B.S. in Computer Engineering

(120 credit minimum)

First Year		
1st Semester		Credits
CHEM 125	General Chemistry I	3
FED 101	Fundamentals of Engineering Design	2
ENGL 101	English Composition: Introduction to Academic Writing	3
MATH 111	Calculus I	4
PHYS 111	Physics I	3
PHYS 111A	Physics I Lab	1
FYS SEM	First-Year Student Seminar	0
	Term Credits	16
2nd Semester		
CS 115	Introduction to Computer Science I in C++	3
MATH 112	Calculus II	4
PHYS 122	Electricity & Magntsm ECE Appl	3
PHYS 121A	Physics II Lab	1
ECE 101	Introduction to Electrical and Computer Engineering	0
ENGL 102	English Composition: Introduction to Writing for Research	3
	Term Credits	14
Second Year		
1st Semester		
CS 116	Introduction to Computer Science II in C++.	3
ECE 231	Circuits and Systems I	3
ECE 251	Digital Design	3
MATH 222	Differential Equations	4
History and Humaniti requirements/ger-200	ies GER 200 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education- D-level/)	3
	Term Credits	16
2nd Semester		
ECE 232	Circuits and Systems II	3
ECE 252	Microprocessors	3
MATH 213	Calculus III B	4
ECE 294	Analog and Digital Circuits Laboratory	2
ECE 271	Electronic Circuits I	3
	Term Credits	15
Third Year		
1st Semester		
CS 280	Programming Language Concepts	3
ECE 368	Signal Transmission	3
ECE 395	Microprocessor Laboratory	2
MATH 326	Discrete Analysis for Computer Engineers	3
ECE 321	Random Signals and Noise	3
	Term Credits	14
2nd Semester		
CS 332	Principles of Operating Systems	3
MATH 340 or MATH 337	Applied Numerical Methods or Linear Algebra	3
ECE 353	Computer Organization and Architecture	3
PHIL 334	Engineering Ethics and Technological Practice: Philosophical Perspectives on Engineering	3

	Total Credits	120
	Term Credits	14
	ocial Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/ n-requirements/hss-capstone/)	3
Technical Elective		3
COE Track Electiv		3
COE Track Labor	atory Elective	2
ECE 416 or ECE 417	Electrical and Computer Engineering Project II or Electrical & Computer Engineering Project II	3
2nd Semester	Term Credits	16
History and Huma requirements/ger-	,	3
Technical Elective		3
COE Track Election	ve II	3
COE Track Electiv	ve I	3
ECE 495	Computer Engineering Design Lab	3
ECE 414	Electrical and Computer Engineering Project I	1
Fourth Year 1st Semester		
- 4.7	Term Credits	15
ECON 266	Macroeconomics	
ECON 265	Microeconomics	
ECON 201	Economics	
IE 492	Engineering Management	
MGMT 390	Principles of Business	
Select one of the	following:	3

Computer Engineering Tracks

The computer Engineering technical tracks are designed to provide in-depth study in a specialty area. Students at the fourth year of the curriculum must choose one of the available tracks. Courses are listed below. Students may take alternative courses but must see their academic advisor for approval.

Code	Title	Credits
Computer Engineering Tracks - Sele	ect one of the following:	
1. Advanced Computer Systems Tra	ack	
ECE 451	Advanced Computer Architecture	
ECE 452	High Performance Computer Architecture	
ECE 453	Introduction to Discrete Event Systems	
or IS 461	Systems Simulation	
ECE 459	Advanced Computer Systems Design Lab	
2. Computer Communications Track		
ECE 421	Digital Data Communication	
ECE 422	Computer Communications Networks	
ECE 425	Wireless Communication Systems	
ECE 429	Computer Communications Lab	

Computer Engineering Technical Electives - 3 courses

The ECE Elective must be a 300 or 400 level ECE course or an advisor approved upper level engineering, science or mathematics course. Elective courses cannot cover the same material as other courses taken by the student. For example, a CS course covering the same material as an ECE course taken by the student cannot count as a technical elective. .Courses from the Engineering Technology Department are generally not approved as ECE electives.

Co-op

Co-op courses bearing degree credit replace a technical elective or another course approved by the faculty advisor in the student's major department. In Computer Engineering, ECE 310 Co-op Work Experience I is taken for zero credits, and ECE 410 Co-op Work Experience II is taken for 3 degree credits, upon acceptance by the faculty co-op advisor of an approved proposal.

CoOp Option A Track

(145 credits minimum)

