ELECTRICAL ENGINEERING

Curriculum Guide effective Fall 2017 ~ North Dakota State University

STUDENT _____ ID # _____ ADVISOR_____

	Fall					Spring				
	Course		Crs	Grade	Gen Ed	Course		Crs	Grade	Gen Ed
Freshman (<27 crs)	CHEM 121	General Chemistry I	3		S	ECE 111[∀]	Intro to ECE	3		
	Wellness Elec		2		W	ENGL 120	College Composition II	3		C
	ECE 173	Intro to Computing	4			MATH 129	Basic Linear Algebra	3		
	ENGL 110	College Composition I	3		C	MATH 166	Calculus II	4		
	MATH 165	Calculus I	4		R	PHYS 251	Univ Physics I	4		S
			16					**17**		
Sophomore (27-59 crs)	EE 206	Circuit Analysis I/lab	4			COMM 110	Fund Public Speaking	3		C
	MATH 265	Calculus III (w/vectors)	4			ECE 311	Circuit Analysis II/lab	4		
	PHYS 252	Univ Physics II	4		S	MATH 266	Intro Differential Equations	3		
	ECE 275	Digital Design/lab	4			Tech Elective		3		
	Gen Ed Elective	Science Lab	1		L	Gen Ed Elective[¥]		3		A or B
			17					**16**		
Junior (60 - 89 crs)	ECE 320	Electronics I/lab	3			ECE 341	Random Processes	3		
	ECE 321	Electronics II/lab	2			ECE 401	Design I (capstone)	1		
	ECE 376	Embedded Systems/lab	4			ECE 331	Energy Conversion/lab	4		
	ECE 351	Applied EM/lab	4			Tech Elective		3		
	ENGL	*Upper Level Writing**	3		C	ECE 343	Signals & Systems	4		
			16					**15**		
Senior (90 + crs)	ECE 403	Design II (capstone)	2			ECE 405	Design III (capstone)	3		
	ENGR 402	Engr Ethics/Social Resp	1			ECE Elective		3		
	ECE Elective		3			ECE Elective		3		
	Tech Elective		3			Gen Ed Elective		3		A or B
	Gen Ed Elective[ǂ]		3		A or B	Tech Elective		3		
	Gen Ed Elective[ǂ]		3		A or B					
			15					**15**		
						TOTAL CREDITS		**127**		

General Education Electives

Approved courses listed in the registration schedule centerfold.

Gen Ed	Course	Crs	Grade
A		3	
A		3	
B		3	
B		3	
D ■	(double-count with A or B above)		
G ●	(double-count with A or B above)		
L		1	
W		2	

General Education Categories:

A - Humanities/Fine Arts
B - Social/Behavioral Sciences
C - Communication
D - Cultural Diversity ■
F - First-Year Experience
G - Global Perspectives ●
L - Co-requisite Lab
R - Quantitative Reasoning
S - Science & Technology
W - Wellness

[¥] Suggested to take either ECON 105, ECON 201, or ECON 202

*Select from ENGL 320, 321, 324 or 459 to satisfy the Upper Level Writing for General Education

[ǂ] Suggested to take ENGR 312 and ENGR 311

ECE Elective: any didactic ECE 4xx course[2] (not x93, 494, 496)

Tech Elective: ECE 374, any didactic ECE 4xx course[2], ECE x93 or 494 (max 6 credits total between x93 and 494), ECE 496 (max 3 credits), or any course from accompanying list

[∀] Students must take ECE 111 prior to enrolling in ECE courses listed above in the Junior or Senior year; otherwise, students must take an additional ECE Elective in lieu of ECE 111

Students must earn a "C" or better in ECE 173, ECE 275, EE 206, and all required MATH courses, before enrolling in ECE courses listed above in the Junior or Senior years

[1] Students must have at least a 2.0 GPA in all required EE and ECE courses taken at NDSU, in order to graduate. Elective ECE courses are not included in this GPA requirement.

