Op II	Professional Practice Co-Op II	0.0	School of Elec & Computer Engr	EX	Coop	Type	Include/Exclude	Restriction	Credit Hours: 0.00. To obtain professional practice with qualified employers within industry, government, or small business. Permission of department required.
							Full-Time Privileges	Campus	Include	PWL	
							Upper Division	College	Include	EC	
								Schedule		EX	
Keep PWL - Offer at PIN	ECE38399	Prof Practice Co-Op III	Professional Practice Co-Op III	0.0	School of Elec & Computer Engr	EX	Coop	Type	Include/Exclude	Restriction	Credit Hours: 0.00. To obtain professional practice with qualified employers within industry, government, or small business. Permission of department required.
							Full-Time Privileges	Campus	Include	PWL	
							Upper Division	College	Include	EC	
								Schedule		EX	
Keep PWL - Offer at PIN	ECE39399	Cooperative Experience III	Cooperative Experience III	0.0	School of Elec & Computer Engr	EX	Coop	Type	Include/Exclude	Restriction	Credit Hours: 0.00. Professional experience in electrical and/or computer engineering. Program coordinated by school with cooperation of participating employers. Students submit summary report and company evaluation. Professional Practice students only.
							Full-Time Privileges	Campus	Include	PWL	
							Upper Division	College	Include	EC	
								Schedule		EX	
Keep PWL - Offer at PIN	ECE39401	Prof Communication And Div	Professional Communications And Diversity	1.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. This course provides ECE students with practice in relevant aspects of communication. Topics include: successfully seeking employment, working effectively in teams, delivering engaging presentations, and leveraging the advantages and
						LEC		Campus	Include	PWL	
								Program	Include	COMPENGR-BSE	
									Include	ECE-BSE	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE39499	Ext Cooperative Experience IV	Extensive Cooperative Experience IV	0.0	School of Elec & Computer Engr	EX	Coop	Type	Include/Exclude	Restriction	Credit Hours: 0.00. Professional experience in electrical and/or computer engineering. Program coordinated by school with cooperation of participating employers. Students submit summary report and company evaluation. Professional Practice students only.
							Full-Time Privileges	Campus	Include	PWL	
							Upper Division	College	Include	EC	
								Schedule		EX	
Archive PUI: ECE 39595 is replacement course	ECE39501	Sel Topics Elec/ Comp Engr II	Selected Topics In Electrical And Computer Engineering II	0.0 TO 4.0	Regional Campus Only	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 0.00 to 4.00. Variable topic and experimental courses appropriate at the junior level, as approved by the ECE Curriculum Committee at IUPUI.
						LEC	Variable Title	Campus	Include	PIU	
						REC		Schedule		DIS	
						IND				IND	
										LEC	
										REC	

Keep PWL - Offer at PIN	ECE39595	Selected Topics In ECE	Selected Topics In Electrical And Computer Engineering	0.0 TO 5.0	School of Elec & Computer Engr	IND	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 1.00 to 5.00. Topics vary. Permission of department required.
						LEC	Upper Division	Campus	Include	PFW	
						DIS	Variable Title		Include	PWL	
						LAB		College	Include	EC	
						LBP		Schedule		DIS	
										IND	
										LAB	
										LBP	
										LEC	
Keep PWL - Offer at PIN	ECE39599	Ext Cooperative Experience V	Extensive Cooperative Experience V	0.0	School of Elec & Computer Engr	EX	Coop	Type	Include/Exclude	Restriction	
							Full-Time Privileges	Campus	Include	PWL	
							Upper Division	College	Include	EC	
								Schedule		EX	
Keep PWL - Offer at PIN	ECE39600	Ind Pract Seminar I	Industrial Practice Seminar I	1.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. A special seminar for cooperative education and curricular practical training students. Permission of instructor required.
						LEC		Campus	Include	PWL	
								Classification	Exclude	01	
									Exclude	02	
									Exclude	03	
									Exclude	04	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE39699	Prof Practice Internship	Professional Practice Internship	0.0	School of Elec & Computer Engr	EX	Full-Time Privileges	Type	Include/Exclude	Restriction	Credit Hours: 0.00. To obtain professional practice with qualified employers within industry, government, or small business. Permission of department required.
							Internship	Campus	Include	PWL	
							Upper Division	College	Include	EC	
								Schedule		EX	
Archive PWL and PIN: ECE 49401 is replacement course	ECE40000	Prof Devel And Career Guidance	Professional Development And Career Guidance	1.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. A lecture-demonstration series emphasizing evaluation of career options, identification and development of professional skills. Examples of career-related topics include choosing a job, and post-graduate education in engineering or other
						DIS		Campus	Include	PIU	
									Include	PWL	
								Classification	Exclude	01	
									Exclude	02	
									Exclude	03	
									Exclude	04	
									Exclude	05	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Archive PWL	ECE40020	Sound Reinforcement Sys Desig	Sound Reinforcement System Design	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. An introduction to computational tools used in the measurement and analysis of electro-acoustic systems, and their application to sound reinforcement system engineering. Service learning based projects, serving the needs of community clients, provide the context for application of sound reinforcement system design principles and
						LEC		Campus	Include	PWL	
								Major	Include	ECEB	
									Include	IDE	
								Schedule		DIS	
										LEC	

Keep at PUI	ECE40100	Engr Ethics/Profssnlsm	Engineering Ethics and Professionalism	1.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Some ethical, social, political, legal, and ecological issues that practicing engineers may encounter. (ECE 401 and ME 401 are cross-listed courses; students may not get credit for both ECE 401 and ME 401.).
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Archive PWL: ECE 49022 is replacement course	ECE40200	EE Design Projects	Electrical Engineering Design Projects	0.0 OR 3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Lecture sessions provide the student with background information on the design and management of projects. Formal lectures cover, for example, design for manufacturability, design for quality, test and evaluation, reliability and ethics, patents and copyrights, plus case studies. During the laboratory sessions, the students work in teams on a challenging open-ended electrical engineering project that draws on previous coursework. Projects routinely involve standard design facets (such as consideration of alternative solutions, feasibility considerations, and detailed system descriptions) and include a number of realistic constraints (such as cost, safety, reliability, and aesthetics). Completion of BS EE or BS CmpE core curriculum.
						DIS		Area		ECE40200	
						LAB		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Keep PWL - Offer at PIN	ECE40400	Intro To Computer Security	Introduction To Computer Security	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Introduction to security issues related to the operation of computers and the workings of computer networks. Topics covered include introduction to cryptography, authentication protocols, digital signature algorithms, internet vulnerabilities, worms and virus propagation, denial of service attacks, etc. The students will also learn how to design firewalls to protect a system against unwanted intrusions. Permission of department required.
						DIS		Campus	Include	PWL	
								Schedule		DIS	
										LEC	
Archive PIN: ECE 46900 is replacement course	ECE40800	Oper Syst & Syst Prog	Operating Systems And Systems Programming	3.0	Regional Campus Only	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Students will learn to design and construct operating systems for both individual computers and distributed systems, and to apply and utilize operating system functionality to their application development. The course will cover basic concepts and methods for managing processor, main memory, storage, and network resources, including their system functions. Detailed examples are taken from a number of operating systems, emphasizing the techniques used in networked UNIX and embedded Linux.
								Campus	Include	PIU	
								Schedule		DIS	
Keep PWL - Offer at PIN	ECE40862	Software For Embedded System	Software For Embedded Systems	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. This course provides an introduction to software design for embedded computing systems. Major topics covered include the importance of time and timing in embedded systems, embedded software organization (FSM-based program design, polled loop systems, foreground-background systems, event driven architectures,
						LEC		Campus	Include	PWL	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE40875	Data Min Basic Concepts & Tech	Data Mining Basic Concepts And Techniques	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. This course introduces fundamental techniques in data mining, such as the techniques that extract useful knowledge from a large amount of data. Topics include data preprocessing, exploratory data analysis, association rule mining, clustering,
						DIS		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Archive PUI: ECE 43800 is replacement course	ECE41000	Intro Dig Signal Proc	Introduction to Digital Signal Processing	0.0 OR 3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. An introductory treatment of digital signal processing algorithms and implementation using high-speed digital signal processors. Sampling, architecture, addressing modes and instruction set of digital signal processors, discrete Fourier transform, fast Fourier transform, and digital filtering.
						DIS		Campus	Include	PIU	
						LAB		Schedule		DIS	
										LAB	
										LEC	
Keep PWL - Offer at	ECE41023	Electromech Motion Control	Electromechanical Motion Control	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. The operation, analysis, and control of electromechanical systems are covered, including a treatment of electromechanical devices, power electronics, and control systems. Sample applications include servo-systems, propulsion drives, and variable-speed rotational equipment.

PIN						DIS		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE41200	Intro To Engr Optics	Introduction To Engineering Optics	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. The control and characteristics of optical radiation are covered. Applications to optical instrumentation, thin films, holography, and polarizing optics are discussed.
						LEC		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE41300	Intro To Optics Lab	Introduction To Optics Laboratory	1.0	School of Elec & Computer Engr	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. A set of laboratory experiments dealing with fundamentals and applications of geometrical optics, polarization optics, wave optics, and Fourier optics.
						DIS		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
Keep PWL - Offer at PIN	ECE41400	Electro & Fiber Optics	Elements Of Electro And Fiber Optics	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Introduction to the use of lasers, fiber and integrated optical components and devices in communication and sensory applications. Topics include generation, transformation, modulation, deflection, and detection of laser beams, and their applications in fiber communication sensory systems.
						DIS		Campus	Include	PFW	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Archive PWL	ECE41437	ASIC Fab And Test I	ASIC Fabrication And Test I	0.0 OR 2.0	School of Elec & Computer Engr	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 2.00. The first semester of a two-semester sequence to give teams of 3 to 6 students the experience of designing an ASIC (Application Specific Integrated Circuit), having the chip fabricated and testing it. The team of students will develop requirements for a design, prepare the design using VHDL ((VHSIC(very high speed integrated circuit) Hardware Description Language)), Verilog, or schematic entry tools, create and use test benches to functionally verify the design, use automated tools to prepare a circuit layout,
						LEC		Campus	Include	PWL	
						DIS		College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Archive PWL	ECE41438	ASIC Fab And Test II	ASIC Fabrication And Test II	0.0 OR 2.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 2.00. The second semester of a two-semester sequence to give teams of 3 to 6 students the experience of designing an ASIC (Application Specific Integrated Circuit), having the chip fabricated and testing it. The team of students will develop requirements for a design, prepare the design using VHDL ((VHSIC(very high speed integrated circuit) Hardware Description Language)), Verilog, or schematic entry tools,
						LEC		Campus	Include	PWL	
						LAB		College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Keep PWL - Offer at PIN	ECE41500	Elect & Fiber Optc Lab	Electro- And Fiber Optics Laboratory	1.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Laboratory exercises in lasers, hologram, modulation and deflection of laser beams, fiber components, and systems.
						LAB		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
Archive PIN	ECE41700	Multimedia Application	Multimedia Applications	3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. An introductory treatment of multimedia algorithms and implementation using high-speed multimedia processors. Detailed discussion of architecture, addressing modes and instruction set of multimedia processors, entropy coding, transform coding, speech compression, image compression, and video compression.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	

Archive PIN	ECE42100	Adv Digtl Syst Design	Advanced Digital Systems Design	3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Advanced topics in digital design. Boolean logic. Logic optimization, VLSI and ASIC design basics. Design. Simulation. Placement and routing. Logic synthesis. FPGA structure. FPGA implementation. FPGA design flow. Verilog and VHDL coding.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Archive PIN	ECE42400	Elctrmch Sys&Appl Mech	Electromechanical Systems And Applied Mechatronics	3.0	Regional Campus Only	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Design, optimization and control of electromechanical and mechatronic systems. omprehensive dynamic analysis, modeling, and simulation of electric machines, power electronics, and sensors. Application of advanced software and hardware in mechatronic systems design and optimization.
						LEC		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Archive PIN	ECE42700	Semiconductor Pow Elec	Semiconductor Power Electronics	0.0 OR 3.0	Regional Campus Only	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Introduction to power semiconductor devices, characteristics, and ratings. Emphasis on analysis and design of circuits with power semiconductors and associated devices. Power rectification, inversion, AC-to-AC power control, firing circuits, and microcomputer control of power circuits.
						DIS		Campus	Include	PIU	
						LEC		Schedule		DIS	
										LAB	
										LEC	
Keep at both campuses	ECE43200	Elmnt Power Syst Engr	Elements Of Power System Engineering	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Fundamental concepts of power system analysis, transmission line parameters, basic system models, steady-state performance, network calculations, power
						LEC		Campus	Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								Classification	Include	07	
									Include	08	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE43201	Elementary Power Systems Engr	Elementary Power Systems Engineering	3.0	Regional Campus Only	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Fundamental concepts of power systems analysis, transmission line parameters, basic system models, steady state performance, network calculations, power
						LEC		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE43500	Object-Oriented Design	Object-Oriented Design Using C++ And Java	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Review of OO design with C++ and Java. Difficulties caused by multiple inheritances in C++. Taking advantage of Run-Time Identification in C++. Multi-threading, AWT, and Network Programming in Java. Discussion of Java applets, beans, and servlets. Unified modeling language. Use-case analysis. Constructing conceptual models. System sequence diagrams. "Gang of Four" design patterns. Case studies. Permission of instructor required.
						DIS		Campus	Include	PWL	
								Schedule		DIS	
										LEC	
Keep at both campuses	ECE43700	Computer Des&Prototypg	Computer Design And Prototyping	0.0 OR 4.0	School of Elec & Computer Engr	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. An introduction to computer organization and design, including instruction set selection, arithmetic logic unit design, data path design, control strategies, pipelining, memory hierarchy, and I/O interface design.
						DIS		Campus	Include	PFW	
						LEC			Include	PIU	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	