First Year

CHEM 125 General Chemistry I 3 ER D1 101 Fundamentals of Engineering Design 2 ERNEL 101 English Composition: Introduction to Academic Writing 3 MATH 111 Calculus I 4 PHYS 1111 Physics I Lab 1 FYS SEM First-Year Student Seminar 0 Torm Credits 16 20 Assenser 5 CS 115 Introduction to Computer Science I in C++ 3 MATH 112 Calculus II 4 PHYS 122A Physics II Lab 1 ECR 115 Introduction to Computer Science I in C++ 3 MCR 102 English Composition: Introduction to Writing for Research 3 ECR 115 Introduction to Electrical and Computer Engineering 0 ENGL 102 English Composition: Introduction to Writing for Research 3 EXECTATION To Credits 3 ECR 216 Introduction to Computer Science II in C++ 3 ECR 227 Credits and Systems I 3 ECR 228 Credits and Systems I 3	1st Semester		Credits
ENDL 0101 English Composition: Introduction to Academic Writing 3 MATH 111 Calculus I 4 PHYS 111A Physics I Lab 6 FYS SEM First-Year Student Seminar 0 Tom Credits 16 Composition: Introduction to Computer Science I in C++ 6 Composition: Introduction to Computer Science I in C++ 3 MATH 112 Calculus II 4 PHYS 122A Physica I Lab 1 ECE 116 Introduction to Electrical and Computer Engineering 0 ECE 121 Introduction to Electrical and Computer Engineering 0 ECE 212 Physica I Lab 1 ECE 213 Tom Credits 1 ES 2007 Tom Credits 3 ECE 251 Digital Composition: Introduction to Writing for Research 3 ECE 252 Circulus and Systems I 3 ECE 253 Digital Computer Science II in C++. 3 ECE 254 Digital Composition: Introduction to Computer Science II in C++. 1 ECE 252 Digital Computer Scien	CHEM 125	General Chemistry I	3
MATH 1111 Calculus I 4 PHYS 111A Physics I Lab 1 PHYS 111A Physics I Lab 1 PHYS 111A Physics I Lab 1 To Rem Credits 10 To Rem Ster 1 CS 115 Introduction to Computer Science I in C++ 3 MATH 112 Calculus II 3 PHYS 122A Electricity & Magntsm ECE Appl 3 MATH 112 Claculus II Introduction to Electrical and Computer Engineering 0 ECE 101 Introduction to Electrical and Computer Engineering 0 ENDL 102 English Composition: Introduction to Writing for Research 3 ENDL 102 English Composition: Introduction to Writing for Research 3 ES 101 Introduction to Computer Science II in C++. 3 ES 118 Displat Design 3 ECE 231 Circuits and Systems I 3 ECE 231 Displat Design 3 Hotory and Humanities CER 200 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-remarks/gen-zu-vel/ 3 ECE 232 </td <td>FED 101</td> <td>Fundamentals of Engineering Design</td> <td>2</td>	FED 101	Fundamentals of Engineering Design	2
PHYS 1111 Physics I Lab 1 PHYS 1111A Physics I Lab 1 Fys SEM First-Year Student Seminar 0 Cond Semester CS 115 Introduction to Computer Science I in C++ 3 CS 115 Introduction to Computer Science I in C++ 4 PHYS 122 Electricity & Magnism ECE Appl 3 ECE 101 Introduction to Electrical and Computer Engineering 0 ENDL 102 English Composition: Introduction to Writing for Research 3 ENDL 103 Introduction to Electrical and Computer Engineering 1 ENDL 104 Physics II Lab 1 ENDL 105 English Composition: Introduction to Writing for Research 3 ENDL 106 English Composition: Introduction to Writing for Research 3 ENDL 107 Term Credits 3 ECE 210 Introduction to Computer Science II in C++. 3 ECE 231 Circuits and Systems I 4 ECE 232 Differential Equations 4 All History and Humanities CER 2001 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-researc	ENGL 101	English Composition: Introduction to Academic Writing	3
PHYS 111A Physics I Lab 1 FYS SEM First-Year Student Seminar 16 Amount of State Sta	MATH 111	Calculus I	4
FYS SEM First-Year Student Seminar 0 7cm Credits 16 2ch Semester 18 CS 115 Introduction to Computer Science I in C++ 3 MATH 112 Calculus II 4 PHYS 122 M Electricity & Magnism ECE Appl 3 PHYS 121A Physics II Lab 1 ECE 101 Introduction to Electrical and Computer Engineering 1 ENSL 1202 English Composition: Introduction to Writing for Research 14 Second Year State Second Year State Second Year State Second Year State Second Year State Seco	PHYS 111	Physics I	3