[2] See http://bulletin.ndsu.edu/course-catalog/descriptions/ece/ for the full list of ECE courses

Electrical Engineering
TECH ELECTIVES

Curriculum updated 5/2017

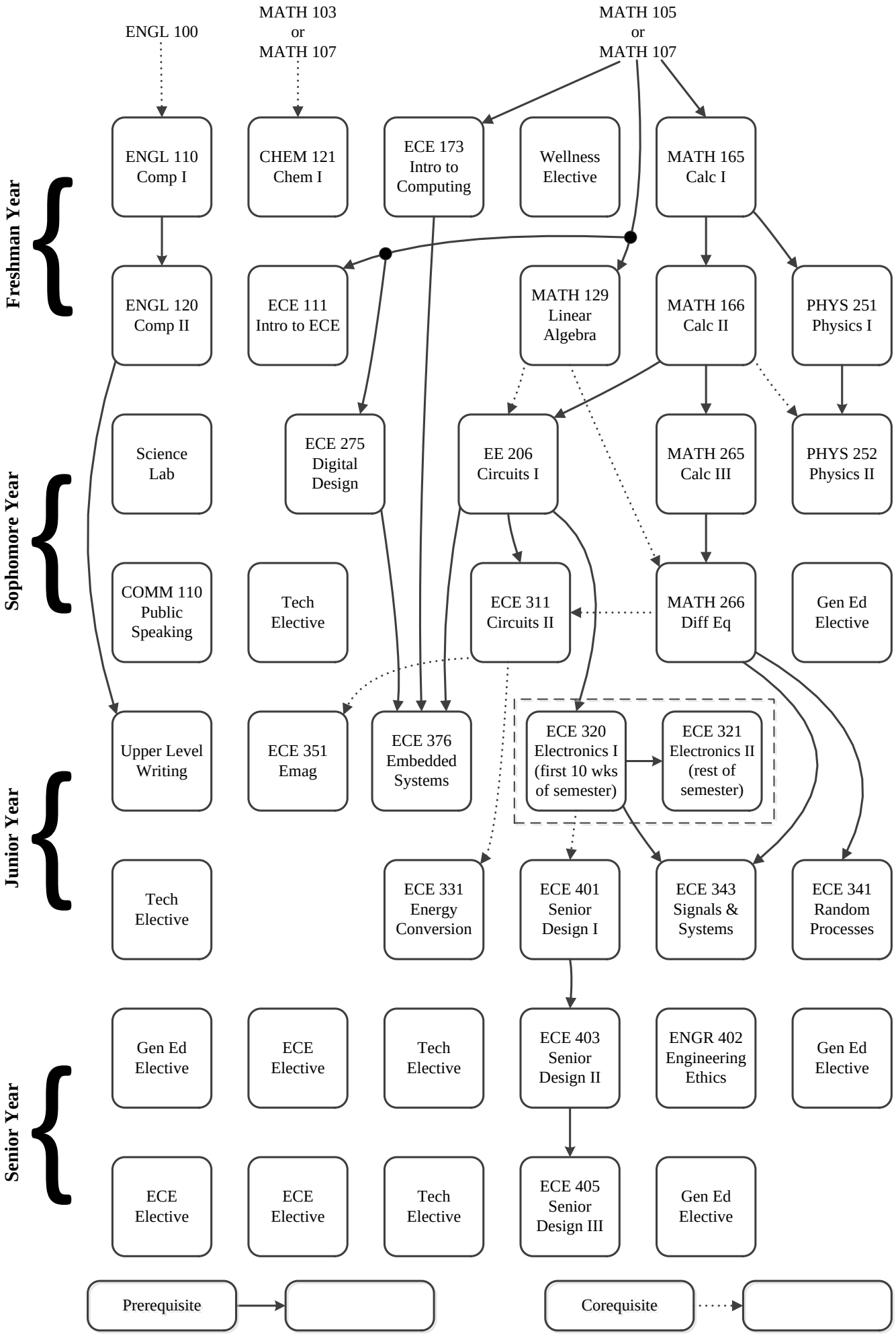
ECE 374	Computer Organization	4
ECE 4xx	Any Didactic 4xx ECE Course[4]	3-4
ECE x93	Undergraduate Research (max 6 credits)[3]	1-3
ECE 494	Independent Study (max 6 credits)[3]	1-3
ECE 496	Field Experience (max 3 credits)	3
ABEN 456	Biobased Energy	3
BIOL 150/150L	General Biology I and Lab*	4
BIOL 220/220L	Human Anatomy and Physiology I and Lab*	4
BIOL 221/221L	Human Anatomy and Physiology II and Lab*	4
BIOL 315/315L	Genetics and Lab*	4
CE 309/310	Fluid Mechanics and Lab*	4
CE/ME 486	Nanotechnology and Nanomaterials	3
CHEM 122/122L	General Chemistry II and Lab*	4
CHEM 341/341L	Organic Chemistry I and Lab*	4
CHEM 342/342L	Organic Chemistry II and Lab*	4
CHEM 364	Physical Chemistry I	3
CHEM 365/471	Physical Chemistry II and Lab*	5
CHEM 425/429	Inorganic Chemistry I and Lab*	5
CSCI 161	Computer Science II	4
CSCI 222	Discrete Mathematics	3
CSCI 336	Theoretical Computer Science II	3
CSCI 366	Files for D-Base Systems	3
CSCI 372	Comparative Languages	3
CSCI 426	Introduction to Artificial Intelligence	3
CSCI 458	Microcomputer Graphics	3
CSCI 459	Foundations of Computer Networks	3
CSCI 467	Algorithm Analysis	3
CSCI 474	Operating Systems Concepts	3
CSCI 475	Operating Systems Design	3
CSCI 477	Object-Oriented Systems	3
ENGR 310	Entrepreneurship for Engineers and Scientists	3

