BS in Computer Science

The B.S. in Computer Science provides a strong base in programming and problem-solving skills, a theoretical understanding of computer science, and practical experience in applying the computer to the solution of problems. Specialization is provided through numerous upper-division electives. The program offers concentrations in Secure Cyber Systems, Software Engineering, and Data Analytics.

Marketable Skills

1. Students will be able to function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
2. Students will have the skills to communicate effectively in a variety of professional contexts.
3. Students will have the knowledge to design, implement, and evaluate a computing-based solution to meet given set of computing requirements.
4. Adaptability: Readily adjust to changing and complex situations, acquiring necessary skills and knowledge along the way.

Educational Objectives

The B.S. in Computer Science program's educational objectives address the department's mission to serve the region, nation, and the world by graduating highly competitive students with the potential to become leaders in their profession.

- Our graduates will be innovative and productive problem solvers in industry, academia, and government who have the ability to apply theoretical and technical computer science knowledge to provide solutions to real-world problems of varying complexity (*Quality of our Graduates*).
- Our graduates will contribute to the economic health of the nation, in particular the Paso del Norte region, through technical expertise and complementary skills such as ability to work in interdisciplinary teams, lead, innovate, and apply entrepreneurial thinking with a global perspective (*Local and Global Impact*).
- Our graduates will remain at the forefront of computing through research, advanced studies, certification, entrepreneurship, or other means of self-advancement (*Continuous Learning*).

Fast Track

The Fast-Track Program (http://catalog.utep.edu/admissions/undergraduate/fast-track/#text) enables outstanding undergraduate UTEP students to receive both undergraduate and graduate credit for up to 15 hours of UTEP course work as determined by participating Master's and Doctoral programs. Not all undergraduate programs have elected to participate in the Fast Track option, so students should see their departmental graduate advisor for information about requirements and guidelines. A list of courses that have been approved for possible use at the graduate level is found here (http://catalog.utep.edu/admissions/undergraduate/fast-track/#fasttrackcoursestext).

Degree Plan

Required Credits: 120

Code	Title	Hours
University Core Curriculum		
Complete the University Core Curriculum requirements. (p. 4)		42
Computer Science Designated Core (All courses require a grade of C or better.)		
Required Courses:		
CE 2326	Econ for Engrs & Scientists	3
CS 1320	Computer Programming Sci/Engr	3
MATH 1508	Precalculus ((Listed if completed, but not required))	3-5
or MATH 1310	Trigonometry and Conics	
or MATH 1411	Calculus I	
PHYS 2320 & PHYS 2120	Introductory Mechanics and Laboratory for PHYS 2320	4
or PHYS 2420	Introductory Mechanics	
PHYS 2321 & PHYS 2121	Introductory Electromagnetism and Laboratory for PHYS 2321	4
or PHYS 2421	Introductory Electromagnetism	
Computer Science Additional Science Hours (All courses require a grade of C or better.)		
Select one of the following lecture/lab combinations:		4
BIOL 1305 & BIOL 1107	General Biology and Topics in Study of Life I	