Term Credits 16 2nd Semester CS 115 Introduction to Computer Science I in C++ 3 MATH 112 Calculus II 4 PHYS 122 Electricity & Magnism ECE Appl 3 BPHYS 121A Physics II Lab 1 ECE 101 Introduction to Electrical and Computer Engineering 0 ENGL 102 English Composition: Introduction to Writing for Research 3 Term Credits 14 Second Year 1 15t Semester 1 CS 116 Introduction to Computer Science II in C++. 3 CSE 231 Circuits and Systems I 3 ECE 231 Digital Design 3 MATH 222 Differential Equations 4 History and Humanities GER 200 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-registres/general-education-registres/general-education-registres/general-education-registres/general-education-registres/general-education-registres/general-education-registres/general-education-registres/general-education-registres/general-education-registres/general-education-registres/general-education-registres/general-education-registres/general-education-registres/general-education-registres/general-education-registres/gen	PHYS 111A	Physics I Lab	1
2N Semester 3 CS 15.6 Al colculus II 4 MATH 112.2 Electricity & Magntsm ECE Appl 3 PHYS 121.4 Physics II Lab 1 ECE 101 Introduction to Electrical and Computer Engineering 0 ENEL 102 English Composition: Introduction to Writing for Research 18 ENEL 102 English Composition: Introduction to Writing for Research 18 EXECATION Term Credits 3 ESCENDATE Term Credits 3 ESCE 251 Introduction to Computer Science II in C++. 3 ECE 231.0 Circuits and Systems I 3 ECE 231 Differential Equations 4 History and Humanities ERR 2001 evel (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-20-level 16 ECE 232 Circuits and Systems II 3 ECE 232 Microprocessors 3 ECE 232 Microprocessors 3 ECE 232 Microprocessors 3 ECE 234 Analog and Digital Circuits Laboratory 4 <t< td=""><td>FYS SEM</td><td>First-Year Student Seminar</td><td>0</td></t<>	FYS SEM	First-Year Student Seminar	0
CS 115 Introduction to Computer Science I in C++ 3 MATH 112 Calculus II 4 PHYS 122 Electricity & Magntsm ECE Appl 3 PHYS 121A Physics II Lab 1 ECE 101 Introduction to Electrical and Computer Engineering 0 ENGL 102 English Composition: Introduction to Writing for Research 3 Term Credits 14 Second Year 18 Semester CS 5116 Introduction to Computer Science II in C++, 3 Science II in C++, 3 ECE 231 Circuits and Systems I 3 Science II in C++, 3 Science II in C++, <td></td> <td>Term Credits</td> <td>16</td>		Term Credits	16
MATH 112 Calculus II 4 PHYS 122 Electricity & Magnism ECE Appl 3 PHYS 121A Physics II Lab 1 ECE 101 Introduction to Electrical and Computer Engineering 0 ENGL 102 English Composition: Introduction to Writing for Research 3 Term Credits 14 Second Year 1st Semester CS 116 Introduction to Computer Science II in C++. 3 ECE 231 Circuits and Systems I 3 ECE 231 Differential Equations 4 History and Humanities GER 200 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-200-level) 3 Term Credits 16 ECE 232 Circuits and Systems II 3 ECE 232 Microprocessors 3 ECE 232 Microprocessors 3 ECE 234 Analog and Digital Circuits Laboratory 2 ECE 294 Analog and Digital Circuits Laboratory 1	2nd Semester		
PHYS 122 Electricity & Magntsm ECE Appl 3 PHYS 121A Physics II Lab 1 CEC 101 Introduction to Electrical and Computer Engineering 0 ENDL 102 English Composition: Introduction to Writing for Research 3 Term Credits 14 Second Year Second Yea	CS 115	Introduction to Computer Science I in C++	3
PHYS 121A Physics II Lab 1 ECE 101 Introduction to Electrical and Computer Engineering 0 ENGL 102 English Composition: Introduction to Writing for Research 14 Second Year 1st Semester CS 116 Introduction to Computer Science II in C++. 3 SCE 231 Circuits and Systems I 3 ECE 251 Digital Design 3 MATH 222 Differential Equations 4 History and Humanities GER 200 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-200-level/>	MATH 112	Calculus II	4
ECE 101 Introduction to Electrical and Computer Engineering 0 ENGL 102 English Composition: Introduction to Writing for Research 3 Term Credits 14 Second Year 1st Semester CS 116 Introduction to Computer Science II in C++. 3 SCE 251 Circuits and Systems I 3 SCE 252 Digital Design 3 MATH 222 Differential Equations 4 History and Humanities GER 200 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-200-level/) 3 Term Credits 16 Professional Systems II 3 ECE 232 Circuits and Systems II 3 ECE 232 Microprocessors 3 ECE 271 Electronic Circuits I 3 AMTH 213 Calculus III B 4 ECE 274 Analog and Digital Circuits Laboratory 2 EMER 211 Professional Skills for Engineers I 1	PHYS 122	Electricity & Magntsm ECE Appl	3
