ELECTRICAL ENGINEERING
Curriculum Guide effective Fall 2015 ~ North Dakota State University

STUDENT _____   ID # _____   ADVISOR_____

Fall					Spring				
Course		Crs	Grade	Gen Ed	**Course**		Crs	Grade	Gen Ed
CHEM 121 General Chemistry I		3		S	**ECE 111ᵛ** Intro to ECE		3		
Wellness Elec		2		W	**ENGL 120** College Composition II		3		C
ECE 173 Intro to Computing		3			**MATH 129** Basic Linear Algebra		2		
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
UNIV 189 Skills for Success		1		F					
		16					16		
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 Electiveᵞ		3		A or B
		17					16		
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		
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 Electiveᵀ		3		A or B	Tech Elective		3		
Gen Ed Electiveᵀ		3		A or B					
		15					15		
					TOTAL CREDITS		126		

(Left margin year labels: Freshman (<27 crs), Sophomore (27-59 crs), Junior (60 - 89 crs), Senior (90 + crs))

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

ᵀSuggested to take ENGR 312 and ENGR 311

ECE Elective: any ECE 4xx course², excluding 494 and 496

Tech Elective: ECE 374, any didactic ECE 4xx course², ECE 494 (max 6 hours), ECE 496 (max 3 hours), or any course from the accompanying list

ᵛStudents 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 4/2015

ECE 374	Computer Organization	4		IME 440	Engineering Economy	3
ECE 4xx	Any Didactic 4xx ECE Course[3]	3-4		IME 456	Program & Project Management	3
ECE 494	Independent Study (max 6 hours)	3		IME 461	Quality Assurance & Control	3-4
ECE 496	Field Experience (max 3 hours)	3		MATH 270	Introduction to Abstract Math	3
ABEN 456	Biobased Energy	3		MATH 420	Abstract Algebra I	3
BIOL 150/150L	General Biology I and Lab*	4		MATH 421	Abstract Algebra II	3
BIOL 220/220L	Human Anatomy and Physiology I and Lab*	4		MATH 429	Linear Algebra	3
BIOL 221/221L	Human Anatomy and Physiology II and Lab*	4		MATH 450	Real Analysis I	3
BIOL 315/315L	Genetics and Lab*	4		MATH 451	Real Analysis II	3
CE 309/310	Fluid Mechanics and Lab*	4		MATH 452	Complex Analysis	3
CE/ME 486	Nanotechnology and Nanomaterials	3		MATH 480	Applied Differential Equations	3
CHEM 122/122L	General Chemistry II and Lab*	4		MATH 481	Fourier Analysis	3
CHEM 341/341L	Organic Chemistry I and Lab*	4		MATH 483	Partial Differential Equations	3
CHEM 342/342L	Organic Chemistry II and Lab*	4		MATH 488	Numerical Analysis I	3
CHEM 364	Physical Chemistry I	3		MATH 489	Numerical Analysis II	3
CHEM 365/471	Physical Chemistry II and Lab*	5		ME 221	Engineering Mechanics I	3
CHEM 425/429	Inorganic Chemistry I and Lab*	5		ME 222	Engineering Mechanics II	3
CSCI 161	Computer Science II	4		ME 223	Mechanics of Materials	3
CSCI 222	Discrete Mathematics	3		ME 350	Thermodynamics & Heat Transfer	3
CSCI 336	Theoretical Computer Science II	3		ME 470	Renewable Energy Technology	3
CSCI 366	Files for D-Base Systems	3		MICR 445	Animal Cell Culture Techniques	2
CSCI 372	Comparative Languages	3		PHYS 350	Modern Physics	3
CSCI 426	Introduction to Artificial Intelligence	3		PHYS 360	Modern Physics II	3
CSCI 458	Microcomputer Graphics	3		PHYS 413	Lasers for Scientists and Engineers	3
CSCI 459	Foundations of Computer Networks	3		PHYS 415	Elements of Photonics	3
CSCI 467	Algorithm Analysis	3		PHYS 485	Quantum Mechanics I	3
CSCI 474	Operating Systems Concepts	3		STAT 450	Stochastic Processes	3
CSCI 475	Operating Systems Design	3		STAT 451	Bayesian Stat Decision Theory	3
CSCI 477	Object-Oriented Systems	3		STAT 468	Probability & Math Stats II	3
ENGR 310	Entrepreneurship for Engineers and Scientists	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; this may be satisfied by either 3 or 4 of the above courses (i.e., four 3-credit courses or three 4-credit courses)

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

Electrical Engineering Curriculum Flowchart

ENGL 100

MATH 103
or
MATH 107

MATH 105
or
MATH 107

Freshman Year

| ENGL 110 Comp I | CHEM 121 Chem I | ECE 173 Intro to Computing | Wellness Elective | MATH 165 Calc I | UNIV 189 Skills for Success |

| ENGL 120 Comp II | ECE 111 Intro to ECE | MATH 129 Linear Algebra | MATH 166 Calc II | PHYS 251 Physics I |

Sophomore Year

| Science Lab | ECE 275 Digital Design | EE 206 Circuits I | MATH 265 Calc III | PHYS 252 Physics II |

| COMM 110 Public Speaking | Tech Elective | ECE 311 Circuits II | MATH 266 Diff Eq | Gen Ed Elective |

Junior Year

| Upper Level Writing | ECE 351 Emag | ECE 376 Embedded Systems | ECE 320 Electronics I (first 10 wks of semester) | ECE 321 Electronics II (rest of semester) | ECE 341 Random Processes |

| Tech Elective | ECE 331 Energy Conversion | ECE 401 Senior Design I | ECE 343 Signals & Systems | |

Senior Year

| Gen Ed Elective | ECE Elective | Tech Elective | ECE 403 Senior Design II | ENGR 402 Engineering Ethics | Gen Ed Elective |

| ECE Elective | ECE Elective | Tech Elective | ECE 405 Senior Design III | Gen Ed Elective |

| Prerequisite | ⟶ | | Corequisite | ⋯⋯⟶ | |