Keep PWL - Offer at PIN	ECE43800	Dig Sig Proc With Appl	Digital Signal Processing With Applications	0.0 OR 4.0	School of Elec & Computer Engr	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. The course is presented in five units. Foundations: the review of continuous-time and discrete-time signals and spectral analysis; design of finite impulse response and infinite impulse response digital filters; processing of random signals. Speech processing; vocal tract models and characteristics of the speech waveform; short-time spectral analysis and synthesis; linear predictive coding. Image processing: two-dimensional signals, systems and spectral analysis; image enhancement; image coding; and image reconstruction. The laboratory experiments are closely coordinated with each unit. Throughout the course, the integration of digital signal processing concepts in a design environment is emphasized.
						DIS		Campus	Include	PNC	
						LEC			Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Keep at both campuses	ECE44000	Transmission Informa	Transmission Of Information	0.0 OR 4.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. Analysis and design of analog and digital communication systems. Emphasis on engineering applications of theory to communication system design. The laboratory introduces the use of advanced engineering workstations in the design and testing of communication systems.
						DIS		Campus	Include	PIU	
						LAB			Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Keep PWL - Offer at PIN	ECE44100	Parameter Systems	Distributed Parameter Systems	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Transient and steady-state behavior of transmission lines, wave guides, antennas, propagation, noise, microwave sources, and system design.
						DIS		Campus	Include	PFW	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE45300	Fund Of Nanoelectronics	Fundamentals Of Nanoelectronics	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Nanoelectronic devices are an integral part of our life, including the billion-plus transistors in every smartphone, each of which has an active region that is only a few hundred atoms long. This course is designed to convey the key concepts
						LEC		Campus	Include	PWL	
								Schedule		DIS	
										LEC	
Keep at both campuses	ECE45500	Integrated Circ Engrg	Integrated Circuit Engineering	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Analysis, design, and fabrication of silicon bipolar and MOSFET monolithic integrated circuits. Consideration of amplifier circuit design and fabrication
						LEC		Campus	Include	PIU	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE45600	Dig Intg Circ Anly Des	Digital Integrated Circuit Analysis And Design	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. As applied t digital integrated circuits, the MDs transistor is studied in depth-from its fabrication to its electrical characteristics. Combinational, sequential,
						DIS		Campus	Include	CEC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE45700	Electronic Design Lab	Electronic Design Laboratory	1.0	School of Elec & Computer Engr	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Laboratory exercises illustrating the design and application of electronic circuits. Case studies of circuits presently in existing instruments, such as the
						DIS		Campus	Include	PFW	
									Include	PWL	

PIN								College	Include	EC	
								Schedule		DIS	
										LAB	
	ECE46100	Software Engineering	Software Engineering	0.0 OR 3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Introduction to software engineering principles, with special emphasis on the process, methods, and tools needed to develop and test quality software products and systems.
Keep at both campuses						PSO		Campus	Include	PIU	
						DIS			Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
										PSO	
	ECE46300	Intro Comp Comm Netwrk	Introduction To Computer Communication Networks	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. An introduction to the design and implementation of computer communication networks. The focus is on the concepts and the fundamental design principles that have contributed to the global Internet success. Topics include: digital
						DIS		Campus	Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								Major	Include	CMPE	
									Include	ECEB	
Keep at both campuses								Schedule		DIS	
										LEC	
	ECE46800	Int Cmplrs & Trnsl Eng	Introduction To Compilers And Translation Engineering	0.0 OR 4.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. The design and construction of compilers and other translators. Topics include compilation goals, organization of a translator, grammars and languages, symbol tables, lexical analysis, syntax analysis (parsing), error handling, intermediate and final code generation, assemblers, interpreters, and an introduction to optimization. Emphasis is on engineering a compiler or interpreter for a small programming language - typically a C or Pascal subset. Projects involve the stepwise implementation (and documentation) of such a system. Department permission required.
Keep at both campuses						LEC		Campus	Include	PIU	
						LAB			Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
	ECE46900	Opring Systms Engrg	Operating Systems Engineering	0.0 OR 4.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. The design and construction of operating systems for both individual computers and distributed (networked) systems. Basic concepts and methods for managing processor, main memory, block-structured storage, and network resources are covered. Detailed examples are taken from a number of operating systems, emphasizing the techniques used in networked versions of UNIX. These techniques are applied to design improvements of portions of a simplified, networked, UNIX-based operating system; the improvements are implemented and their performance is evaluated in laboratory experiments.
Keep PWL - Offer at PIN						LAB		Campus	Include	PFW	
						DIS			Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
	ECE47000	Curriculr Pract Train	Curricular Practical Training	0.0	School of Elec & Computer Engr	EX	Coop	Type	Include/Exclude	Restriction	Credit Hours: 0.00. An electrical and/or computer engineering work experience. This internship experience is intended to complement the student's academic plan-of-study and help prepare him/her for his/her future role as a practicing engineer. A letter from the prospective employer stating the period of employment, hours per week, job title, job qualifications, and job minimum period of employment is required. This course may not be taken in successive semesters. Permission of department required.
Keep PWL - Offer at PIN						DIS	Full-Time Privileges	Campus	Include	PWL	
							Upper Division	College	Include	EC	
								Schedule		DIS	
										EX	
	ECE47001	Part-Time CPT	Part-Time Curricular Practical Training	0.0	School of Elec & Computer Engr	DIS	Internship	Type	Include/Exclude	Restriction	Credit Hours: 0.00. A part-time electrical and/or computer engineering work experience. This internship experience is intended to complement the student's academic plan of study and help prepare him/her for his/her future role as a practicing engineer.
Keep PWL - Offer at						EX	Upper Division	Campus	Include	PWL	

PIN								College	Include	EC	
								Schedule		DIS	
										EX	
Archive PIN: ECE 40862 is replacement	ECE47100	Embedded System	Embedded Microcontroller, Microprocessor, and DSP-Based	3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. A structured approach to the development and integration of embedded microcontroller/microprocessor/DSP-based systems. The course provides students with design experience of embedded systems. The course covers the microprocessor selection, the configuration of peripheral components, and the hardware abstraction techniques. The course also covers the C programming techniques for embedded systems and using a fixed point microprocessor for floating point calculations.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE47300	Intro Artificial Intel	Introduction To Artificial Intelligence	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. The course introduces fundamental areas of artificial intelligence: knowledge representation and reasoning; machine learning; planning; game playing; natural language processing; and vision.
						DIS		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE47700	Digital Systems Sr Project	Digital Systems Senior Project	0.0 OR 4.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. A structured approach to the development and integration of embedded microcontroller hardware and software that provides senior-level students with significant design experience applying microcontrollers to a wide range of embedded systems (e.g., instrumentation, process control, telecommunications, and
						LEC		Area		ECE47700	
						IND		Campus	Include	PWL	
						LAB		College	Include	EC	
								Schedule		DIS	
										IND	
										LAB	
										LEC	
Archive PWL: VIP 47920 is replacement course	ECE47900	Senior Part In VIP In ECE	Senior Participation In Vertically Integrated Projects (VIP) Ir	0.0 TO 2.0	School of Elec & Computer Engr	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00 or 2.00. This course provides an opportunity for undergraduate students to explore and develop comprehensive applications of electrical and computer engineering technologies, especially as they relate to active research areas of Purdue faculty members. Students will learn about the underlying research, and will work on
						DIS		Campus	Include	PWL	
						LEC		Classification	Include	07	
									Include	08	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Keep at both campuses	ECE48300	Digital Control Systms	Digital Control Systems Analysis And Design	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. The course introduces feedback computer controlled systems, the components of digital control systems, and system models on the z-domain (z-transfer functions) and on the time domain (state variable representations.) The objectives for system design and evaluation of system performance are considered. Various discrete-
						DIS		Campus	Include	PFW	
									Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Archive PIN: ECE 49022 is replacement course	ECE48700	Senior Design I	Senior Design I	1.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. A real-life experience in engineering problem solving in a group setting from identification, planning and execution to professional-quality written and oral presentations. This is the first semester of a two semester course sequence. Prerequisites: Intent to graduate within two semesters.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	

Archive PIN: ECE 49022 is replacement course	ECE48800	Senior Design II	Senior Design II	0.0 OR 2.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 2.00. A real-life experience in engineering problem solving in a group setting from identification, planning and execution to professional-quality written and oral presentations. This is the second semester of a two semester course sequence.
						LAB		Campus	Include	PIU	
						DIS		Schedule		DIS	
										LAB	
										LEC	
Archive PIN	ECE48900	Intro To Robotics	Introduction to Robotics	3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PUI	ECE49022	Elec Engr Sr Design Proj	Electrical Engineering Senior Design Projects	0.0 OR 4.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Homogeneous transformations; kinematics of manipulator arms; dynamic equations using Newton-Euler and Euler-Lagrange formulations; inverse kinematics; trajectory generation; task planning; manipulator control; robot languages; robot sensing and vision; and industrial applications of robots. Lab experiments and final
						LEC		Area		ECE49022	
						LAB		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Archive PUI: ECE 49022 is replacement course	ECE49100	Engr Design Projects	Engineering Design Project	1.0 TO 3.0	Regional Campus Only	IND	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00 to 3.00. The student selects an engineering design project and works under the direction of the faculty sponsor. Suitable projects may be from the local industrial, municipal, state, and educational communities.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										IND	
Archive PUI: ECE 49022 is replacement course	ECE49200	Senior Design	Senior Design	0.0 OR 3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. General design methodology, consideration of alternative solutions, and project planning in design. Influence of safety, reliability, economics, and aesthetics on design of engineering systems. Interpretation of specifications and requests for proposals. Early in the course, teams of students will be assigned a major design problem that will be the focus throughout the course. Oral presentation and report writing required.
						LAB		Campus	Include	PIU	
						DIS		Schedule		DIS	
										LAB	
										LEC	
Keep PWL - Offer at PUI	ECE49401	Professional Comm Capstone	Professional Communication Capstone	1.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. This course provides ECE students an opportunity to refine their professional communication skills before launching into the workplace or graduate school. Topics include: ethics in ECE, workplace communication (written and verbal), and
						LEC		Campus	Include	PWL	
								Program	Include	COMPENGR-BSE	
									Include	ECE-BSE	
								Schedule		DIS	
										LEC	
Archive PWL: ECE 49595 is replacement course	ECE49500	Selected Tpcs In ECE	Selected Topics In Electrical And Computer Engineering	0.0 TO 4.0	School of Elec & Computer Engr	IND	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 1.00 to 4.00. Topics vary. Permission of department required.
						DIS	Upper Division	Campus	Include	PFW	
						LEC	Variable Title		Include	PIU	
						LAB			Include	PNC	
						PSO			Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										IND	
										LAB	
										LEC	
										PSO	

Keep PWL - Offer at PUI	ECE49595	Selected Topics In ECE	Selected Topics In Electrical And Computer Engineering	0.0 TO 5.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00 to 5.00. Topics vary. Permission of department required.
						IND	Variable Title	Campus	Include	PWL	
						LAB		College	Include	EC	
						LEC		Schedule		DIS	
						PSO				IND	
						LBP				LAB	
										LBP	
										LEC	
										PSO	
Keep at both campuses	ECE49600	EE And CMPE Projects	Electrical And Computer Engineering Projects	0.0 TO 18.0	School of Elec & Computer Engr	DIS	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 0.00 to 18.00. Arrange Hours and Credit. Topics vary. Permission of department required. Permission of instructor required.
						IND	Upper Division	Campus	Include	PFW	
						LEC	Variable Title		Include	PIU	
						EX			Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										EX	
										IND	
										LEC	

Status	PIN	Short Title	Long Title	Credit	College	Sched Types	Attributes	Restrictions			Course Description
Archive at PWL	ECE19000	Introduction To ECE	Introduction To Electrical And Computer Engineering	1.0	School of Elec & Computer Engr	LEC	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. This course is intended to provide an introduction to electrical and computer engineering for students in their freshman year. A goal is to provide some historical background of the respective sub-areas within ECE, a description of analytical tools that will be developed throughout their curriculum, the motivation for the tools, and to inform students of elective courses in ECE.
						DIS		Campus	Include	PWL	
								College	Include	E	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE19595	Selected Topics In ECE	Selected Topics In Electrical And Computer Engineering	1.0 TO 5.0	School of Elec & Computer Engr	IND	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00 to 5.00. Topics vary. Permission of department required.
						DIS	Variable Title	Campus	Include	PWL	
						LAB		College	Include	EC	
						LEC		Schedule		DIS	
										IND	
										LAB	
										LEC	
Archive for PWL and PIN	ECE20000	Elec & Comptr Engr Sem	Electrical And Computer Engineering Seminar	0.0	School of Elec & Computer Engr	LEC	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 0.00. An introduction to the School of Electrical and Computer Engineering, ECE program objectives and outcomes, BSEE & BSCmpE degree requirements, and professional development.
						DIS		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE20001	Electrical Engr Fundamentals I	Electrical Engineering Fundamentals I	0.0 OR 3.0	School of Elec & Computer Engr	LEC	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. This course covers fundamental concepts and applications for electrical and computer engineers as well as for engineers who need to gain a broad understanding of these disciplines. The course starts by the basic concepts of charge, current, and voltage as well as their expressions with regards to resistors and resistive circuits. Essential concepts, devices, theorems, and applications of direct-current (DC),
						DIS		Area			
						REC		Campus	Include	PWL	
								College	Include	AB	
									Include	AE	
									Include	BE	
									Include	CE	
									Include	CH	
									Include	CN	
									Include	E	
									Include	EC	
									Include	EE	
									Include	EV	
									Include	ID	
									Include	IE	
									Include	ME	
									Include	MS	
									Include	NE	
								Schedule		DIS	
										LEC	
										REC	