EMGL 102 English Composition: Introduction to Writing for Research 3 Term Credits 14 Second Year 18t Semester CS 116 Introduction to Computer Science II in C++. 3 SCE 231 Circuits and Systems I 3 ECE 251 Digital Design 4 MATH 222 Differnial Equations 4 History and Humanities GER 200 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-20v-level/) 3 Term Credits 16 Description of Critics In Introduction of Circuits Introduction of Circui	PHYS 121A	Physics II Lab	1
Term Credits	ECE 101	Introduction to Electrical and Computer Engineering	0
Second Year 1st Semester CS 116 Introduction to Computer Science II in C++. 3 CSC 231 Circuits and Systems I 3 ECE 251 Digital Design 3 MATH 222 Differential Equations 4 History and Humanites GER 200 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-200-levely 3 Term Credits 16 Scenester ECE 232 Circuits and Systems II 3 ECE 232 Circuits and Systems II 3 ECE 252 Microprocessors 3 BCE 252 Microprocessors 3 BCE 274 Electronic Circuits I 3 BCE 294 Analog and Digital Circuits Laboratory 2 ENGR 211 Professional Skills for Engineers I 1 Term Credits 0 Term Credits 0 Term Credits 12 Term Credits 12 Term Cr	ENGL 102	English Composition: Introduction to Writing for Research	3
1st Semester CS 116 Introduction to Computer Science II in C++. 3 ECE 231 Circuits and Systems I 3 ECE 251 Digital Design 3 MATH 222 Differential Equations 4 History and Humanities GER 200 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-200-level/) 3 Term Credits 16 ECE 232 Circuits and Systems II 3 ECE 232 Microprocessors 3 ECE 271 Electronic Circuits I 3 MATH 213 Calculus III B 4 ECE 274 Analog and Digital Circuits Laboratory 2 ENGR 211 Professional Skills for Engineers I 1 Term Credits 16 Summer CO-OP I Term Credits 0 Term Credits 1 Term Credits 12 Term Credits 12 Term Credits <td></td> <td>Term Credits</td> <td>14</td>		Term Credits	14
CS 116 Introduction to Computer Science II in C++. 3 ECE 231 Circuits and Systems I 3 ECE 251 Digital Design 3 MATH 222 Differential Equations 4 History and Humanities GER 200 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-200-level/) 3 Term Credits 16 200 Ever (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-200-level/) Term Credits 16 200 Ever (Julia II B 3 SCE 232 Circuits and Systems II 3 SCE 252 Microprocessors 3 SCE 252 Analog and Digital Circuits Laboratory 2 SUBRE 211 Professional Skills for Engineers I 1 Term Credits 0	Second Year		
ECE 231 Circuits and Systems I 3 ECE 251 Digital Design 3 MATH 222 Differential Equations 4 History and Humanites GER 200 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-200-level/) 3 Term Credits 16 202 Semester Circuits and Systems II 3 ECE 232 Circuits and Systems II 3 ECE 252 Microprocessors 3 ECE 252 Microprocessors 3 ECE 252 Calculus III B 4 ECE 294 Analog and Digital Circuits Laboratory 2 ENGR 211 Professional Skills for Engineers I 1 Summer 1 CO-OP I Term Credits 0 Third Year 1 1st Semester ENGR 210 Co-op Work Experience I 12 ENGR 8310 Co-op Work Experience I 12 2 And Semester Co-op Work Experience I 3	1st Semester		
ECE 251 Digital Design 3 MATH 222 Differential Equations 4 History and Humanities GER 200 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-200-level/) 3 Term Credits 16 And Semester ECE 232 Circuits and Systems II 3 ECE 252 Microprocessors 3 ECE 251 Electronic Circuits I 3 MATH 213 Calculus III B 4 ECE 294 Analog and Digital Circuits Laboratory 2 ENGR 211 Professional Skills for Engineers I 1 Term Credits 16 Summer CO-OP I Term Credits 0 Third Year 1st Semester ENGR 310 Co-op Work Experience I 12 Term Credits 12 Term Credits 12 Term Credits 12 Term Credits 12 Term Cr	CS 116	Introduction to Computer Science II in C++.	3
MATH 222 Differential Equations 4 History and Humanities GER 200 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-200-level/) 16 Term Credits 16 Colspan="2">Term Credits 16 Term Credits 3 ECE 232 Circuits and Systems II 3 ECE 252 Microprocessors 3 ECE 251 Electronic Circuits I 3 MATH 213 Calculus III B 4 ECE 294 Analog and Digital Circuits Laboratory 2 ENGR 211 Professional Skills for Engineers I 1 Term Credits 16 Summer CO-OP I Term Credits 0 Third Year 1st Semester ENGR 310 Co-op Work Experience I 12 Term Credits 12 Term Credits 12 Term Credits 12			

