

Note: No Major or Support courses may be selected as credit/no credit.

MAJOR COURSES		
CSC/CPE 101	Fundamentals of Computer Science	4
CSC/CPE 202	Data Structures	4
CSC/CPE 123	Introduction to Computing ¹	4
CSC/CPE 203	Project-Based Object-Oriented Program & Design	4
CSC 225	Introduction to Computer Organization	4
CSC 248	Discrete Structures	4
CSC 300	Professional Responsibilities	4
or PHIL 323	Ethics, Science and Technology ⁵	
CSC 305	Individual Software Design and Development	4
CSC 308	Software Engineering I	4
CSC 309	Software Engineering II	4
CSC 349	Design and Analysis of Algorithms	4
CSC/CPE 357	Systems Programming	4
CSC 365	Introduction to Database Systems	4
CSC 402	Software Requirements Engineering	4
CSC 405	Software Construction	4
CSC 406	Senior Project - Software Deployment	4
CSC 430	Programming Languages	4
CSC 484	User-Centered Interface Design and Development	4
Technical Electives		
Select from the lists in Technical Electives Guidelines below ^{2,3}		16
Total Major Units		88

SUPPORT COURSES		
IME 314	Engineering Economics	3
or IME 315	Financial Decision Making for Engineers	
MATH 141	Calculus I (B4) ⁴	4
MATH 142	Calculus II (B4) ⁴	4
MATH 143	Calculus III (Area B Electives) ⁴	4
MATH 241	Calculus IV	4
MATH 244	Linear Analysis I	4
PHIL 230	Philosophical Classics: Knowledge & Reality (C2) ⁴	4
or PHIL 231	Philosophical Classics: Ethics & Political Phil (C2) ⁴	
PSY 201/202	General Psychology (E) ⁴	4
PSY 350	Teamwork	4
or COMS 217	Small Group Communication	
STAT 312	Statistical Methods for Engrs (Upper-Division B) ⁴	4
Life Science Support Elective		
Select from the following (B2): ⁴		4-5
BIO 111	BIO 213 & BMED 213	MCRO 221
BIO 161	BOT 121	MCRO 224
Mathematics Support Elective		
Select from the following:		4
MATH 248	Methods of Proof in Mathematics	
MATH 334	Combinatorial Math	
MATH 335	Graph Theory	
MATH 451	Numerical Analysis I	
Physical Science Support Electives		
Select one of the following series (B1 & B3; Area B Electives): ⁴		12
CHEM 124 & CHEM 125 & CHEM 126		
PHYS 141 & PHYS 142 & PHYS 143		
Total Support Units		59-60

GENERAL EDUCATION		
Area A English Language Communication and Critical Thinking		
A1	Oral Communication	4
A2	Written Communication	4
A3	Critical Thinking	4
Area B Scientific Inquiry and Quantitative Reasoning		
B1	Physical Science (4 units in Support) ⁴	0
B2	Life Science (4 units in Support) ⁴	0
B3	One lab taken with either a B1 or B2 course	
B4	Mathematics/Quantitative Reasoning (8 units in Support) ⁴	0
Upper-Division B (4 units in Support) ⁴		0
Area B Electives (8 units in Support) ⁴		0
Area C Arts and Humanities		
Lower-division courses in Area C must come from three different subject prefixes.		
C1	Arts	4
C2	Humanities (4 units in Support) ⁴	0
Lower-Div C Elective - Select a course from C1 or C2 (NO PHIL)		4
Upper-Division C		4
Area D Social Sciences		
D1	American Institutions (Title 5, Section 40404 Req)	4
Area D Elective - Select either a lower-division D2 or upper-division D course.		4
Area E Lifelong Learning and Self-Development		
Lower-Division E (4 units in Support) ⁴		0
Area F Ethnic Studies		
F	Ethnic Studies	4
Total GE Units		36
FREE ELECTIVES⁵		0
TOTAL DEGREE UNITS		183-184

FOOTNOTES
1 An additional 4 units of CPE/CSC technical electives may substitute for CSC/CPE 123, although new students are strongly encouraged to take CSC/CPE 123.
2 Consultation with advisor is recommended prior to selecting Technical Electives; bear in mind your selections may impact pursuit of post-baccalaureate studies and/or goals.
3 An additional 4 units of CPE/CSC Technical Electives is needed if CSC/CPE 123 is not taken.
4 Required in Major or Support; also satisfies General Education (GE) requirement.
5 If a General Education (GE) course is used to satisfy a Major or Support requirement, additional units of Free Electives may be needed to complete the total units required for the degree.