Keep PWL - Offer at PIN	ECE20002	Elect Engr Fundamental II	Electrical Engineering Fundamentals II	3.0	School of Elec & Computer Engr	DIS	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Continuation of Electrical and Computer Engineering Fundamentals I. The course addresses mathematical and computational foundations of circuit analysis (differential equations, Laplace Transform techniques) with a focus on application to linear circuits having variable behavior as a function of frequency, with emphasis on filtering. Variable frequency behavior is further considered for applications of electronic
						LEC		Campus	Include	CEC	
									Include	PWL	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE20007	Elec Engr Fundamentals I Lab	Electrical Engineering Fundamentals I Lab	1.0	School of Elec & Computer Engr	LAB	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 1.00. This is an introduction course in electronic measurement and circuit modeling, simulation and design techniques. These skills are developed through a variety of laboratory experiments ranging from voltage, current, and frequency, to resistors, inductors, capacitors, and operational amplifiers. When possible, the experiments develop practical skills through small design and soldering tasks. Finally, the course
						DIS	Lower Division	Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
Keep PWL - Offer at PIN	ECE20008	Elec Engr Fundamentals II Lab	Electrical Engineering Fundamentals II Lab	1.0	School of Elec & Computer Engr	LAB	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 1.00. This is a course in electronic measurement, circuit modeling, simulation and design techniques. These skills are developed through a variety of laboratory experiments including discrete semiconductor measurement, transistor amplifiers, motor control, and operational amplifier internals. The experiments develop practical skills through small design and soldering tasks. Finally, the course culminates in
						DIS	Lower Division	Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
Keep PWL, Archive at PIN	ECE20100	Linear Circuit Anly I	Linear Circuit Analysis I	3.0	School of Elec & Computer Engr	DIS	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Volt-ampere characteristics for circuit elements; independent and dependent sources; Kirchhoff's laws and circuit equations. Source transformations; Thevenin's and Norton's theorems; superposition, step response of 1st order (RC, RL) and 2nd order (RLC) circuits. Phasor analysis, impedance calculations, and computation of sinusoidal steady state responses. Instantaneous and average power, complex power, power factor correction, and maximum power transfer. Instantaneous and average power.
						LEC	Dept Credit	Area			
							Exempt	Campus	Include	PFW	
							Lower Division		Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	AB	
									Include	AE	
									Include	BE	
									Include	CE	
									Include	CH	
									Include	CN	
									Include	E	
									Include	EC	
									Include	ID	
									Include	IE	
									Include	ME	
									Include	MS	
									Include	NE	
								Schedule		DIS	
										LEC	
Archive for PWL	ECE20200	Linear Circuit Anly II	Linear Circuit Analysis II	3.0	School of Elec & Computer Engr	LEC	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Continuation of ECE 20100. Use of Laplace Transform techniques to analyze linear circuits with and without initial conditions. Characterization of circuits based upon impedance, admittance, and transfer function parameters. Determination of frequency response via analysis of poles and zeros in the complex plane. Relationship between the transfer function and the impulse response of a circuit. Use of continuous
						DIS	Lower Division	Campus	Include	PFW	
									Include	PIU	

Archive for PWL - Update to PIN										Include	PNC	
										Include	PUC	
										Include	PWL	
								College		Include	EC	
										Include	ID	
								Schedule			DIS	
											LEC	
Archive at PIN	ECE20400	Int Elec & Electr Circ	Introduction To Electrical And Electronic Circuits	4.0	Regional Campus Only	LEC	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. Students will learn basics of electrical and electronic circuits including introduction to analog and digital electronic circuits. Measurement of electrical signals using meters, probes, and oscilloscopes are covered in the laboratory component of the course. Circuits are designed for minimum hardware with emphasis on understanding analog and digital electronics with particular use of digital and analog microchips. Non-ECE majors who complete this course can continue the digital course sequence offered by the ECE department including microprocessor systems and interfacing, and digital signal processing. No credit will be given for ECE majors.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Archive at PIN	ECE20500	Int Elec & Electr Circ	Introduction To Electrical And Electronic Circuits	3.0	Regional Campus Only	LEC	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Students will learn basics of electrical and electronic circuits including introduction to analog and digital electronic circuits. Circuits are designed for minimum hardware with emphasis on understanding analog and digital electronics with particular use of digital and analog microchips. Non-ECE majors who complete this course can continue the digital course sequence offered by the ECE department including microprocessor systems and interfacing, and digital signal processing. No credit will be given for ECE majors.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Update to PIN	ECE20501	Intro Elec Circs, Sens, Motors	Introduction To Electrical Circuits, Sensors, And Motors Lect	0.0 OR 3.0	Regional Campus Only	DIS	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. The basics of electrical circuit analysis using Kirchhoff's laws, node voltage, mesh current, superposition, the maximum power theorem; transient analysis of RL / RC circuits; Bipolar Junction Transistor DC analysis; basics of simple sensors; basic operation of rotating electric machines; basics of digital logic circuits. Non-ECE majors only.
						LEC		Campus	Include	PIU	
						REC		Schedule		DIS	
										LEC	
										REC	
Update to PIN	ECE20502	Intro Elec Cir,Sen,& Motor Lab	Introduction To Electrical Circuits, Sensors, And Motors Lab	1.0	Regional Campus Only	DIS	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Students will learn the basics of electrical signal measurements using meters, probes, oscilloscopes; basic measurements using simple sensors; basic measurements as applied to motors. Circuits are designed for basic hardware with emphasis on understanding analog and digital electronics with practical use of digital and analog-interface microcontrollers. Non-ECE majors only.
						LAB		Campus	Include	PIU	
								Schedule		DIS	
										LAB	
Archive for PWL and PIN	ECE20700	Elect Measur Technique	Electronic Measurement Techniques	1.0	School of Elec & Computer Engr	LAB	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Experimental exercises in the use of laboratory instruments. Voltage, current, impedance, frequency, and wave form measurements. Frequency and transient response. Elements of circuit modeling and design.
						DIS	Dept Credit	Campus	Include	PFW	
							Lower Division		Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
									Include	ME	
								Schedule		DIS	
										LAB	
	ECE20800	Electron Dev & Des Lab	Electronic Devices And Design Laboratory	1.0	School of Elec & Computer Engr	DIS	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Laboratory experiments in the measurement of electronic device characteristics. Design of biasing networks, small signal amplifiers, and switching circuits.
						LAB	Lower Division	Campus	Include	PFW	

Archive for PWL, Update to PIN										Include	PIU	
										Include	PWL	
								College		Include	EC	
										Include	ID	
								Schedule			DIS	
											LAB	
Keep PWL - Offer at PIN	ECE20875	Python For Data Science	Python For Data Science	3.0	School of Elec & Computer Engr	DIS	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. This course will introduce Python programming to students through data science problems. Students will learn Python concepts as well as introductory data science topics, and will use their knowledge of Python (and prior programming experience) to implement data analyses.	
						LEC		Campus	Include	CEC		
									Include	PWL		
								College	Include	EC		
								Schedule		DIS		
										LEC		
Archive for PIN	ECE21000	ECE Sophomore Seminar	Electrical And Computer Engineering Sophomore Seminar	1.0	Regional Campus Only	LEC	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 1.00. An introduction to the School of Electrical and Computer Engineering, ECE program objectives and outcomes, BSEE and BSCmpE degree requirements, and professional development.	
						DIS	Lower Division	Campus	Include	PIU		
								Schedule		DIS		
										LEC		
Archive for PWL - Update to PIN	ECE25500	Intr Electron Anly Des	Introduction To Electronic Analysis And Design	3.0	School of Elec & Computer Engr	DIS	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Diode, bipolar transistor, and FET circuit models for the design and analysis of electronic circuits. Single and multistage analysis and design; introduction to digital circuits. Computer-aided design calculations, amplifier operating point design, and frequency response of single and multistage amplifiers. High-frequency and low-	
						LEC		Campus	Include	PFW		
									Include	PIU		
									Include	PWL		
								College	Include	EC		
									Include	ID		
								Schedule		DIS		
										LEC		
Update to PIN	ECE26100	Engineering Programming Lab	Engineering Programming Lab	1.0	Regional Campus Only	LAB	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Introduction to problem solving using software tools, in particular the C programming language.	
						DIS	Lower Division	Campus	Include	PIU		
								Schedule		DIS		
										LAB		
Archive at PIN	ECE26200	Program For Engineers	Programming For Engineers	0.0 OR 4.0	Regional Campus Only	LEC	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. Introduction to programming, problem solving and the C programming language.	
						DIS		Campus	Include	PIU		
						LAB		Schedule		DIS		
										LAB		
										LEC		
Update to PIN	ECE26300	Intro Computing In Elect Engr	Introduction To Computing In Electrical Engineering	3.0	Regional Campus Only	LEC	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 3.00. An introductory course in computing programming with an emphasis on program decomposition and program structure. The objective of the course is to introduce the student to problem solving using high-level languages. The students are also introduced to number concepts fundamental in electrical engineering. Programming will be in "C" in order to develop a structured approach to problem solving. Problems	
						DIS	Lower Division	Campus	Include	PIU		
								Schedule		DIS		
										LEC		
Keep at PWL, update to PIIN	ECE26400	Advanced C Programming	Advanced C Programming	3.0	School of Elec & Computer Engr	LEC	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Continuation of a first programming course. Topics include files, structures, pointers, and the proper use of dynamic data structures. A basic knowledge of the UNIX operating system and an introductory C programming course; C	
						DIS	Lower Division	Campus	Include	CEC		
									Include	PIU		
									Include	PNC		
									Include	PUC		

									Include	PWL	
								College	Include	BE	
									Include	EC	
								Schedule		DIS	
										LEC	
Archive PIN	ECE26600	Digital Logic Design	Digital Logic Design	3.0	Regional Campus Only	LEC	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Introduction to logic design, with emphasis on practical design techniques and circuit implementation. Topics include Boolean algebra; theory of logic functions; mapping techniques and function minimization; logic equivalent circuits and symbol transformations; transistor-transistor-logic (TTL)/metal oxide semi-conductor (MOS) logic into gate implementations; electrical characteristics; propagation delays; signed number notations and arithmetic; binary and decimal arithmetic logic circuits; theory of sequential circuits; timing diagrams; analysis and synthesis of SR-, D-, T-, and JK-based sequential circuits; clock generation circuits; algorithmic state machine method of designing sequential circuits.
						DIS	Lower Division	Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Archive PIN	ECE26700	Dig Logic Design Lab	Digital Logic Design Laboratory	1.0	Regional Campus Only	LAB	Credit By Exam	Type	Include/Exclude	Restriction	
						DIS	Lower Division	Campus	Include	PIU	
								Schedule		DIS	
										LAB	
Keep at PWL, update to PIIN	ECE27000	Intro Digitl Sys Desgn	Introduction To Digital System Design	0.0 OR 4.0	School of Elec & Computer Engr	LAB	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 4.00. An introduction to digital system design and hardware engineering, with an emphasis on practical design techniques and circuit implementation.
						LEC	Lower Division	Campus	Include	PFW	
						DIS			Include	PIU	
						LE1			Include	PWL	
						REC		College	Include	EC	
								Schedule		DIS	
										LAB	
										LE1	
										LEC	
										REC	
Archive PWL	ECE27900	Soph Part In VIP In ECE	Sophomore Participation In Vertically Integrated Projects In	0.0 TO 2.0	School of Elec & Computer Engr	LAB	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00 or 2.00. This course provides an opportunity for undergraduate students to explore and develop comprehensive applications of electrical and computer engineering technologies, especially as they relate to active research areas of Purdue faculty members. Students will learn about the underlying research, and will work on
						LEC		Campus	Include	PWL	
						DIS		Classification	Include	03	
									Include	04	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Archive at PIN	ECE28200	UNIX Program For Engrs	UNIX Programming For Engineers	1.0	Regional Campus Only	LAB	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Introduction to the UNIX operating system, including the UNIX file system, UNIX tools, and utilities. Introduction to Shell programming. The emphasis will be on how these tools/utilities are utilized in the Computing Engineering field.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LAB	
Keep PWL - Offer at PIN	ECE29199	Cooperative Experience I	Cooperative Experience I	0.0	School of Elec & Computer Engr	EX	Coop	Type	Include/Exclude	Restriction	Credit Hours: 0.00. Professional experience in electrical and/or computer engineering. Program coordinated by school with cooperation of participating employers. Students submit summary report and company evaluation. Professional Practice students only.
							Full-Time Privileges	Campus	Include	PWL	
							Lower Division	Classification	Include	03	
									Include	04	
								College	Include	EC	
								Schedule		EX	
Keep PWL - Offer at	ECE29299	Cooperative Experience II	Cooperative Experience II	0.0	School of Elec & Computer Engr	EX	Coop	Type	Include/Exclude	Restriction	Credit Hours: 0.00. Professional experience in electrical and/or computer engineering. Program coordinated by school with cooperation of participating employers. Students submit summary report and company evaluation. Professional Practice students only.