4 B.S. in Computer Engineering

Fourth Year 1st Semester 1 ENGR 410 0-op Work Experience II 1 ENGR 410 1cm Credits 1 Term Credits 12 Colspan="2">Term Credits 1 Solution of Management Substances 3 Solution of Management Substances 3 ECON 250 Microeconomics 1 ECON 265 Microeconomics 15 ECON 265 Microeconomics 15 Fifth Year 1 Solution Substances 1 ECON 265 Microeconomics 15 Fifth Year 15 State Substances 15 Fifth Year 1 State Substances 1 ECON 265 Macroeconomics 15 Fifth Year 1 State Substances 1 ECO 265 Microeconomics 1 State	MATH 326	Discrete Analysis for Computer Engineers	3
Summer Term Credits 0 Fourth Year 18t Semester Term Credits 12 19t Semester CS 332 Principles of Operating Systems 3 AMATH 330 Applied Numerical Methods 3 Or Linear Algebra 3 Select 35 Computer Organization and Architecture 3 Select 35 Principles of Business 3 Select 35 Computer Selective Business 4 ECON 265 Microceconomics 4 Selective Selective Business 3 Selective Business 3 <td>ECE 321</td> <td>Random Signals and Noise</td> <td>3</td>	ECE 321	Random Signals and Noise	3
CO-OF III Term Credits 0 Fourth Year 18 Semester ENGR 10 Co-op Work Experience II 1 Cand Semester CS 322 Principles of Operating Systems 3 MATH 330 Applied Numerical Methods 3 or MATH 337 Computer Organization and Architecture 3 CEC 353 Computer Organization and Architecture 3 Select one of the following: 3 MIGMATH 390 Principles of Business 3 ECON 265 Microeconomics 4 ECON 265 Microeconomics 5 ECON 265 Microeconomics 5 ECE 414 Electrical and Computer Engineering Project I 1 1 ECE 415 Computer Engineering Design Lab 3 3 COE Track Elective II 3 3 Term Credits 1 1 ECE 416 Electrical and Computer Engineering P		Term Credits	14
Part	Summer		
Fourth Year 1st Semester 1 ENGR 410 0-op Work Experience II 1 ENGR 410 1cm Credits 1 Term Credits 12 Colspan="2">Term Credits 1 Solution of Management Substances 3 Solution of Management Substances 3 ECON 250 Microeconomics 1 ECON 265	CO-OP II		
State Semester ENCR 170 Co-op Work Experience II 1 2 Term Credits 1 2 Term Credits 3 AMATH 340 Applied Numerical Methods 3 or MATH 337 Or Unioar Algebra 3 ECE 353 Computer Organization and Architecture 3 Select one of the following: 3 Select one of the following: 3 Select one of the following: 3 E GON 201 Engineering Management 2 ECON 255 Microeconomics 2 ECON 256 Microeconomics 15 ECE 414 Electrical and Computer Engineering Project I 1 ECE 419 Computer Engineering Design Lab 3 COE Track Elective I 3 COE Track Elective I 3 Term Credits 1 COE Track Elective I 1 Term Credits 1 CoE 416 Elect		Term Credits	0
ENGR 410 Co-op Work Experience II 12 Torn Credits 12 2nd Semester 12 CS 332 Principles of Operating Systems 3 MATH 340 Applied Numerical Methods 3 or MATH 337 Or Dupter Organization and Architecture 3 ECE 353 Computer Organization and Architecture 3 Select one of the following: 3 MGMT 390 Principles of Business 3 IE 492 Engineering Management 2 ECON 265 Microeconomics 2 ECON 265 Microeconomics 15 ECON 266 Macroeconomics 15 ECON 267 Microeconomics 15 ECO 268 Macroeconomics 15 ECE 414 Electrical and Computer Engineering Project I 1 1 ECE 418 Electrical and Computer Engineering Project I 3 3 COE Track Elective I 3 1 3 Testnical Electival Accomputer Engineering Project II 3 6 And Semeste	Fourth Year		
Term Credits 12 2nd Semester	1st Semester		
2nd Semester CS 332 Principles of Operating Systems 3 MATH 340 Applied Numerical Methods 3 or MATH 337 or Linear Algebra 3 ECE 353 Computer Organization and Architecture 3 PHIL 334 Engineering Ethics and Technological Practice: Philosophical Perspectives on Engineering 3 Select one of the following: 3 Select one of the following: 3 EC 492 Engineering Management 5 ECON 261 Economics ECON 265 Microeconomics 1 ECON 266 Macroeconomics 1 ECON 267 Macroeconomics 1 ECE 418 Electrical and Computer Engineering Project I 1 ECE 414 Electrical and Computer Engineering Project I 3 COE Track Elective I 3 History and Humanites CER 300+ level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/) 3 ECE 416 Electrical and Computer Engineering Project II 3 OE Track Llaboratory Elective 2 </td <td>ENGR 410</td> <td>Co-op Work Experience II</td> <td>12</td>	ENGR 410	Co-op Work Experience II	12
CS 332 Principles of Operating Systems 3 MATH 340 Applied Numerical Methods 3 or MATH 337 or Linear Algebra 3 ECE 363 Computer Organization and Architecture 3 PHIL 334 Engineering Ethics and Technological Practice: Philosophical Perspectives on Engineering 3 Select one of the following: 3 MGMT 390 Principles of Business 1 IE 492 Engineering Management 2 ECON 201 Economics 2 ECON 265 Microeconomics 1 ECON 265 Macroeconomics 1 ECON 266 Macroeconomics 1 ECON 267 Macroeconomics 1 ECON 268 Macroeconomics 1 ECON 268 Macroeconomics 1 ECE 417 1 1 ECE 418 Electrical and Computer Engineering Project I 1 ECE 419 1 2 Technical Elective 1 Technical Elective 1 3 <td< td=""><td>-</td><td>Term Credits</td><td>12</td></td<>	-	Term Credits	12
MATH 340 or MATH 337 or Linear Algebra 3 SCE 353 Computer Organization and Architecture 3 PHIL 334 Engineering Ethics and Technological Practice: Philosophical Perspectives on Engineering 3 Select one of the following: 3 MGMT 390 Principles of Business Figure 1 IE 492 Engineering Management ECON 201 ECON 265 Microeconomics ECON 266 Macroeconomics ECON 266 Macroeconomics 15 Fifth Year 15 15t Semester 15 EC 4 14 Electrical and Computer Engineering Project I 1 ECE 415 Computer Engineering Design Lab 3 COE Track Elective I 3 Technical Elective 3 History and Humanities GER 300+ level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/ 3 Teck 216 Elective I 3 COE Track Laboratory Elective 2 COE Track Laboratory Elective 2 COE Track Laboratory Elective II 3 COE Track Laboratory Elective 2 COE Track Laboratory Elective 3 Technical Elective III<	2nd Semester		