Technical Electives Guidelines

Courses used to satisfy any other Major, Support, or General Education requirement are not allowed to count toward the Technical Electives requirement. Credit/No Credit grading is not allowed.

Contact the Computer Science and Software Engineering department for further information.

Select Technical Electives from the following: ^{1,2}

CSC 313	Teaching Computing
CSC/CPE 321	Introduction to Computer Security
CSC 323	Cryptography Engineering
CSC 325	Introduction to Privacy: Policy and Technology
CSC 344	Music Programming
CSC 364	Intro to Networked, Distributed, and Parallel Computing
CSC 366	Database Modeling, Design and Implementation
CSC 369	Introduction to Distributed Computing
CSC 371	Game Design
CSC 377	Introduction to Mixed Reality
CSC 378	Interactive Entertainment Engineering
CSC 400	Special Problems ²
CSC 409	Current Topics in Software Engineering
CSC 410	Software Evaluation
CSC 421	Binary Exploitation: Tools and
CSC 422	Network Security
CSC 424	Software Security
CSC/CPE 425	Wireless Security
CSC 429	Current Topics in Computer Security
CSC/CPE 431	Compiler Construction
CSC 436	Mobile Application Development
CSC 437	Dynamic Web Development
CSC 445	Theory of Computation I
CSC 448	Bioinformatics Algorithms
CSC/CPE 453	Introduction to Operating Systems
CSC/CPE 454	Implementation of Operating Systems
CSC/CPE 458	Current Topics in Computer Systems
CSC 466	Knowledge Discovery from Data
CSC 468	Database Management Systems Implementation
CSC/CPE 469	Distributed Systems
CSC/CPE 471	Introduction to Computer Graphics
CSC 473	Advanced Rendering Techniques
CSC 474	Computer Animation
CSC/CPE 476	Real-Time 3D Computer Graphics Software
CSC 477	Scientific and Information Visualization
CSC 478	Current Topics in Computer Graphics
CSC 480	Artificial Intelligence
CSC 481	Knowledge Based Systems
CSC 482	Speech and Language Processing
CSC 486	Human-Computer Interaction Theory & Design
CSC 487	Deep Learning
CSC 490	Selected Advanced Topics ²
CSC 493	Cooperative Education Experience ²
CSC 496	Selected Advanced Laboratory ²
CSC 497	Research Senior Project I
& CSC 498	and Research Senior Project II
CSC 508	Software Engineering I
CSC 509	Software Engineering II
CSC 513	Computing Education Research and Practice
CSC/CPE 515	Computer Architecture
CSC 521	Computer Security
CSC 522	Advanced Network Security
CSC 524	System Security
CSC 530	Languages and Translators
CSC 540	Theory of Computation II

CSC 549	Advanced Algorithm Design and Analysis
CSC 550	Operating Systems
CSC 560	Database Systems
CSC/CPE 564	Computer Networks: Research Topics
CSC 566	Topics in Advanced Data Mining
CSC/CPE 569	Distributed Computing
CSC 570	Current Topics in Computer Science
CSC 572	Computer Graphics
CSC 580	Artificial Intelligence
CSC 581	Computer Support for Knowledge Management
CSC 582	Computational Linguistics
CSC 587	Advanced Deep Learning
CPE 315	Computer Architecture
CPE 316	Microcontrollers and Embedded Applications
CPE 400	Special Problems for Undergraduates ²
CPE 416	Autonomous Mobile Robotics
CPE 419	Applied Parallel Computing
CPE/EE 428	Computer Vision
CPE 464	Introduction to Computer Networks
CPE 465	Advanced Computer Networks
CPE 488/IME	Microelectronics and Electronics Packaging
458/MATE 458	