PIN							Full-Time Privileges	Campus	Include	PWL	
							Lower Division	College	Include	EC	
								Schedule		EX	
Keep PWL - Offer at PIN	ECE29401	ECE Sophomore Seminar	Electrical And Computer Engineering Sophomore Seminar	1.0	School of Elec & Computer Engr	DIS	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. An introduction to the School of Electrical and Computer Engineering, the program's objectives, and outcomes, BSEE and BSCmpE degree requirements, professional writing and multicultural and professional development.
						LEC		Campus	Include	PWL	
								Program	Include	COMPENGR-BSE	
									Include	ECE-BSE	
								Schedule		DIS	
										LEC	
Archive PIN	ECE29500	Sel Topics Elec/Comp Engr I	Selected Topics In Electrical And Computer Engineering I	0.0 TO 4.0	Regional Campus Only	DIS	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 0.00 to 4.00. Variable topic and experimental courses appropriate at the sophomore level, as approved by the ECE Curriculum Committee at IUPUI.
						LEC	Variable Title	Campus	Include	PIU	
						IND		Schedule		DIS	
										IND	
										LEC	
Keep PWL - Offer at PIN	ECE29595	Selected Topics In ECE	Selected Topics In Electrical And Computer Engineering	1.0 TO 5.0	School of Elec & Computer Engr	IND	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00 to 5.00. Topics vary. Permission of department required.
						DIS	Variable Title	Campus	Include	PFW	
						LEC			Include	PWL	
						LAB		College	Include	EC	
								Schedule		DIS	
										IND	
										LAB	
										LEC	
Keep PWL - Offer at PIN	ECE29600	Electrical & Comp Eng Projects	Electrical And Computer Engineering Projects	0.0 TO 18.0	School of Elec & Computer Engr	IND	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 0.00 to 18.00. Projects in Electrical and Computer Engineering. Permission of Department required.
						DIS	Variable Title	Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										IND	
Keep PWL - Offer at PIN	ECE30010	Intro To Mach Learn & Pat Rec	Introduction To Machine Learning And Pattern Recognition	3.0	School of Elec & Computer Engr	IND	Upper Division	Type	Include/Exclude	Restriction	
								Campus	Include	PWL	
								Schedule		IND	
Keep at PWL, update to PIIN	ECE30100	Signals And Systems	Signals And Systems	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Classification, analysis and design of systems in both the time- and frequency-domains. Continuous-time linear systems: Fourier Series, Fourier Transform, bilateral Laplace Transform. Discrete-time linear systems: difference equations, Discrete-Time Fourier Transform, bilateral Z-Transform. Sampling, quantization, and discrete-time processing of continuous-time signals. Discrete-time nonlinear systems: median-type filters, threshold decomposition. System design examples such as the compact disc player and AM radio.
						DIS		Campus	Include	CEC	
									Include	PFW	
									Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	BE	

										Include	EC	
										Include	ID	
									Schedule		DIS	
											LEC	
Keep at PWL, update to PIIN	ECE30200	Probabilistic Methods	Probabilistic Methods In Electrical And Computer Engineerin	3	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. An introductory treatment including probability of events, discrete and continuous random variables, multiple random variables, sums of random variables	
						DIS		Campus	Include	CEC		
						LAB			Include	PFW		
									Include	PIU		
									Include	PNC		
									Include	PUC		
									Include	PWL		
								College	Include	EC		
								Schedule		DIS		
										LAB		
										LEC		
Keep PWL - Offer at PIN	ECE30411	Electromagnetics I	Electromagnetics I	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. This course is a continued study of vector calculus, electrostatics, magnetostatics, and Maxwell's Equations. It serves as an introduction to electromagnetic waves and transmission lines, which is continued in ECE 30412.	
						LEC		Campus	Include	PWL		
								College	Include	EC		
								Schedule		DIS		
										LEC		
Keep PWL - Offer at PIN	ECE30412	Electromagnetics II	Electromagnetics II	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Electromagnetics II builds on Electromagnetics I (ECE 31100) and emphasizes time-varying electromagnetic fields. Both fundamental understanding and an appreciation for applications that span all technologies related to electrical and computer engineering are emphasized. The topics covered include: Maxwell's equations, plane	
						LEC		Campus	Include	PWL		
								Major	Include	CMPE		
									Include	ECEB		
								Schedule		DIS		
										LEC		
Keep PWL - Offer at PIN	ECE30414	Elmt Fiber Opt/Lasers/Optoelec	Elements Of Fiber Optics, Lasers And Optoelectronics	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Fundamental of photonics, guided-wave optics, optical fibers, lasers, photon detectors, integrated optical components, optical information processing, devices in communication and sensor applications. Topics include generation, transformation, modulation and detection of laser beams and their applications.	
						LEC		Area		ECE30414		
								Campus	Include	PWL		
								College	Include	EC		
								Schedule		DIS		
										LEC		
Keep PWL - Offer at PIN	ECE30415	Fiber Optics And Lasers Lab	Fiber Optics And Lasers Laboratory	1.0	School of Elec & Computer Engr	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. This laboratory course exercises in lasers, modulation of laser beams, fiber components and systems. It covers some simple optical measurements like Power and beam spot measurement of Gaussian beams. Students learn about lens-	
						DIS		Campus	Include	PWL		
								College	Include	EC		
								Schedule		DIS		
										LAB		
Keep PWL - Offer at PIN	ECE30416	Basics Of Engineering Optics	Basics Of Engineering Optics	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Basic control over propagation, reflection, refraction of optical radiation are covered. Applications to optical instrumentation such as microscopy, polarization optics such as wave plates, thin films, and holography are discussed. Geometrical optics including lenses, mirrors, prisms; Huygens' principle, Fermat principle;	
						LEC		Area		ECE30416		
								Campus	Include	PWL		
								College	Include	EC		
								Schedule		DIS		
										LEC		
Keep PWL - Offer at	ECE30417	Engineering Optics Laboratory	Engineering Optics Laboratory	1.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. A set of laboratory experiments dealing with fundamentals and basic applications of geometrical optics, beams, polarization optics, wave optics and Fourier optics. Permission of instructor required.	
						LAB		Campus	Include	PWL		

PIN								College	Include	EC	
								Schedule		DIS	
										LAB	
Keep at PWL, update to PIIN	ECE30500	Semiconductor Devices	Semiconductor Devices	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Introduces and explains terminology, models, properties, and concepts associated with semiconductor devices. Provides detailed insight into the internal workings of the "building-block" device structures such as the pn-junction diode,
						DIS		Campus	Include	CEC	
									Include	PIU	
									Include	PWL	
								College	Include	BE	
									Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE30600	Circuits & Systems Lab	Electronic Circuits And Systems Laboratory	1.0	School of Elec & Computer Engr	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Experiments in electronic circuits and systems, including spectral analysis techniques, sampling, distortion measurements, random signals, signal-to-noise
						DIS		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
Keep PWL - Offer at PIN	ECE30653	Intro To Nano, Qntm Sci & Tech	Introduction To Nanotechnology And Quantum Science & Te	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. This interdisciplinary course offers an introduction to nanotechnology and quantum science and technology for undergraduate students in science and engineering. The students will develop understanding of interdisciplinary nature of these fields and utilize concepts in physics, chemistry and mechanics to describe and analyze
						LEC		Campus	Include	PWL	
								Major	Include	CMPE	
									Include	ECEB	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE30700	Fields & Waves Lab	Electromagnetic Fields And Waves Laboratory	1.0	School of Elec & Computer Engr	LAB	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Experimental exercises illustrating concepts in electric and magnetic fields, transmission lines, electromagnetic fields, simple waveguides, and antennas.
						DIS	Upper Division	Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
Keep PWL - Offer at PIN	ECE30800	Sysm Simul & Contr Lab	Systems Simulation And Control Laboratory	1.0	School of Elec & Computer Engr	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Instruction and laboratory exercises in the solution of differential equations that arise in the modeling of physical systems. Instruction in the principles of
						DIS		Campus	Include	PFW	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
Keep PWL - Offer at PIN	ECE30834	Fund Of Computer Graphics	Fundamentals Of Computer Graphics	0.0 OR 3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Fundamental principles and techniques of computer graphics. The course covers the basics of going from a scene representation to a raster image using OpenGL. Specific topics include coordinate manipulations, perspective, basics of illumination and shading, color models, texture maps, clipping and basic raster algorithms, fundamentals of scene constructions. Permission of department required.
						LEC		Campus	Include	PWL	
						PSO		College	Include	EC	
								Schedule		DIS	
										LEC	
										PSO	
Keep PWL - Offer at PIN	ECE30862	Obj Orient Prog C++ &Java	Object-Oriented Programming In C++ And Java	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. C++ and Java programming languages, including classes, inheritance, encapsulation, polymorphism, class derivation, abstract classes, interfaces, static class members, object construction and destruction, namespaces, exception handling, function, overloading and overriding, function name overload resolution, container classes, and template classes.
						DIS		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	

Keep PWL - Offer at PIN	ECE30864	Software Engineering Tools	Software Engineering Tools	0.0 OR 1.0	School of Elec & Computer Engr	DIS	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 1.00. This course will acquaint students with the toolkit of the modern software engineer. Students will learn the tools surrounding the software application itself, e.g., tools for software process, software construction, and software deployment.
						LBP	Upper Division	Campus	Include	PFW	
						LAB			Include	PWL	
								College	Include	BE	
									Include	EC	
								Schedule		DIS	
										LAB	
										LBP	
Keep PWL - Offer at PIN	ECE31032	Power Systems Engineering	Power Systems Engineering	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Introduction to the economic operation of power systems, three-phase circuit analysis, modeling of transformers and transmission lines, steady-state
						LEC		Area		ECE31032	
								Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE31033	Power Electronics	Power Electronics	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Introduction to the fundamental operating principles of power conditioning circuits that are currently being used to effect power flow from AC to DC and vice versa. Emphasis is on the relationship between form and function of these circuits. Circuits discussed will include AC/DC line-commutated converters, DC/DC
						LEC		Campus	Include	PWL	
								College	Include	EC	
								Program	Include		
								Schedule		DIS	
										LEC	
Archive PWL and PIN	ECE31100	Elec & Magnetic Fields	Electric And Magnetic Fields	3.0	School of Elec & Computer Engr	LEC	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Continued study of vector calculus, electrostatics, and magnetostatics, and Maxwell's equations. Introduction to electromagnetic waves, transmission lines, and radiation from antennas.
						DIS	Upper Division	Campus	Include	PFW	
						LAB			Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	BE	
									Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Update to PIN	ECE31500	Fund Electrical Energy Engr	Fundamentals Of Electrical Energy Engineering	3.0	Regional Campus Only	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Resistive circuit analysis with controlled sources. Sinusoidal frequency response, filters and Bode plots. Complex power in AC circuits, ideal transformers and three-phase power. Power electronic circuits including diodes, transistor switches, rectifiers and AC-DC converters. Magnetic circuits, magnetic materials and B-H curves. Transformer equivalent circuit models. No credit will be given for ECE majors.
						LEC		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Keep PWL - update to PIN	ECE32100	Electromech Motion Dev	Electromechanical Motion Devices	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. The general theory of electromechanical motion devices relating electric variables and electromagnetic forces. The basic concepts and operational behavior of DC, induction, brushless DC, and stepper motors used in control applications are presented.
						DIS		Campus	Include	CEC	
									Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	

Keep PWL - Offer at PIN	ECE32300	Elec-Mech Mot Dev Lab	Electromechanical Motion Devices and Systems Laboratory	1.0	School of Elec & Computer Engr	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Experiments closely coordinated with ECE 32100 involving measurement of fundamental parameters of various electromechanical devices using
						DIS		Campus	Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
Update to PIN	ECE32600	Engineering Project Managemen	Engineering Project Management	3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. (ME 32600) Project management is an important skill that is needed in the private and public sectors as well as specialty businesses. This course will explore the challenges facing today's project managers and will provide a broad understanding of the project management environment focused on multiple aspects of the project.
						DIS		Campus	Include	PIU	
								Classification	Exclude	01	
									Exclude	02	
								Schedule		DIS	
										LEC	
Update to PIN	ECE32700	Engineering Economics	Engineering Economics	3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. (ME 32700) Engineering Economics is designed as an overview of economics with a focus on how it relates to the practice of engineering. Topics include interest formulas, rate of return, life cost analysis, depreciation, taxes, and cash flow.
						DIS		Campus	Include	PIU	
								Classification	Exclude	01	
									Exclude	02	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE33700	ASIC Design Lab	ASIC Design Laboratory	0.0 OR 2.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 2.00. Introduction to standard cell design of Application Specific Integrated Circuits (ASICs) using modern hardware description languages (HDLs). Emphasis on how to write HDL code that will map readily to hardware. Laboratory experiments using commercial grade computer-aided design (CAD) tools for HDL based design, logic simulation, automatic placement and routing, timing analysis and
						LAB		Campus	Include	PWL	
						LEC		College	Include	EC	
						PSO		Schedule		DIS	
										LAB	
										LEC	
										PSO	
Update to PIN	ECE34000	Simu Modeling & Ident	Simulation, Modeling, and Identification	0.0 OR 3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Investigation and evaluation of design problems through simulation of systems described by ordinary differential and difference equations. Development of simulation models from physical parameters and from experimental data. Topics include continuous, discrete, and hybrid models of electrical, mechanical, and biological systems. Laboratory experiences demonstrate concepts studied in text and lecture.
						LAB		Campus	Include	PIU	
						DIS		Schedule		DIS	
										LAB	
										LEC	
Archive at PIN	ECE35900	C And Data Structures	C And Data Structures	0.0 OR 3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. An introductory level course on C, a general purpose high-level language with features to facilitate such tasks as systems programming and structuring of data. Students becoming proficient in C language programming will learn techniques of structured programming data structures and how to develop programs that are used regularly in many applications.
						DIS		Campus	Include	PFW	
						REC			Include	PIU	
								Schedule		DIS	

										LEC	
										REC	
Keep PWL - update to PIN	ECE36200	Micropro Sys & Intrfac	Microprocessor Systems And Interfacing	0.0 OR 4.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. An introduction to basic computer organization, microprocessor instruction sets, assembly language programming, and microcontroller peripherals.
						LAB		Campus	Include	PFW	
						DIS			Include	PIU	
						LE1			Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LE1	
										LEC	
Archive PIN	ECE36400	Sftwr Engr Tools Lab	Software Engineering Tools Laboratory	0.0 OR 1.0	Regional Campus Only	LAB	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 1.00. To acquaint the students with a variety of current software engineering tools, scripting languages, and application programming languages. Students are expected to use their previous programming experience to design and test software programs using the techniques learned in this course.
						LBP	Upper Division	Campus	Include	PIU	
						DIS		College	Include	BE	
									Include	EC	
								Schedule		DIS	
										LAB	
										LBP	
Update to PIN	ECE36500	Digital Comp Design	Introduction To The Design Of Digital Computers	3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. The hardware organization of computer systems including the following topics: instruction set selection, arithmetic/logic unit design, hard-wired and microprogrammed control schemes, memory organization, IO interface design. The course will involve computer simulation of digital systems.
						DIS		Campus	Include	PFW	
									Include	PIU	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE36800	Data Structures	Data Structures	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Provides insight into the use of data structures. Topics include stacks, queues and lists, trees, graphs, sorting, searching, and hashing.
						DIS		Campus	Include	CEC	
									Include	PFW	
									Include	PWL	
								College	Include	BE	
									Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Update to PIN	ECE36900	Disc Math For Comp Eng	Discrete Mathematics For Computer Engineering	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. This course introduces discrete mathematical structures and finite-state machines. Students will learn how to use logical and mathematical formalisms to formulate and solve problems in computer engineering. Topics include formal logic, proof techniques, recurrence relations, sets, combinatorics, relations, functions, algebraic structures, and finite-state machines.
						DIS		Campus	Include	PFW	
									Include	PIU	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Update to PIN	ECE37200	Principals Of Software Design	Principles Of Software Design	3.0	Regional Campus Only	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. (CSCI 36300) This course is designed to teach students best practices in designing and implementing object-oriented systems of high quality. To accomplish this task, we start with an overview of software design patterns and their role in developing high-quality software. We then begin surveying different design-level
						LEC		Campus	Include	PIU	
								Schedule		DIS	
										LEC	