or MATH 337 or Linear Algebra 3 ECE 363 Computer Organization and Architecture 3 PHIL 334 Engineering Ethics and Technological Practice: Philosophical Perspectives on Engineering 3 Select one of the following: 3 MGMT 390 Principles of Business 1 IE 492 Engineering Management 1 ECON 265 Microeconomics 1 ECON 266 Macroeconomics 15 Fifth Year 15 State Senseste 15 ECE 414 Electrical and Computer Engineering Project I 1 ECE 495 Computer Engineering Design Lab 3 COE Track Elective I 3 Technical Elective 3 History and Humantities GER 300+ level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/) 3 Fect 416 Electrical and Computer Engineering Project II 3 or ECE 417 or Electrical & Computer Engineering Project II 3 COE Track Laboratory Elective 2 COE Track Elective III 3	CS 332	Principles of Operating Systems	3
ECE 353 Computer Organization and Architecture PHIL 334 Engineering Ethics and Technological Practice: Philosophical Perspectives on Engineering 3 Select one of the following: Principles of Business IE 492 Engineering Management ECON 201 Economics ECON 265 Microeconomics ECON 266 Macroeconomics ECON 266 Macroeconomics Term Credits FIfth Year 1st Semester ECE 414 Electrical and Computer Engineering Project I Computer Engineering Project I Subject I S	MATH 340	Applied Numerical Methods	3
PHIL 334 Engineering Ethics and Technological Practice: Philosophical Perspectives on Engineering 3 Select one of the following: 3 MGMT 390 Principles of Business 1 ECON 201 Economics 2 ECON 265 Microeconomics 2 ECON 266 Macroeconomics 1 Frifth Year 15 Fifth Year 15 State Senester 1 ECE 414 Electrical and Computer Engineering Project I 1 ECE 4195 Computer Engineering Design Lab 3 COE Track Elective I 3 COE Track Elective II 3 Term Credits 3 Term Credits 16 And Semester ECE 416 Electrical and Computer Engineering Project II 3 Or Electrical & Electrical & Computer Engineering Project II 3 COE Track Laboratory Elective 2 COE Track Elective III 3 COE Track El	or MATH 337	or Linear Algebra	
Select one of the following: MGMT 390 Principles of Business IE 492 Engineering Management ECON 201 Economics ECON 265 Microeconomics ECON 266 Macroeconomics Term Credits 15 Fifth Year 15 ECE 414 Electrical and Computer Engineering Project I Computer Engineering Project II Com	ECE 353	Computer Organization and Architecture	3
MGMT 390 Principles of Business IE 492 Engineering Management ECON 201 Economics ECON 265 Microeconomics ECON 266 Macroeconomics Term Credits 15 Fifth Year 1st Semester ECE 414 Electrical and Computer Engineering Project I 1 ECE 495 Computer Engineering Design Lab 3 COE Track Elective I 3 Technical Elective I 3 Technical Elective I 3 Term Credits 16 Term Credits 16 Term Credits 17 Term Credits 17 Term Credits 18 Technical Elective I 3 Term Credits 16 Term Credits 16 Term Credits 17 Term Credits 18 Technical Elective II 3 Term Credits 18 Technical Elective II 3 Technical Elective III 3 Term Credits III 3 Term Credit	PHIL 334	Engineering Ethics and Technological Practice: Philosophical Perspectives on Engineering	3
IE 492 Engineering Management ECON 201 Economics ECON 265 Microeconomics ECON 266 Macroeconomics Term Credits 15 Fifth Year 1st Semester ECE 414 Electrical and Computer Engineering Project I 1 ECE 495 Computer Engineering Design Lab 3 COE Track Elective I 3 Technical Elective I 3 History and Humanities GER 300+ level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/) Term Credits 16 Electrical and Computer Engineering Project II 3 Technical Elective I 3 History and Humanities GER 300+ level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/) Term Credits 16 Electrical and Computer Engineering Project II 3 or ECE 417 or Electrical & Computer Engineering Project II 3 Technical Elective III 3 Technical Elective	Select one of the fo	ollowing:	3
ECON 201 Economics ECON 265 Microeconomics Term Credits 15 Fifth Year 1st Semester ECE 414 Electrical and Computer Engineering Project I ECE 495 Computer Engineering Design Lab COE Track Elective I COE Track Elective I Term Credits 3 History and Humanities GER 300+ level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/) Term Credits 1 COE Track Laboratory Elective I 23 COE Track Lective II 34 COE Track Elective II 35 COE Track Elective II 36 COE Track Elective II 37 Term Credits 16 28 29 20 20 20 20 20 21 21 21 21 21	MGMT 390	Principles of Business	
ECON 265 Macroeconomics Term Credits 15 Fifth Year 1st Semester ECE 414 Electrical and Computer Engineering Project I ECE 495 Computer Engineering Design Lab COE Track Elective I COE Track Elective I Term Credits GER 300+ level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/gen-300-level) Term Credits Computer Engineering Project II 33 Technical Elective Term Credits 16 2nd Semester ECE 416 Electrical and Computer Engineering Project II or ECE 417 or Electrical & Computer Engineering Project II COE Track Laboratory Elective 2 COE Track Laboratory Elective 13 Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/ 3 Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/ 3 general-education-requirements/hss-capstone/) Term Credits 14 Term Credits 14	IE 492	Engineering Management	
Term Credits 15 Fifth Year 1st Semester 15	ECON 201	Economics	