DATA 301 Introduction to Data Science

PHYS/CPE 345 Quantum Computing

The following restrictions must be satisfied

4 of these units must be satisfied by a course that has as a prereq either

1) An upper-division course required by the major (excluding CSC 357) or

2) Another Technical Elective

Select from the following:

CSC 366	Database Modeling, Design and Implementation
CSC 409	Current Topics in Software Engineering
CSC 410	Software Evaluation
CSC 421	Binary Exploitation: Tools and Techniques
CSC 422	Network Security
CSC 424	Software Security
CSC/CPE 425	Wireless Security
CSC 429	Current Topics in Computer Security
CSC/CPE 431	Compiler Construction
CSC 437	Dynamic Web Development
CSC 448	Bioinformatics Algorithms
CSC/CPE 454	Implementation of Operating Systems
CSC 466	Knowledge Discovery from Data
CSC 468	Database Management Systems Implementation
CSC 473	Advanced Rendering Techniques
CSC 474	Computer Animation
CSC/CPE 476	Real-Time 3D Computer Graphics Software
CSC 477	Scientific and Information Visualization
CSC 478	Current Topics in Computer Graphics
CSC 481	Knowledge Based Systems
CSC 482	Speech and Language Processing
CSC 486	Human-Computer Interaction Theory & Design
CSC 487	Deep Learning
CSC 497	Research Senior Project I
& CSC 498	and Research Senior Project II
CSC 508	Software Engineering I
CSC 509	Software Engineering II
CSC/CPE 515	Computer Architecture
CSC 521	Computer Security
CSC 522	Advanced Network Security
CSC 530	Languages and Translators
CSC 540	Theory of Computation II

CSC 549	Advanced Algorithm Design and Analysis
CSC 550	Operating Systems
CSC 560	Database Systems
CSC/CPE 564	Computer Networks: Research Topics
CSC 566	Topics in Advanced Data Mining
CSC 572	Computer Graphics
CSC 580	Artificial Intelligence
CSC 581	Computer Support for Knowledge Management
CSC 582	Computational Linguistics
CSC 587	Advanced Deep Learning
CPE 416	Autonomous Mobile Robotics
CPE 465	Advanced Computer Networks
Up to 4 units may be taken from the Approved Ext Elect listed below:	
AERO 450	Introduction to Aerospace Systems Engineering
ART 376	The Art of Mixed Reality
ART 384	Digital 3D Modeling and Design
BUS 310	Introduction to Entrepreneurship
CHEM 216	Organic Chemistry I
CHEM 217	Organic Chemistry II
CHEM 218	Organic Chemistry III
CHEM 312	Survey of Organic Chemistry
ECON 339	Econometrics
EE 201	Electric Circuit Theory
& EE 251	and Electric Circuits Laboratory
EE 314	Introduction to Communication Systems
EE/CPE 336	Microprocessor System Design
EE 424	Introduction to Remote Sensing
ENVE 542	Sustainable Environmental Engineering
IME 301	Operations Research I
IME 356	Manufacturing Automation
IME 403	Software Product Management
IME 456	The Industrial Internet of Things
MATH 206	Linear Algebra I
MATH 242	Differential Equations I
MATH 248	Methods of Proof in Mathematics
MATH 341	Theory of Numbers
MATH 350	Mathematical Software
MATH 412	Introduction to Analysis I
ME 211	Engineering Statics
ME 212	Engineering Dynamics
ME 405	Mechatronics
PHIL 412	Epistemology
PHIL 422	Philosophy of Mind
PHYS 211	Modern Physics I
PSY 329	Research Methods in Psychology
PSY 333	Quant Research Methods for the Behavioral Sciences
PSY 357	Cognition
STAT 305	Introduction to Probability and Simulation
STAT 323	Design and Analysis of Experiments I
STAT 324	Applied Regression Analysis
STAT 330	Statistical Computing with SAS
STAT 331	Statistical Computing with R
STAT 334	Applied Linear Models
STAT 416	Statistical Analysis of Time Series
STAT 418	Categorical Data Analysis
STAT 419	Applied Multivariate Statistics
STAT 434	Statistical Learning: Methods and Applications
Total Units	