Archive PWL	ECE37900	Junior Part In VIP In ECE	Junior Participation In Vertically Integrated Projects (VIP) In	0.0 TO 2.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00 or 2.00. This course provides an opportunity for undergraduate students to explore and develop comprehensive applications of electrical and computer engineering technologies, especially as they relate to active research areas of Purdue faculty members. Students will learn about the underlying research, and will work on
						LAB		Campus	Include	PWL	
						LEC		Classification	Include	05	
									Include	06	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Keep PWL - Offer at PIN	ECE38199	Prof Practice Co-Op I	Professional Practice Co-Op I	0.0	School of Elec & Computer Engr	EX	Coop	Type	Include/Exclude	Restriction	Credit Hours: 0.00. To obtain professional practice with qualified employers within industry, government, or small business. Permission of department required.
							Full-Time Privileges	Campus	Include	PWL	
							Upper Division	Classification	Include	05	
									Include	06	
								College	Include	EC	
								Schedule		EX	
Keep PWL - Update to PIN	ECE38200	Fdbk Sys Anly & Design	Feedback System Analysis And Design	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. In this course, classical concepts of feedback system analysis and associated compensation techniques are presented. In particular, the root locus, Bode diagram, and Nyquist criterion are used as determinants of stability.
						DIS		Campus	Include	PFW	
									Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE38299	Prof Practice Co-Op II	Professional Practice Co-Op II	0.0	School of Elec & Computer Engr	EX	Coop	Type	Include/Exclude	Restriction	Credit Hours: 0.00. To obtain professional practice with qualified employers within industry, government, or small business. Permission of department required.
							Full-Time Privileges	Campus	Include	PWL	
							Upper Division	College	Include	EC	
								Schedule		EX	
Keep PWL - Offer at PIN	ECE38399	Prof Practice Co-Op III	Professional Practice Co-Op III	0.0	School of Elec & Computer Engr	EX	Coop	Type	Include/Exclude	Restriction	Credit Hours: 0.00. To obtain professional practice with qualified employers within industry, government, or small business. Permission of department required.
							Full-Time Privileges	Campus	Include	PWL	
							Upper Division	College	Include	EC	
								Schedule		EX	
Keep PWL - Offer at PIN	ECE39399	Cooperative Experience III	Cooperative Experience III	0.0	School of Elec & Computer Engr	EX	Coop	Type	Include/Exclude	Restriction	Credit Hours: 0.00. Professional experience in electrical and/or computer engineering. Program coordinated by school with cooperation of participating employers. Students submit summary report and company evaluation. Professional Practice students only.
							Full-Time Privileges	Campus	Include	PWL	
							Upper Division	College	Include	EC	
								Schedule		EX	
Keep PWL - Offer at PIN	ECE39401	Prof Communication And Div	Professional Communications And Diversity	1.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. This course provides ECE students with practice in relevant aspects of communication. Topics include: successfully seeking employment, working effectively in teams, delivering engaging presentations, and leveraging the advantages and
						LEC		Campus	Include	PWL	
								Program	Include	COMPENGR-BSE	
									Include	ECE-BSE	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE39499	Ext Cooperative Experience IV	Extensive Cooperative Experience IV	0.0	School of Elec & Computer Engr	EX	Coop	Type	Include/Exclude	Restriction	Credit Hours: 0.00. Professional experience in electrical and/or computer engineering. Program coordinated by school with cooperation of participating employers. Students submit summary report and company evaluation. Professional Practice students only.
							Full-Time Privileges	Campus	Include	PWL	
							Upper Division	College	Include	EC	
								Schedule		EX	
Archive PIN	ECE39501	Sel Topics Elec/ Comp Engr II	Selected Topics In Electrical And Computer Engineering II	0.0 TO 4.0	Regional Campus Only	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 0.00 to 4.00. Variable topic and experimental courses appropriate at the junior level, as approved by the ECE Curriculum Committee at IUPUI.
						LEC	Variable Title	Campus	Include	PIU	
						REC		Schedule		DIS	

						IND				IND	
										LEC	
										REC	
Keep PWL - Offer at PIN	ECE39595	Selected Topics In ECE	Selected Topics In Electrical And Computer Engineering	0.0 TO 5.0	School of Elec & Computer Engr	IND	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 1.00 to 5.00. Topics vary. Permission of department required.
						LEC	Upper Division	Campus	Include	PFW	
						DIS	Variable Title		Include	PWL	
						LAB		College	Include	EC	
						LBP		Schedule		DIS	
										IND	
										LAB	
										LBP	
										LEC	
Keep PWL - Offer at PIN	ECE39599	Ext Cooperative Experience V	Extensive Cooperative Experience V	0.0	School of Elec & Computer Engr	EX	Coop	Type	Include/Exclude	Restriction	
							Full-Time Privileges	Campus	Include	PWL	
							Upper Division	College	Include	EC	
								Schedule		EX	
Keep PWL - Offer at PIN	ECE39600	Ind Pract Seminar I	Industrial Practice Seminar I	1.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. A special seminar for cooperative education and curricular practical training students. Permission of instructor required.
						LEC		Campus	Include	PWL	
								Classification	Exclude	01	
									Exclude	02	
									Exclude	03	
									Exclude	04	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE39699	Prof Practice Internship	Professional Practice Internship	0.0	School of Elec & Computer Engr	EX	Full-Time Privileges	Type	Include/Exclude	Restriction	Credit Hours: 0.00. To obtain professional practice with qualified employers within industry, government, or small business. Permission of department required.
							Internship	Campus	Include	PWL	
							Upper Division	College	Include	EC	
								Schedule		EX	
Archive PWL and PIN	ECE40000	Prof Devel And Career Guidance	Professional Development And Career Guidance	1.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. A lecture-demonstration series emphasizing evaluation of career options, identification and development of professional skills. Examples of career-related topics include choosing a job, and post-graduate education in engineering or other
						DIS		Campus	Include	PIU	
									Include	PWL	
								Classification	Exclude	01	
									Exclude	02	
									Exclude	03	
									Exclude	04	
									Exclude	05	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Archive PWL	ECE40020	Sound Reinforcement Sys Desig	Sound Reinforcement System Design	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. An introduction to computational tools used in the measurement and analysis of electro-acoustic systems, and their application to sound reinforcement system engineering. Service learning based projects, serving the needs of community clients, provide the context for application of sound reinforcement system design principles and
						LEC		Campus	Include	PWL	
								Major	Include	ECEB	
									Include	IDE	

								Schedule		DIS	
										LEC	
Update to PIN	ECE40100	Engr Ethics/Profssnlsm	Engineering Ethics and Professionalism	1.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Some ethical, social, political, legal, and ecological issues that practicing engineers may encounter. (ECE 401 and ME 401 are cross-listed courses; students may not get credit for both ECE 401 and ME 401.).
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Archive PWL	ECE40200	EE Design Projects	Electrical Engineering Design Projects	0.0 OR 3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Lecture sessions provide the student with background information on the design and management of projects. Formal lectures cover, for example, design for manufacturability, design for quality, test and evaluation, reliability and ethics, patents and copyrights, plus case studies. During the laboratory sessions, the students work in teams on a challenging open-ended electrical engineering project that draws on previous coursework. Projects routinely involve standard design facets (such as consideration of alternative solutions, feasibility considerations, and detailed system descriptions) and include a number of realistic constraints (such as cost, safety, reliability, and aesthetics). Completion of BS EE or BS CmpE core curriculum.
						DIS		Area		ECE40200	
						LAB		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Keep PWL - Offer at PIN	ECE40400	Intro To Computer Security	Introduction To Computer Security	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Introduction to security issues related to the operation of computers and the workings of computer networks. Topics covered include introduction to cryptography, authentication protocols, digital signature algorithms, internet vulnerabilities, worms and virus propagation, denial of service attacks, etc. The students will also learn how to design firewalls to protect a system against unwanted intrusions. Permission of department required.
						DIS		Campus	Include	PWL	
								Schedule		DIS	
										LEC	
Update to PIN	ECE40800	Oper Syst & Syst Prog	Operating Systems And Systems Programming	3.0	Regional Campus Only	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Students will learn to design and construct operating systems for both individual computers and distributed systems, and to apply and utilize operating system functionality to their application development. The course will cover basic concepts and methods for managing processor, main memory, storage, and network resources, including their system functions. Detailed examples are taken from a number of operating systems, emphasizing the techniques used in networked UNIX and embedded Linux.
								Campus	Include	PIU	
								Schedule		DIS	
Keep PWL - Offer at PIN	ECE40862	Software For Embedded System	Software For Embedded Systems	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. This course provides an introduction to software design for embedded computing systems. Major topics covered include the importance of time and timing in embedded systems, embedded software organization (FSM-based program design, polled loop systems, foreground-background systems, event driven architectures,
						LEC		Campus	Include	PWL	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE40875	Data Min Basic Concepts & Tech	Data Mining Basic Concepts And Techniques	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. This course introduces fundamental techniques in data mining, such as the techniques that extract useful knowledge from a large amount of data. Topics include data preprocessing, exploratory data analysis, association rule mining, clustering,
						DIS		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Archive PIN	ECE41000	Intro Dig Signal Proc	Introduction to Digital Signal Processing	0.0 OR 3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. An introductory treatment of digital signal processing algorithms and implementation using high-speed digital signal processors. Sampling, architecture, addressing modes and instruction set of digital signal processors, discrete Fourier transform, fast Fourier transform, and digital filtering.
						DIS		Campus	Include	PIU	
						LAB		Schedule		DIS	
										LAB	
										LEC	

Keep PWL - Offer at PIN	ECE41023	Electromech Motion Control	Electromechanical Motion Control	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. The operation, analysis, and control of electromechanical systems are covered, including a treatment of electromechanical devices, power electronics, and control systems. Sample applications include servo-systems, propulsion drives, and variable-speed rotational equipment.
						DIS		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE41200	Intro To Engr Optics	Introduction To Engineering Optics	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. The control and characteristics of optical radiation are covered. Applications to optical instrumentation, thin films, holography, and polarizing optics are discussed.
						LEC		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE41300	Intro To Optics Lab	Introduction To Optics Laboratory	1.0	School of Elec & Computer Engr	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. A set of laboratory experiments dealing with fundamentals and applications of geometrical optics, polarization optics, wave optics, and Fourier optics.
						DIS		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
Keep PWL - Offer at PIN	ECE41400	Electro & Fiber Optics	Elements Of Electro And Fiber Optics	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Introduction to the use of lasers, fiber and integrated optical components and devices in communication and sensory applications. Topics include generation, transformation, modulation, deflection, and detection of laser beams, and their applications in fiber communication sensory systems.
						DIS		Campus	Include	PFW	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Archive PWL	ECE41437	ASIC Fab And Test I	ASIC Fabrication And Test I	0.0 OR 2.0	School of Elec & Computer Engr	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 2.00. The first semester of a two-semester sequence to give teams of 3 to 6 students the experience of designing an ASIC (Application Specific Integrated Circuit), having the chip fabricated and testing it. The team of students will develop requirements for a design, prepare the design using VHDL ((VHSIC(very high speed integrated circuit) Hardware Description Language)), Verilog, or schematic entry tools, create and use test benches to functionally verify the design, use automated tools to prepare a circuit layout,
						LEC		Campus	Include	PWL	
						DIS		College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Archive PWL	ECE41438	ASIC Fab And Test II	ASIC Fabrication And Test II	0.0 OR 2.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 2.00. The second semester of a two-semester sequence to give teams of 3 to 6 students the experience of designing an ASIC (Application Specific Integrated Circuit), having the chip fabricated and testing it. The team of students will develop requirements for a design, prepare the design using VHDL ((VHSIC(very high speed integrated circuit) Hardware Description Language)), Verilog, or schematic entry tools,
						LEC		Campus	Include	PWL	
						LAB		College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Keep PWL - Offer at PIN	ECE41500	Elect & Fiber Optc Lab	Electro- And Fiber Optics Laboratory	1.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Laboratory exercises in lasers, hologram, modulation and deflection of laser beams, fiber components, and systems.
						LAB		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	

Archive PIN	ECE41700	Multimedia Application	Multimedia Applications	3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. An introductory treatment of multimedia algorithms and implementation using high-speed multimedia processors. Detailed discussion of architecture, addressing modes and instruction set of multimedia processors, entropy coding, transform coding, speech compression, image compression, and video compression.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Archive PIN	ECE42100	Adv Digtl Syst Design	Advanced Digital Systems Design	3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Advanced topics in digital design. Boolean logic. Logic optimization, VLSI and ASIC design basics. Design. Simulation. Placement and routing. Logic synthesis. FPGA structure. FPGA implementation. FPGA design flow. Verilog and VHDL coding.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Archive PIN	ECE42400	Elctrmch Sys&Appl Mech	Electromechanical Systems And Applied Mechatronics	3.0	Regional Campus Only	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Design, optimization and control of electromechanical and mechatronic systems. omprehensive dynamic analysis, modeling, and simulation of electric machines, power electronics, and sensors. Application of advanced software and hardware in mechatronic systems design and optimization.
						LEC		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Archive PIN	ECE42700	Semiconductor Pow Elec	Semiconductor Power Electronics	0.0 OR 3.0	Regional Campus Only	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Introduction to power semiconductor devices, characteristics, and ratings. Emphasis on analysis and design of circuits with power semiconductors and associated devices. Power rectification, inversion, AC-to-AC power control, firing circuits, and microcomputer control of power circuits.
						DIS		Campus	Include	PIU	
						LEC		Schedule		DIS	
										LAB	
										LEC	
Keep PWL - Update to PIN	ECE43200	Elmnt Power Syst Engr	Elements Of Power System Engineering	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Fundamental concepts of power system analysis, transmission line parameters, basic system models, steady-state performance, network calculations, power
						LEC		Campus	Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								Classification	Include	07	
									Include	08	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Update to PIN	ECE43201	Elementary Power Systems Engr	Elementary Power Systems Engineering	3.0	Regional Campus Only	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Fundamental concepts of power systems analysis, transmission line parameters, basic system models, steady state performance, network calculations, power
						LEC		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE43500	Object-Oriented Design	Object-Oriented Design Using C++ And Java	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Review of OO design with C++ and Java. Difficulties caused by multiple inheritances in C++. Taking advantage of Run-Time Identification in C++. Multi-threading, AWT, and Network Programming in Java. Discussion of Java applets, beans, and servlets. Unified modeling language. Use-case analysis. Constructing conceptual models. System sequence diagrams. "Gang of Four" design patterns. Case studies. Permission of instructor required.
						DIS		Campus	Include	PWL	
								Schedule		DIS	
										LEC	
Keep PWL - Update to PIN	ECE43700	Computer Des&Prototypg	Computer Design And Prototyping	0.0 OR 4.0	School of Elec & Computer Engr	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. An introduction to computer organization and design, including instruction set selection, arithmetic logic unit design, data path design, control strategies, pipelining, memory hierarchy, and I/O interface design.
						DIS		Campus	Include	PFW	
						LEC			Include	PIU	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	