Term Credits Fifth Year 1st Semester ECE 414 Electrical and Computer Engineering Project I ECE 495 Computer Engineering Design Lab COE Track Elective I COE Track Elective I Stennical Elective History and Humanities GER 300+ level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/) Term Credits 16 2nd Semester ECE 416 Electrical and Computer Engineering Project II or ECE 417 or Electrical & Computer Engineering Project II COE Track Laboratory Elective COE Track Elective III 3 Technical Elective Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/hss-capstone/) Term Credits 14	ECON 265	Microeconomics	
Fifth Year 1st Semester ECE 414	ECON 266	Macroeconomics	
Semester ECE 414		Term Credits	15
ECE 414 Electrical and Computer Engineering Project I ECE 495 Computer Engineering Design Lab COE Track Elective I COE Track Elective II Altistory and Humanities GER 300+ level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/) Term Credits 16 2nd Semester ECE 416 Electrical and Computer Engineering Project II or ECE 417 or Electrical & Computer Engineering Project II COE Track Laboratory Elective COE Track Elective III 3 Technical Elective 4 Aumanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/ general-education-requirements/hss-capstone/) Term Credits 1 Aumanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/ general-education-requirements/hss-capstone/)	Fifth Year		
ECE 495 Computer Engineering Design Lab COE Track Elective I COE Track Elective II Technical Elective History and Humanities GER 300+ level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/) Term Credits 16 2nd Semester ECE 416 Electrical and Computer Engineering Project II or ECE 417 or Electrical & Computer Engineering Project II COE Track Laboratory Elective COE Track Laboratory Elective 12 COE Track Elective III 33 Technical Elective 43 Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/ general-education-requirements/hss-capstone/) Term Credits 14	1st Semester		
COE Track Elective I COE Track Elective II Technical Elective History and Humanities GER 300+ level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/) Term Credits 16 2nd Semester ECE 416 Electrical and Computer Engineering Project II or ECE 417 or Electrical & Computer Engineering Project II COE Track Laboratory Elective COE Track Elective III Technical Elective Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/ general-education-requirements/hss-capstone/) Term Credits 13 33 34 35 36 36 37 38 39 39 30 30 30 30 30 30 30 30	ECE 414	Electrical and Computer Engineering Project I	1
COE Track Elective II Technical Elective History and Humanities GER 300+ level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/) Term Credits 16 2nd Semester ECE 416 Electrical and Computer Engineering Project II or ECE 417 or Electrical & Computer Engineering Project II COE Track Laboratory Elective COE Track Lective III Technical Elective Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/hss-capstone/) Term Credits 13 3 3 3 3 3 4 3 4 3 4 3 5 5 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	ECE 495	Computer Engineering Design Lab	3
Technical Elective History and Humanities GER 300+ level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/) Term Credits 16 2nd Semester ECE 416 Electrical and Computer Engineering Project II 3 or ECE 417 or Electrical & Computer Engineering Project II COE Track Laboratory Elective COE Track Elective III Technical Elective Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/ general-education-requirements/hss-capstone/) Term Credits 13 14	COE Track Electiv	e I	3
History and Humanities GER 300+ level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/) Term Credits 16 2nd Semester ECE 416 Electrical and Computer Engineering Project II 3 or ECE 417 or Electrical & Computer Engineering Project II COE Track Laboratory Elective COE Track Elective III Technical Elective Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/hss-capstone/) Term Credits 14	COE Track Electiv	e II	3
requirements/ger-300-level/) Term Credits 16 2nd Semester ECE 416	Technical Elective		3
Term Credits 2nd Semester ECE 416 Electrical and Computer Engineering Project II 3 or ECE 417 or Electrical & Computer Engineering Project II COE Track Laboratory Elective 2 COE Track Elective III 3 Technical Elective 3 Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/ general-education-requirements/hss-capstone/) Term Credits 16			3
ECE 416 Electrical and Computer Engineering Project II or ECE 417 or Electrical & Computer Engineering Project II COE Track Laboratory Elective 2 COE Track Elective III 3 Technical Elective 3 Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/ general-education-requirements/hss-capstone/) Term Credits 14			16
or ECE 417 or Electrical & Computer Engineering Project II COE Track Laboratory Elective COE Track Elective III Technical Elective Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/ general-education-requirements/hss-capstone/) Term Credits 14	2nd Semester		
COE Track Laboratory Elective COE Track Elective III 3 Technical Elective Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/ general-education-requirements/hss-capstone/) Term Credits 14			3
COE Track Elective III Technical Elective 3 Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/ general-education-requirements/hss-capstone/) Term Credits 3 14			2
Technical Elective Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/ general-education-requirements/hss-capstone/) Term Credits 14			
Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/ general-education-requirements/hss-capstone/) Term Credits 14			
general-education-requirements/hss-capstone/) Term Credits 14		ocial Science Senior Seminar GER (http://catalog.niit.edu/undergraduate/academic-policies-procedures/	
Term Credits 14			3
	-		14