IME 440	Engineering Economy	3
IME 456	Program & Project Management	3
IME 461	Quality Assurance & Control	3-4
MATH 270	Introduction to Abstract Math	3
MATH 420	Abstract Algebra I	3
MATH 421	Abstract Algebra II	3
MATH 429	Linear Algebra	3
MATH 450	Real Analysis I	3
MATH 451	Real Analysis II	3
MATH 452	Complex Analysis	3
MATH 480	Applied Differential Equations	3
MATH 481	Fourier Analysis	3
MATH 483	Partial Differential Equations	3
MATH 488	Numerical Analysis I	3
MATH 489	Numerical Analysis II	3
ME 221	Engineering Mechanics I	3
ME 222	Engineering Mechanics II	3
ME 223	Mechanics of Materials	3
ME 350	Thermodynamics & Heat Transfer	3
ME 470	Renewable Energy Technology	3
MICR 445	Animal Cell Culture Techniques	2
PHYS 350	Modern Physics	3
PHYS 360	Modern Physics II	3
PHYS 413	Lasers for Scientists and Engineers	3
PHYS 415	Elements of Photonics	3
PHYS 485	Quantum Mechanics I	3
STAT 450	Stochastic Processes	3
STAT 451	Bayesian Stat Decision Theory	3
STAT 468	Probability & Math Stats II	3
ZOO 460	Animal Physiology	3

[1] In order for the BIOL, CHEM, and CE lecture/lab courses listed above (denoted with a *) to count as an EE Tech Elective, students must take and pass both the lecture and corresponding lab, which are listed together above

[2] The EE Curriculum requires a minimum of 12 credits of Tech Electives, which can be satisfied by any combination of above courses (e.g., four 3-credit courses, three 4-credit courses, 2 credits of research plus a 4-credit course and two 3-credit courses, etc.)

[3] Total of 6 credits max between ECE 193, 293, 393, 493, and 494

[4] See http://bulletin.ndsu.edu/course-catalog/descriptions/ece/ for the full list of ECE courses

Electrical Engineering Curriculum Flowchart