Keep PWL - Offer at PIN	ECE43800	Dig Sig Proc With Appl	Digital Signal Processing With Applications	0.0 OR 4.0	School of Elec & Computer Engr	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. The course is presented in five units. Foundations: the review of continuous-time and discrete-time signals and spectral analysis; design of finite impulse response and infinite impulse response digital filters; processing of random signals. Speech processing; vocal tract models and characteristics of the speech waveform; short-time spectral analysis and synthesis; linear predictive coding. Image processing: two-dimensional signals, systems and spectral analysis; image enhancement; image coding; and image reconstruction. The laboratory experiments are closely coordinated with each unit. Throughout the course, the integration of digital signal processing concepts in a design environment is emphasized.
						DIS		Campus	Include	PNC	
						LEC			Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Keep PWL - Update to PIN	ECE44000	Transmission Informa	Transmission Of Information	0.0 OR 4.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. Analysis and design of analog and digital communication systems. Emphasis on engineering applications of theory to communication system design. The laboratory introduces the use of advanced engineering workstations in the design and testing of communication systems.
						DIS		Campus	Include	PIU	
						LAB			Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Keep PWL - Offer at PIN	ECE44100	Parameter Systems	Distributed Parameter Systems	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Transient and steady-state behavior of transmission lines, wave guides, antennas, propagation, noise, microwave sources, and system design.
						DIS		Campus	Include	PFW	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE45300	Fund Of Nanoelectronics	Fundamentals Of Nanoelectronics	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Nanoelectronic devices are an integral part of our life, including the billion-plus transistors in every smartphone, each of which has an active region that is only a few hundred atoms long. This course is designed to convey the key concepts
						LEC		Campus	Include	PWL	
								Schedule		DIS	
										LEC	
Keep PWL - Update to PIN	ECE45500	Integrated Circ Engrg	Integrated Circuit Engineering	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Analysis, design, and fabrication of silicon bipolar and MOSFET monolithic integrated circuits. Consideration of amplifier circuit design and fabrication
						LEC		Campus	Include	PIU	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE45600	Dig Intg Circ Anly Des	Digital Integrated Circuit Analysis And Design	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. As applied t digital integrated circuits, the MDs transistor is studied in depth-from its fabrication to its electrical characteristics. Combinational, sequential,
						DIS		Campus	Include	CEC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE45700	Electronic Design Lab	Electronic Design Laboratory	1.0	School of Elec & Computer Engr	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Laboratory exercises illustrating the design and application of electronic circuits. Case studies of circuits presently in existing instruments, such as the
						DIS		Campus	Include	PFW	
									Include	PWL	

PIN								College	Include	EC	
								Schedule		DIS	
										LAB	
Keep PWL - Update to PIN	ECE46100	Software Engineering	Software Engineering	0.0 OR 3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Introduction to software engineering principles, with special emphasis on the process, methods, and tools needed to develop and test quality software products and systems.
						PSO		Campus	Include	PIU	
						DIS			Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
										PSO	
Keep PWL - Update to PIN	ECE46300	Intro Comp Comm Netwrk	Introduction To Computer Communication Networks	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. An introduction to the design and implementation of computer communication networks. The focus is on the concepts and the fundamental design principles that have contributed to the global Internet success. Topics include: digital transmission and multiplexing, protocols, MAC layer design (Ethernet/802.11), LAN
						DIS		Campus	Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								Major	Include	CMPE	
									Include	ECEB	
								Schedule		DIS	
										LEC	
Keep PWL - Update to PIN	ECE46800	Int Cmplrs & Trnsl Eng	Introduction To Compilers And Translation Engineering	0.0 OR 4.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. The design and construction of compilers and other translators. Topics include compilation goals, organization of a translator, grammars and languages, symbol tables, lexical analysis, syntax analysis (parsing), error handling, intermediate and final code generation, assemblers, interpreters, and an introduction to optimization. Emphasis is on engineering a compiler or interpreter for a small programming language - typically a C or Pascal subset. Projects involve the stepwise implementation (and documentation) of such a system. Department permission required.
						LEC		Campus	Include	PIU	
						LAB			Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Keep PWL - Offer at PIN	ECE46900	Opring Systms Engrg	Operating Systems Engineering	0.0 OR 4.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. The design and construction of operating systems for both individual computers and distributed (networked) systems. Basic concepts and methods for managing processor, main memory, block-structured storage, and network resources are covered. Detailed examples are taken from a number of operating systems, emphasizing the techniques used in networked versions of UNIX. These techniques are applied to design improvements of portions of a simplified, networked, UNIX-based operating system; the improvements are implemented and their performance is evaluated in laboratory experiments.
						LAB		Campus	Include	PFW	
						DIS			Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Keep PWL - Offer at PIN	ECE47000	Curriculr Pract Train	Curricular Practical Training	0.0	School of Elec & Computer Engr	EX	Coop	Type	Include/Exclude	Restriction	Credit Hours: 0.00. An electrical and/or computer engineering work experience. This internship experience is intended to complement the student's academic plan-of-study and help prepare him/her for his/her future role as a practicing engineer. A letter from the prospective employer stating the period of employment, hours per week, job title, job qualifications, and job minimum period of employment is required. This course may not be taken in successive semesters. Permission of department required.
						DIS	Full-Time Privileges	Campus	Include	PWL	
							Upper Division	College	Include	EC	
								Schedule		DIS	
										EX	
Keep PWL - Offer at	ECE47001	Part-Time CPT	Part-Time Curricular Practical Training	0.0	School of Elec & Computer Engr	DIS	Internship	Type	Include/Exclude	Restriction	Credit Hours: 0.00. A part-time electrical and/or computer engineering work experience. This internship experience is intended to complement the student's academic plan of study and help prepare him/her for his/her future role as a practicing engineer.
						EX	Upper Division	Campus	Include	PWL	

PIN								College	Include	EC	
								Schedule		DIS	
										EX	
Archive PIN	ECE47100	Embedded System	Embedded Microcontroller, Microprocessor, and DSP-Based	3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. A structured approach to the development and integration of embedded microcontroller/microprocessor/DSP-based systems. The course provides students with design experience of embedded systems. The course covers the microprocessor selection, the configuration of peripheral components, and the hardware abstraction techniques. The course also covers the C programming techniques for embedded systems and using a fixed point microprocessor for floating point calculations.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE47300	Intro Artificial Intel	Introduction To Artificial Intelligence	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. The course introduces fundamental areas of artificial intelligence: knowledge representation and reasoning; machine learning; planning; game playing; natural language processing; and vision.
						DIS		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE47700	Digital Systems Sr Project	Digital Systems Senior Project	0.0 OR 4.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. A structured approach to the development and integration of embedded microcontroller hardware and software that provides senior-level students with significant design experience applying microcontrollers to a wide range of embedded systems (e.g., instrumentation, process control, telecommunications, and
						LEC		Area		ECE47700	
						IND		Campus	Include	PWL	
						LAB		College	Include	EC	
								Schedule		DIS	
										IND	
										LAB	
										LEC	
Archive PWL	ECE47900	Senior Part In VIP In ECE	Senior Participation In Vertically Integrated Projects (VIP) Ir	0.0 TO 2.0	School of Elec & Computer Engr	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00 or 2.00. This course provides an opportunity for undergraduate students to explore and develop comprehensive applications of electrical and computer engineering technologies, especially as they relate to active research areas of Purdue faculty members. Students will learn about the underlying research, and will work on
						DIS		Campus	Include	PWL	
						LEC		Classification	Include	07	
									Include	08	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Keep PWL - Update to PIN	ECE48300	Digital Control Systms	Digital Control Systems Analysis And Design	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. The course introduces feedback computer controlled systems, the components of digital control systems, and system models on the z-domain (z-transfer functions) and on the time domain (state variable representations.) The objectives for system design and evaluation of system performance are considered. Various discrete-
						DIS		Campus	Include	PFW	
									Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Archive PIN	ECE48700	Senior Design I	Senior Design I	1.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. A real-life experience in engineering problem solving in a group setting from identification, planning and execution to professional-quality written and oral presentations. This is the first semester of a two semester course sequence. Prerequisites: Intent to graduate within two semesters.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	

Update to PIN	ECE48800	Senior Design II	Senior Design II	0.0 OR 2.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 2.00. A real-life experience in engineering problem solving in a group setting from identification, planning and execution to professional-quality written and oral presentations. This is the second semester of a two semester course sequence.
						LAB		Campus	Include	PIU	
						DIS		Schedule		DIS	
										LAB	
										LEC	
Archive PIN	ECE48900	Intro To Robotics	Introduction to Robotics	3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Keep PWL - Offer at PIN	ECE49022	Elec Engr Sr Design Proj	Electrical Engineering Senior Design Projects	0.0 OR 4.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Homogeneous transformations; kinematics of manipulator arms; dynamic equations using Newton-Euler and Euler-Lagrange formulations; inverse kinematics; trajectory generation; task planning; manipulator control; robot languages; robot sensing and vision; and industrial applications of robots. Lab experiments and final
						LEC		Area		ECE49022	
						LAB		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Archive PIN	ECE49100	Engr Design Projects	Engineering Design Project	1.0 TO 3.0	Regional Campus Only	IND	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00 to 3.00. The student selects an engineering design project and works under the direction of the faculty sponsor. Suitable projects may be from the local industrial, municipal, state, and educational communities.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										IND	
Update to PIN	ECE49200	Senior Design	Senior Design	0.0 OR 3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. General design methodology, consideration of alternative solutions, and project planning in design. Influence of safety, reliability, economics, and aesthetics on design of engineering systems. Interpretation of specifications and requests for proposals. Early in the course, teams of students will be assigned a major design problem that will be the focus throughout the course. Oral presentation and report writing required.
						LAB		Campus	Include	PIU	
						DIS		Schedule		DIS	
										LAB	
										LEC	
Keep PWL - Offer at PIN	ECE49401	Professional Comm Capstone	Professional Communication Capstone	1.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. This course provides ECE students an opportunity to refine their professional communication skills before launching into the workplace or graduate school. Topics include: ethics in ECE, workplace communication (written and verbal), and
						LEC		Campus	Include	PWL	
								Program	Include	COMPENGR-BSE	
									Include	ECE-BSE	
								Schedule		DIS	
										LEC	
Archive PWL and PIN	ECE49500	Selected Tpcs In ECE	Selected Topics In Electrical And Computer Engineering	0.0 TO 4.0	School of Elec & Computer Engr	IND	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 1.00 to 4.00. Topics vary. Permission of department required.
						DIS	Upper Division	Campus	Include	PFW	
						LEC	Variable Title		Include	PIU	
						LAB			Include	PNC	
						PSO			Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										IND	
										LAB	
										LEC	
										PSO	

Keep PWL - Offer at PIN	ECE49595	Selected Topics In ECE	Selected Topics In Electrical And Computer Engineering	0.0 TO 5.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00 to 5.00. Topics vary. Permission of department required.
						IND	Variable Title	Campus	Include	PWL	
						LAB		College	Include	EC	
						LEC		Schedule		DIS	
						PSO				IND	
						LBP				LAB	
										LBP	
										LEC	
										PSO	
Keep PWL - Update to PIN	ECE49600	EE And CMPE Projects	Electrical And Computer Engineering Projects	0.0 TO 18.0	School of Elec & Computer Engr	DIS	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 0.00 to 18.00. Arrange Hours and Credit. Topics vary. Permission of department required. Permission of instructor required.
						IND	Upper Division	Campus	Include	PFW	
						LEC	Variable Title		Include	PIU	
						EX			Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										EX	
										IND	
										LEC	

Status	PIN	Short Title	Long Title	Credit	College	Sched Types	Attributes	Restrictions			Course Description
Archive	ECE20000	Elec & Comptr Engr Sem	Electrical And Computer Engineering Seminar	0.0	School of Elec & Computer Engr	LEC	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 0.00. An introduction to the School of Electrical and Computer Engineering, ECE program objectives and outcomes, BSEE & BSCmpE degree requirements, and professional development.
						DIS		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Archive	ECE20100	Linear Circuit Anly I	Linear Circuit Analysis I	3.0	School of Elec & Computer Engr	DIS	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Volt-ampere characteristics for circuit elements; independent and dependent sources; Kirchhoff's laws and circuit equations. Source transformations; Thevenin's and Norton's theorems; superposition, step response of 1st order (RC, RL) and 2nd order (RLC) circuits. Phasor analysis, impedance calculations, and computation of sinusoidal steady state responses. Instantaneous and average power, complex power, power factor correction, and maximum power transfer. Instantaneous and average power.
						LEC	Dept Credit	Area			
							Exempt	Campus	Include	PFW	
							Lower Division		Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	AB	
									Include	AE	
									Include	BE	
									Include	CE	
									Include	CH	
									Include	CN	
									Include	E	
									Include	EC	
									Include	ID	
									Include	IE	
									Include	ME	
									Include	MS	
									Include	NE	
								Schedule		DIS	
										LEC	
Keep-Change to PIN	ECE20200	Linear Circuit Anly II	Linear Circuit Analysis II	3.0	School of Elec & Computer Engr	LEC	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Continuation of ECE 20100. Use of Laplace Transform techniques to analyze linear circuits with and without initial conditions. Characterization of circuits based upon impedance, admittance, and transfer function parameters. Determination of frequency response via analysis of poles and zeros in the complex plane. Relationship between the transfer function and the impulse response of a circuit. Use of continuous
						DIS	Lower Division	Campus	Include	PFW	
									Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
									Include	ID	
								Schedule		DIS	
										LEC	
Archive	ECE20400	Int Elec & Electr Circ	Introduction To Electrical And Electronic Circuits	4.0	Regional Campus Only	LEC	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. Students will learn basics of electrical and electronic circuits including introduction to analog and digital electronic circuits. Measurement of electrical signals using meters, probes, and oscilloscopes are covered in the laboratory component of the course. Circuits are designed for minimum hardware with emphasis on understanding analog and digital electronics with particular use of digital and analog microchips. Non-ECE majors who complete this course can continue the digital course sequence offered by the ECE department including microprocessor systems and interfacing, and digital signal processing. No credit will be given for ECE majors.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	