Computer Engineering Tracks

The computer Engineering technical tracks are designed to provide in-depth study in a specialty area. Students at the fourth year of the curriculum must choose one of the available tracks. Courses are listed below. Students may take alternative courses but must see their academic advisor for approval.

Code	Title	Credits
Computer Engineering	g Tracks - Select one of the following:	
1 Advanced Computer	er Systems Track	

ECE 451	Advanced Computer Architecture
ECE 452	High Performance Computer Architecture

	ECE 453	Introduction to Discrete Event Systems
	or IS 461	Systems Simulation
	ECE 459	Advanced Computer Systems Design Lab
2.	Computer Communications Track	
	ECE 421	Digital Data Communication
	ECE 422	Computer Communications Networks
	ECE 425	Wireless Communication Systems
	ECE 429	Computer Communications Lab

Computer Engineering Technical Electives - 3 courses

The ECE Elective must be a 300 or 400 level ECE course or an advisor approved upper level engineering, science or mathematics course. Elective courses cannot cover the same material as other courses taken by the student. For example, a CS course covering the same material as an ECE course taken by the student cannot count as a technical elective. .Courses from the Engineering Technology Department are generally not approved as ECE electives.

CoOp Option B Track

(145 credits minimum)

1st Semester		Credits
CHEM 125	General Chemistry I	3
FED 101	Fundamentals of Engineering Design	2
ENGL 101	English Composition: Introduction to Academic Writing	3
MATH 111	Calculus I	4
PHYS 111	Physics I	3
PHYS 111A	Physics I Lab	1
FYS SEM	First-Year Student Seminar	0
	Term Credits	16
2nd Semester		
CS 115	Introduction to Computer Science I in C++	3
MATH 112	Calculus II	4
PHYS 122	Electricity & Magntsm ECE Appl	3
PHYS 121A	Physics II Lab	1
ECE 101	Introduction to Electrical and Computer Engineering	0
ENGL 102	English Composition: Introduction to Writing for Research	3
	Term Credits	14
Second Year		
1st Semester		
CS 116	Introduction to Computer Science II in C++.	3
ECE 231	Circuits and Systems I	3
ECE 251	Digital Design	3
MATH 222	Differential Equations	4
History and Humanit	ies GER 200 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-	3
requirements/ger-20	0-level/)	
	Term Credits	16
2nd Semester		
ECE 232	Circuits and Systems II	3
ECE 252	Microprocessors	3
ECE 271	Electronic Circuits I	3
MATH 213	Calculus III B	4
ECE 294	Analog and Digital Circuits Laboratory	2
	Term Credits	15

Third Year 1st Semester

1st Semester		
CS 280	Programming Language Concepts	3
ECE 368	Signal Transmission	3
ECE 395	Microprocessor Laboratory	2
MATH 326	Discrete Analysis for Computer Engineers	3
ECE 321	Random Signals and Noise	3
ENGR 211	Professional Skills for Engineers I	1
	Term Credits	15
2nd Semester		
ENGR 310	Co-op Work Experience I	12
	Term Credits	12
Summer		
CO-OP I		
-	Term Credits	0
Fourth Year		
1st Semester		
CS 332	Principles of Operating Systems	3
MATH 340	Applied Numerical Methods	3
ECE 353	Computer Organization and Architecture	3
PHIL 334	Engineering Ethics and Technological Practice: Philosophical Perspectives on Engineering	3
Select one of the foll		3
MGMT 390	Principles of Business	
IE 492	Engineering Management	
ECON 201	Economics	
ECON 265	Microeconomics	
ECON 266	Macroeconomics	
20011200	Term Credits	15
2nd Semester	Total Ordals	13
ENGR 410	Co-op Work Experience II	12
211011 410	Term Credits	12
Summer	Total Ordals	12
CO-OP II		
00-01 11	Term Credits	0
Fifth Year	Term Credits	U
1st Semester		
ECE 414	Floatrical and Computer Engineering Project I	1
ECE 495	Electrical and Computer Engineering Project I Computer Engineering Design Lab	1 3
COE Track Elective		3
COE Track Elective		3
Technical Elective		3
	ies GER 300+ level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-	3
requirements/ger-30		3
	Term Credits	16
2nd Semester		
ECE 416	Electrical and Computer Engineering Project II	3
or ECE 417	or Electrical & Computer Engineering Project II	· ·
COE Track Laborato		2
COE Track Elective		3
Technical Elective		3

3

Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/hss-capstone/)

14

Total Credits 145

Computer Engineering Tracks

Term Credits

The computer Engineering technical tracks are designed to provide in-depth study in a specialty area. Students at the fourth year of the curriculum must choose one of the available tracks. Courses are listed below. Students may take alternative courses but must see their academic advisor for approval.

Code	Title	Credits
Computer Engineering Tracks - Select	ct one of the following:	
1. Advanced Computer Systems Trac	ck	
ECE 451	Advanced Computer Architecture	
ECE 452	High Performance Computer Architecture	
ECE 453	Introduction to Discrete Event Systems	
or IS 461	Systems Simulation	
ECE 459	Advanced Computer Systems Design Lab	
2. Computer Communications Track		
ECE 421	Digital Data Communication	
ECE 422	Computer Communications Networks	
ECE 425	Wireless Communication Systems	
ECE 429	Computer Communications Lab	

Computer Engineering Technical Electives - 3 courses

The ECE Elective must be a 300 or 400 level ECE course or an advisor approved upper level engineering, science or mathematics course. Elective courses cannot cover the same material as other courses taken by the student. For example, a CS course covering the same material as an ECE course taken by the student cannot count as a technical elective. .Courses from the Engineering Technology Department are generally not approved as ECE

Refer to the General Education Requirements (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/) section of this catalog for further information on electives.

This curriculum represents the maximum number of credits per semester for which a student is advised to register. A full-time credit load is 12 credits. First-year students are placed in a curriculum that positions them for success which may result in additional time needed to complete curriculum requirements. Continuing students should consult with their academic advisor to determine the appropriate credit load.