Archive	ECE20500	Int Elec & Electr Circ	Introduction To Electrical And Electronic Circuits	3.0	Regional Campus Only	LEC	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Students will learn basics of electrical and electronic circuits including introduction to analog and digital electronic circuits. Circuits are designed for minimum hardware with emphasis on understanding analog and digital electronics with particular use of digital and analog microchips. Non-ECE majors who complete this course can continue the digital course sequence offered by the ECE department including microprocessor systems and interfacing, and digital signal processing. No credit will be given for ECE majors.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Archive	ECE20501	Intro Elec Circs, Sens, Motors	Introduction To Electrical Circuits, Sensors, And Motors Lect	0.0 OR 3.0	Regional Campus Only	DIS	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. The basics of electrical circuit analysis using Kirchhoff's laws, node voltage, mesh current, superposition, the maximum power theorem; transient analysis of RL / RC circuits; Bipolar Junction Transistor DC analysis; basics of simple sensors; basic operation of rotating electric machines; basics of digital logic circuits. Non-ECE majors only.
						LEC		Campus	Include	PIU	
						REC		Schedule		DIS	
										LEC	
										REC	
Archive	ECE20502	Intro Elec Cir,Sen,& Motor Lab	Introduction To Electrical Circuits, Sensors, And Motors Lab	1.0	Regional Campus Only	DIS	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Students will learn the basics of electrical signal measurements using meters, probes, oscilloscopes; basic measurements using simple sensors; basic measurements as applied to motors. Circuits are designed for basic hardware with emphasis on understanding analog and digital electronics with practical use of digital and analog-interface microcontrollers. Non-ECE majors only.
						LAB		Campus	Include	PIU	
								Schedule		DIS	
										LAB	
Archive	ECE20700	Elect Measur Technique	Electronic Measurement Techniques	1.0	School of Elec & Computer Engr	LAB	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Experimental exercises in the use of laboratory instruments. Voltage, current, impedance, frequency, and wave form measurements. Frequency and transient response. Elements of circuit modeling and design.
						DIS	Dept Credit	Campus	Include	PFW	
							Lower Division		Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
									Include	ME	
								Schedule		DIS	
										LAB	
Keep-Change to PIN	ECE20800	Electron Dev & Des Lab	Electronic Devices And Design Laboratory	1.0	School of Elec & Computer Engr	DIS	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Laboratory experiments in the measurement of electronic device characteristics. Design of biasing networks, small signal amplifiers, and switching circuits.
						LAB	Lower Division	Campus	Include	PFW	
									Include	PIU	
									Include	PWL	
								College	Include	EC	
									Include	ID	
								Schedule		DIS	
										LAB	
Archive	ECE21000	ECE Sophomore Seminar	Electrical And Computer Engineering Sophomore Seminar	1.0	Regional Campus Only	LEC	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 1.00. An introduction to the School of Electrical and Computer Engineering, ECE program objectives and outcomes, BSEE and BSCmpE degree requirements, and professional development.
						DIS	Lower Division	Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Keep-Change to PIN	ECE25500	Intr Electron Anly Des	Introduction To Electronic Analysis And Design	3.0	School of Elec & Computer Engr	DIS	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Diode, bipolar transistor, and FET circuit models for the design and analysis of electronic circuits. Single and multistage analysis and design; introduction to digital circuits. Computer-aided design calculations, amplifier operating point design, and frequency response of single and multistage amplifiers. High-frequency and low-
						LEC		Campus	Include	PFW	
									Include	PIU	
									Include	PWL	

								College	Include	EC	
									Include	ID	
								Schedule		DIS	
										LEC	
Archive	ECE26100	Engineering Programming Lab	Engineering Programming Lab	1.0	Regional Campus Only	LAB	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Introduction to problem solving using software tools, in particular the C programming language.
						DIS	Lower Division	Campus	Include	PIU	
								Schedule		DIS	
										LAB	
Archive	ECE26200	Program For Engineers	Programming For Engineers	0.0 OR 4.0	Regional Campus Only	LEC	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. Introduction to programming, problem solving and the C programming language.
						DIS		Campus	Include	PIU	
						LAB		Schedule		DIS	
										LAB	
										LEC	
Archive	ECE26300	Intro Computing In Elect Engr	Introduction To Computing In Electrical Engineering	3.0	Regional Campus Only	LEC	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 3.00. An introductory course in computing programming with an emphasis on program decomposition and program structure. The objective of the course is to introduce the student to problem solving using high-level languages. The students are also introduced to number concepts fundamental in electrical engineering. Programming will be in "C" in order to develop a structured approach to problem solving. Problems
						DIS	Lower Division	Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Keep-Change to PIN	ECE26400	Advanced C Programming	Advanced C Programming	3.0	School of Elec & Computer Engr	LEC	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Continuation of a first programming course. Topics include files, structures, pointers, and the proper use of dynamic data structures. A basic knowledge of the UNIX operating system and an introductory C programming course; C
						DIS	Lower Division	Campus	Include	CEC	
									Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	BE	
									Include	EC	
								Schedule		DIS	
										LEC	
Archive	ECE26600	Digital Logic Design	Digital Logic Design	3.0	Regional Campus Only	LEC	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Introduction to logic design, with emphasis on practical design techniques and circuit implementation. Topics include Boolean algebra; theory of logic functions; mapping techniques and function minimization; logic equivalent circuits and symbol transformations; transistor-transistor-logic (TTL)/metal oxide semi-conductor (MOS) logic into gate implementations; electrical characteristics; propagation delays; signed number notations and arithmetic; binary and decimal arithmetic logic circuits; theory of sequential circuits; timing diagrams; analysis and synthesis of SR-, D-, T-, and JK-based sequential circuits; clock generation circuits; algorithmic state machine method of designing sequential circuits.
						DIS	Lower Division	Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Archive	ECE26700	Dig Logic Design Lab	Digital Logic Design Laboratory	1.0	Regional Campus Only	LAB	Credit By Exam	Type	Include/Exclude	Restriction	
						DIS	Lower Division	Campus	Include	PIU	
								Schedule		DIS	
										LAB	
Keep-Change to PIN	ECE27000	Intro Digitl Sys Desgn	Introduction To Digital System Design	0.0 OR 4.0	School of Elec & Computer Engr	LAB	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 4.00. An introduction to digital system design and hardware engineering, with an emphasis on practical design techniques and circuit implementation.
						LEC	Lower Division	Campus	Include	PFW	
						DIS			Include	PIU	
						LE1			Include	PWL	
						REC		College	Include	EC	
								Schedule		DIS	

											LAB	
											LE1	
											LEC	
											REC	
	ECE27900	Soph Part In VIP In ECE	Sophomore Participation In Vertically Integrated Projects In	0.0 TO 2.0	School of Elec & Computer Engr	LAB	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00 or 2.00. This course provides an opportunity for undergraduate students to explore and develop comprehensive applications of electrical and computer engineering technologies, especially as they relate to active research areas of Purdue faculty members. Students will learn about the underlying research, and will work on
						LEC		Campus	Include	PWL	
Archive						DIS		Classification	Include	03	
									Include	04	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
	ECE28200	UNIX Program For Engrs	UNIX Programming For Engineers	1.0	Regional Campus Only	LAB	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Introduction to the UNIX operating system, including the UNIX file system, UNIX tools, and utilities. Introduction to Shell programming. The emphasis will be on how these tools/utilities are utilized in the Computing Engineering field.
Archive						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LAB	
	ECE29500	Sel Topics Elec/Comp Engr I	Selected Topics In Electrical And Computer Engineering I	0.0 TO 4.0	Regional Campus Only	DIS	Lower Division	Type	Include/Exclude	Restriction	Credit Hours: 0.00 to 4.00. Variable topic and experimental courses appropriate at the sophomore level, as approved by the ECE Curriculum Committee at IUPUI.
Archive						LEC	Variable Title	Campus	Include	PIU	
						IND		Schedule		DIS	
										IND	
										LEC	
	ECE30100	Signals And Systems	Signals And Systems	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Classification, analysis and design of systems in both the time- and frequency-domains. Continuous-time linear systems: Fourier Series, Fourier Transform, bilateral Laplace Transform. Discrete-time linear systems: difference equations, Discrete-Time Fourier Transform, bilateral Z-Transform. Sampling, quantization, and discrete-time processing of continuous-time signals. Discrete-time nonlinear systems: median-type filters, threshold decomposition. System design examples such as the compact disc player and AM radio.
						DIS		Campus	Include	CEC	
									Include	PFW	
Keep-Change to PIN									Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	BE	
									Include	EC	
									Include	ID	
								Schedule		DIS	
										LEC	
	ECE30200	Probabilistic Methods	Probabilistic Methods In Electrical And Computer Engineerin	3	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. An introductory treatment including probability of events, discrete and continuous random variables, multiple random variables, sums of random variables
						DIS		Campus	Include	CEC	
						LAB			Include	PFW	
Keep-Change to PIN									Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
	ECE30500	Semiconductor Devices	Semiconductor Devices	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Introduces and explains terminology, models, properties, and concepts associated with semiconductor devices. Provides detailed insight into the internal workings of the "building-block" device structures such as the pn-junction diode,
						DIS		Campus	Include	CEC	

Keep-Change to PIN										Include	PIU	
										Include	PWL	
								College		Include	BE	
										Include	EC	
								Schedule			DIS	
											LEC	
Archive	ECE31100	Elec & Magnetic Fields	Electric And Magnetic Fields	3.0	School of Elec & Computer Engr	LEC	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Continued study of vector calculus, electrostatics, and magnetostatics, and Maxwell's equations. Introduction to electromagnetic waves, transmission lines, and radiation from antennas.	
						DIS	Upper Division	Campus	Include	PFW		
						LAB			Include	PIU		
									Include	PNC		
									Include	PUC		
									Include	PWL		
								College	Include	BE		
									Include	EC		
								Schedule		DIS		
										LAB		
										LEC		
Archive	ECE31500	Fund Electrical Energy Engr	Fundamentals Of Electrical Energy Engineering	3.0	Regional Campus Only	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Resistive circuit analysis with controlled sources. Sinusoidal frequency response, filters and Bode plots. Complex power in AC circuits, ideal transformers and three-phase power. Power electronic circuits including diodes, transistor switches, rectifiers and AC-DC converters. Magnetic circuits, magnetic materials and B-H curves. Transformer equivalent circuit models. No credit will be given for ECE majors.	
						LEC		Campus	Include	PIU		
								Schedule		DIS		
										LEC		
Keep-Change to PIN	ECE32100	Electromech Motion Dev	Electromechanical Motion Devices	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. The general theory of electromechanical motion devices relating electric variables and electromagnetic forces. The basic concepts and operational behavior of DC, induction, brushless DC, and stepper motors used in control applications are presented.	
						DIS		Campus	Include	CEC		
									Include	PIU		
									Include	PNC		
									Include	PUC		
									Include	PWL		
								College	Include	EC		
								Schedule		DIS		
										LEC		
Keep-Change to PIN	ECE32600	Engineering Project Managemen	Engineering Project Management	3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. (ME 32600) Project management is an important skill that is needed in the private and public sectors as well as specialty businesses. This course will explore the challenges facing today's project managers and will provide a broad understanding of the project management environment focused on multiple aspects of the project.	
						DIS		Campus	Include	PIU		
								Classification	Exclude	01		
									Exclude	02		
								Schedule		DIS		
										LEC		

Keep-Change to PIN	ECE32700	Engineering Economics	Engineering Economics	3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. (ME 32700) Engineering Economics is designed as an overview of economics with a focus on how it relates to the practice of engineering. Topics include interest formulas, rate of return, life cost analysis, depreciation, taxes, and cash flow.
						DIS		Campus	Include	PIU	
								Classification	Exclude	01	
									Exclude	02	
								Schedule		DIS	
										LEC	
Keep-Change to PIN	ECE34000	Simu Modeling & Ident	Simulation, Modeling, and Identification	0.0 OR 3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Investigation and evaluation of design problems through simulation of systems described by ordinary differential and difference equations. Development of simulation models from physical parameters and from experimental data. Topics include continuous, discrete, and hybrid models of electrical, mechanical, and biological systems. Laboratory experiences demonstrate concepts studied in text and lecture.
						LAB		Campus	Include	PIU	
						DIS		Schedule		DIS	
										LAB	
										LEC	
Archive	ECE35900	C And Data Structures	C And Data Structures	0.0 OR 3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. An introductory level course on C, a general purpose high-level language with features to facilitate such tasks as systems programming and structuring of data. Students becoming proficient in C language programming will learn techniques of structured programming data structures and how to develop programs that are used regularly in many applications.
						DIS		Campus	Include	PFW	
						REC			Include	PIU	
								Schedule		DIS	
										LEC	
										REC	
Archive	ECE36400	Sftwr Engr Tools Lab	Software Engineering Tools Laboratory	0.0 OR 1.0	Regional Campus Only	LAB	Dept Credit	Type	Include/Exclude	Restriction	Credit Hours: 1.00. To acquaint the students with a variety of current software engineering tools, scripting languages, and application programming languages. Students are expected to use their previous programming experience to design and test software programs using the techniques learned in this course.
						LBP	Upper Division	Campus	Include	PIU	
						DIS		College	Include	BE	
									Include	EC	
								Schedule		DIS	
										LAB	
										LBP	
Archive	ECE36500	Digital Comp Design	Introduction To The Design Of Digital Computers	3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. The hardware organization of computer systems including the following topics: instruction set selection, arithmetic/logic unit design, hard-wired and microprogrammed control schemes, memory organization, IO interface design. The course will involve computer simulation of digital systems.
						DIS		Campus	Include	PFW	
									Include	PIU	
								Schedule		DIS	
										LEC	
Keep-Change to PIN	ECE36900	Disc Math For Comp Eng	Discrete Mathematics For Computer Engineering	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. This course introduces discrete mathematical structures and finite-state machines. Students will learn how to use logical and mathematical formalisms to formulate and solve problems in computer engineering. Topics include formal logic, proof techniques, recurrence relations, sets, combinatorics, relations, functions, algebraic structures, and finite-state machines.
						DIS		Campus	Include	PFW	
									Include	PIU	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	

Keep-Change to PIN	ECE37200	Principals Of Software Design	Principles Of Software Design	3.0	Regional Campus Only	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. (CSCI 36300) This course is designed to teach students best practices in designing and implementing object-oriented systems of high quality. To accomplish this task, we start with an overview of software design patterns and their role in developing high-quality software. We then begin surveying different design-level
						LEC		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Archive	ECE37900	Junior Part In VIP In ECE	Junior Participation In Vertically Integrated Projects (VIP) In	0.0 TO 2.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00 or 2.00. This course provides an opportunity for undergraduate students to explore and develop comprehensive applications of electrical and computer engineering technologies, especially as they relate to active research areas of Purdue faculty members. Students will learn about the underlying research, and will work on
						LAB		Campus	Include	PWL	
						LEC		Classification	Include	05	
									Include	06	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Keep-Change to PIN	ECE38200	Fdbk Sys Anly & Design	Feedback System Analysis And Design	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. In this course, classical concepts of feedback system analysis and associated compensation techniques are presented. In particular, the root locus, Bode diagram, and Nyquist criterion are used as determinants of stability.
						DIS		Campus	Include	PFW	
									Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Archive	ECE39501	Sel Topics Elec/ Comp Engr II	Selected Topics In Electrical And Computer Engineering II	0.0 TO 4.0	Regional Campus Only	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 0.00 to 4.00. Variable topic and experimental courses appropriate at the junior level, as approved by the ECE Curriculum Committee at IUPUI.
						LEC	Variable Title	Campus	Include	PIU	
						REC		Schedule		DIS	
						IND				IND	
										LEC	
										REC	
Archive	ECE40000	Prof Devel And Career Guidance	Professional Development And Career Guidance	1.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. A lecture-demonstration series emphasizing evaluation of career options, identification and development of professional skills. Examples of career-related topics include choosing a job, and post-graduate education in engineering or other
						DIS		Campus	Include	PIU	
									Include	PWL	
								Classification	Exclude	01	
									Exclude	02	
									Exclude	03	
									Exclude	04	
									Exclude	05	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Archive	ECE40020	Sound Reinforcement Sys Desig	Sound Reinforcement System Design	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. An introduction to computational tools used in the measurement and analysis of electro-acoustic systems, and their application to sound reinforcement system engineering. Service learning based projects, serving the needs of community clients, provide the context for application of sound reinforcement system design principles and
						LEC		Campus	Include	PWL	
								Major	Include	ECEB	
									Include	IDE	
								Schedule		DIS	
										LEC	
Keep-Change to PIN	ECE40100	Engr Ethics/Profssnlsm	Engineering Ethics and Professionalism	1.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. Some ethical, social, political, legal, and ecological issues that practicing engineers may encounter. (ECE 401 and ME 401 are cross-listed courses; students may not get credit for both ECE 401 and ME 401.).
						DIS		Campus	Include	PIU	

								Schedule		DIS	
										LEC	
Archive	ECE40200	EE Design Projects	Electrical Engineering Design Projects	0.0 OR 3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Lecture sessions provide the student with background information on the design and management of projects. Formal lectures cover, for example, design for manufacturability, design for quality, test and evaluation, reliability and ethics, patents and copyrights, plus case studies. During the laboratory sessions, the students work in teams on a challenging open-ended electrical engineering project that draws on previous coursework. Projects routinely involve standard design facets (such as consideration of alternative solutions, feasibility considerations, and detailed system descriptions) and include a number of realistic constraints (such as cost, safety, reliability, and aesthetics). Completion of BS EE or BS CmpE core curriculum.
						DIS		Area		ECE40200	
						LAB		Campus	Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Archive	ECE40800	Oper Syst & Syst Prog	Operating Systems And Systems Programming	3.0	Regional Campus Only	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Students will learn to design and construct operating systems for both individual computers and distributed systems, and to apply and utilize operating system functionality to their application development. The course will cover basic concepts and methods for managing processor, main memory, storage, and network resources, including their system functions. Detailed examples are taken from a number of operating systems, emphasizing the techniques used in networked UNIX and embedded Linux.
								Campus	Include	PIU	
								Schedule		DIS	
Archive	ECE41000	Intro Dig Signal Proc	Introduction to Digital Signal Processing	0.0 OR 3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. An introductory treatment of digital signal processing algorithms and implementation using high-speed digital signal processors. Sampling, architecture, addressing modes and instruction set of digital signal processors, discrete Fourier transform, fast Fourier transform, and digital filtering.
						DIS		Campus	Include	PIU	
						LAB		Schedule		DIS	
										LAB	
										LEC	
Archive	ECE41700	Multimedia Application	Multimedia Applications	3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. An introductory treatment of multimedia algorithms and implementation using high-speed multimedia processors. Detailed discussion of architecture, addressing modes and instruction set of multimedia processors, entropy coding, transform coding, speech compression, image compression, and video compression.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Archive	ECE42100	Adv Digtl Syst Design	Advanced Digital Systems Design	3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Advanced topics in digital design. Boolean logic. Logic optimization, VLSI and ASIC design basics. Design. Simulation. Placement and routing. Logic synthesis. FPGA structure. FPGA implementation. FPGA design flow. Verilog and VHDL coding.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Archive	ECE42400	Elctrmch Sys&Appl Mech	Electromechanical Systems And Applied Mechatronics	3.0	Regional Campus Only	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Design, optimization and control of electromechanical and mechatronic systems. omprehensive dynamic analysis, modeling, and simulation of electric machines, power electronics, and sensors. Application of advanced software and hardware in mechatronic systems design and optimization.
						LEC		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Archive	ECE42700	Semiconductor Pow Elec	Semiconductor Power Electronics	0.0 OR 3.0	Regional Campus Only	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Introduction to power semiconductor devices, characteristics, and ratings. Emphasis on analysis and design of circuits with power semiconductors and associated devices. Power rectification, inversion, AC-to-AC power control, firing circuits, and microcomputer control of power circuits.
						DIS		Campus	Include	PIU	
						LEC		Schedule		DIS	
										LAB	
										LEC	
	ECE43200	Elmnt Power Syst Engr	Elements Of Power System Engineering	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Fundamental concepts of power system analysis, transmission line parameters, basic system models, steady-state performance, network calculations, power
						LEC		Campus	Include	PIU	

Keep-Change to PIN										Include	PNC	
										Include	PUC	
										Include	PWL	
									Classification	Include	07	
										Include	08	
									College	Include	EC	
									Schedule		DIS	
											LEC	
Keep-Change to PIN	ECE43700	Computer Des&Prototypg	Computer Design And Prototyping	0.0 OR 4.0	School of Elec & Computer Engr	LAB	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. An introduction to computer organization and design, including instruction set selection, arithmetic logic unit design, data path design, control strategies, pipelining, memory hierarchy, and I/O interface design.	
						DIS		Campus	Include	PFW		
						LEC			Include	PIU		
									Include	PWL		
								College	Include	EC		
								Schedule		DIS		
										LAB		
										LEC		
Keep-Change to PIN	ECE44000	Transmission Informa	Transmission Of Information	0.0 OR 4.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. Analysis and design of analog and digital communication systems. Emphasis on engineering applications of theory to communication system design. The laboratory introduces the use of advanced engineering workstations in the design and testing of communication systems.	
						DIS		Campus	Include	PIU		
						LAB			Include	PNC		
									Include	PUC		
									Include	PWL		
								College	Include	EC		
								Schedule		DIS		
										LAB		
										LEC		
Keep-Change to PIN	ECE45500	Integrated Circ Engrg	Integrated Circuit Engineering	3.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Analysis, design, and fabrication of silicon bipolar and MOSFET monolithic integrated circuits. Consideration of amplifier circuit design and fabrication	
						LEC		Campus	Include	PIU		
									Include	PWL		
								College	Include	EC		
								Schedule		DIS		
										LEC		
Keep-Change to PIN	ECE46100	Software Engineering	Software Engineering	0.0 OR 3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. Introduction to software engineering principles, with special emphasis on the process, methods, and tools needed to develop and test quality software products and systems.	
						PSO		Campus	Include	PIU		
						DIS			Include	PWL		
								College	Include	EC		
								Schedule		DIS		
										LEC		
										PSO		
Keep-Change to PIN	ECE46300	Intro Comp Comm Netwrk	Introduction To Computer Communication Networks	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. An introduction to the design and implementation of computer communication networks. The focus is on the concepts and the fundamental design principles that have contributed to the global Internet success. Topics include: digital	
						DIS		Campus	Include	PIU		
									Include	PNC		
									Include	PUC		
									Include	PWL		
								Major	Include	CMPE		
									Include	ECEB		
								Schedule		DIS		
										LEC		

Keep-Change to PIN	ECE46800	Int Cmplrs & Trnsl Eng	Introduction To Compilers And Translation Engineering	0.0 OR 4.0	School of Elec & Computer Engr	DIS	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 4.00. The design and construction of compilers and other translators. Topics include compilation goals, organization of a translator, grammars and languages, symbol tables, lexical analysis, syntax analysis (parsing), error handling, intermediate and final code generation, assemblers, interpreters, and an introduction to optimization. Emphasis is on engineering a compiler or interpreter for a small programming language - typically a C or Pascal subset. Projects involve the stepwise implementation (and documentation) of such a system. Department permission required.
						LEC		Campus	Include	PIU	
						LAB			Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LAB	
										LEC	
Archive	ECE47100	Embedded System	Embedded Microcontroller, Microprocessor, and DSP-Based	3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. A structured approach to the development and integration of embedded microcontroller/microprocessor/DSP-based systems. The course provides students with design experience of embedded systems. The course covers the microprocessor selection, the configuration of peripheral components, and the hardware abstraction techniques. The course also covers the C programming techniques for embedded systems and using a fixed point microprocessor for floating point calculations.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Keep-Change to PIN	ECE48300	Digital Control Systms	Digital Control Systems Analysis And Design	3.0	School of Elec & Computer Engr	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. The course introduces feedback computer controlled systems, the components of digital control systems, and system models on the z-domain (z-transfer functions) and on the time domain (state variable representations.) The objectives for system design and evaluation of system performance are considered. Various discrete-
						DIS		Campus	Include	PFW	
									Include	PIU	
									Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										LEC	
Archive	ECE48700	Senior Design I	Senior Design I	1.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00. A real-life experience in engineering problem solving in a group setting from identification, planning and execution to professional-quality written and oral presentations. This is the first semester of a two semester course sequence. Prerequisites: Intent to graduate within two semesters.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Archive	ECE48800	Senior Design II	Senior Design II	0.0 OR 2.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 2.00. A real-life experience in engineering problem solving in a group setting from identification, planning and execution to professional-quality written and oral presentations. This is the second semester of a two semester course sequence.
						LAB		Campus	Include	PIU	
						DIS		Schedule		DIS	
										LAB	
										LEC	
Archive	ECE48900	Intro To Robotics	Introduction to Robotics	3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										LEC	
Archive	ECE49100	Engr Design Projects	Engineering Design Project	1.0 TO 3.0	Regional Campus Only	IND	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 1.00 to 3.00. The student selects an engineering design project and works under the direction of the faculty sponsor. Suitable projects may be from the local industrial, municipal, state, and educational communities.
						DIS		Campus	Include	PIU	
								Schedule		DIS	
										IND	
Archive	ECE49200	Senior Design	Senior Design	0.0 OR 3.0	Regional Campus Only	LEC	Upper Division	Type	Include/Exclude	Restriction	Credit Hours: 3.00. General design methodology, consideration of alternative solutions, and project planning in design. Influence of safety, reliability, economics, and aesthetics on design of engineering systems. Interpretation of specifications and requests for proposals. Early in the course, teams of students will be assigned a major design problem that will be the focus throughout the course. Oral presentation and report writing required.

						LAB		Campus	Include	PIU	
						DIS		Schedule		DIS	
										LAB	
										LEC	
Archive	ECE49500	Selected Tpcs In ECE	Selected Topics In Electrical And Computer Engineering	0.0 TO 4.0	School of Elec & Computer Engr	IND	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 1.00 to 4.00. Topics vary. Permission of department required.
						DIS	Upper Division	Campus	Include	PFW	
						LEC	Variable Title		Include	PIU	
						LAB			Include	PNC	
						PSO			Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										IND	
										LAB	
										LEC	
										PSO	
Keep-Change to PIN	ECE49600	EE And CMPE Projects	Electrical And Computer Engineering Projects	0.0 TO 18.0	School of Elec & Computer Engr	DIS	Credit By Exam	Type	Include/Exclude	Restriction	Credit Hours: 0.00 to 18.00. Arrange Hours and Credit. Topics vary. Permission of department required. Permission of instructor required.
						IND	Upper Division	Campus	Include	PFW	
						LEC	Variable Title		Include	PIU	
						EX			Include	PNC	
									Include	PUC	
									Include	PWL	
								College	Include	EC	
								Schedule		DIS	
										EX	
										IND	
										LEC	