BIOL 1306 & BIOL 1108	Organismal Biology and Organismal Biology Laboratory	
ASTR 1307 & ASTR 1107	Elem Astronomy-Solar System and Astronomy Lab I	
CHEM 1305 & CHEM 1105	General Chemistry and Laboratory for CHEM 1305	
CHEM 1306 & CHEM 1106	General Chemistry and Laboratory for CHEM 1306	
GEOL 1313 & GEOL 1103	Intro to Physical Geology and Lab for GEOL 1313	
GEOL 1314 & GEOL 1104	Intro to Historical Geol and Lab for GEOL 1314	
PHYS 2321 & PHYS 2121	Introductory Electromagnetism and Laboratory for PHYS 2321	
Computer Science Core (All courses require a grade of C or better.)		
Required Courses:		
CS 1301 & CS 1101	Intro to Computer Science and Intro to Computer Science Lab	4
CS 2302	Data Structures	3
CS 2401	Elem. Data Struct./Algorithms	4
ECE 2103	Lab for ECE 2303	1
ECE 2303	Digital Systems Design I	3
MATH 1312	Calculus II	3
MATH 1411	Calculus I	4
MATH 2300	Discrete Mathematics	3
or		
CS 2101 & CS 2202	Discrete Structures I and Discrete Structures II	
Computer Science Major		
Required Courses:		
CS 3195	Junior Professionl Orientation	1
CS 3331	Adv. Object-Oriented Programng [C]	3
CS 3350	Automata/Computabi/Formal Lang	3
CS 3360	Programming Language Concepts	3
CS 3432	Computer Organization [C]	4
CS 4175	Parallel Computing	1
CS 4310	Software Eng: Requirements Eng [C]	3
CS 4311	Software Eng: Design & Implmnt	3
CS 4342	Database Systems	3
CS 4375	Operating Systems Concepts	3
MATH 3323	Matrix Algebra	3
Statistics:		
Select one of the following:		3
ECE 3332	Prob with App Elect/Comp Eng	
STAT 3320	Probability and Statistics	
STAT 3330	Probability	
Additional Mathematics or Science Option:		
Option A: Mathematics (Select one course from the following):		
MATH 2313	Calculus III	
MATH 2325	Intro. to Higher Mathematics	
MATH 2326	Differential Equations	
MATH 3320	Actuarial Mathematics	
MATH 3325	Principles of Mathematics	
MATH 4329	Numerical Analysis	

| STAT 4380 | Statistics Inference |
| STAT 4385 | Applied Regression Analysis |

Option B: An additional 3 credit lecture course from the list of science courses above

Select an additional 3 hours from the list below that has NOT been used to satisfy the Lab-Lecture University Core Life and Physical Sciences requirement

ASTR 1307	Elem Astronomy-Solar System
BIOL 1305	General Biology
BIOL 1306	Organismal Biology
CHEM 1305	General Chemistry
CHEM 1306	General Chemistry
GEOL 1313	Intro to Physical Geology
GEOL 1314	Intro to Historical Geol
PHYS 2321	Introductory Electromagnetism
PHYS 2121	Laboratory for PHYS 2321

Technical Electives:

Select 15 hours from the following: [1]		15
CS 1110	Intro to Problem Solving	1
CS 1120	Computational Thinking	1
CS 1190	Special Topics in Computing	1
CS 1290	Special Topics in Computing	2
CS 2210	Algo. Thinking in Prob. Solv.	2
CS 3000 or 4000 level course		
Free Electives:		
Complete three additional hours of free electives [2]		3
Total Hours		**120**

C Courses require a grade of C or better.

1 CS 1110, CS 1120, CS 2210, CS 1190, CS 1290, CS 3000 or 4000 level course. No more than three credit hours of CS 1xxx and CS 2xxx can count for technical electives. No more than six credit hours of CS 1xxx, CS 2xxx, CS 4390, CS 4181, CS 4371, CS 4x73, CS 4392 and/or CS 4393 (in any combination) can count for technical electives.

2 Courses that may be counted towards the free elective requirements are college-level courses offered by the college of Liberal Arts, Business, Science, or Engineering. Remedial courses cannot be counted as a free elective.

Concentrations

Secure Cyber Systems

Students earning a B.S. in Computer Science can select a concentration in Secure Cyber-Systems by taking a set of courses with significant computer security content. Students must take the following five courses:

- CS 4316 Computer Networks
- CS 4318 Wireless Networks
- CS 4351 Computer Security
- CS 4379 Software Reverse Engineering
- CS 4177 Software Vulnerabilities

Software Engineering

Students earning a B.S. in Computer Science can select a concentration in Software Engineering by taking the following set of courses.

Students must take the following two courses:

- CS 4374 Software Construction
- CS 4387 Software Integration and V&V

Students must take one course from the following list:

- CS 4330 Mobile Application Development
- CS 4339 Secure Web-Based Systems
- CS 4371 Computer Science Problems

- CS 4373 Computer Science Internship
- CS 4381 Topics Software Engineering

Data Analytics

Students earning a B.S. in Computer Science can select a concentration in Data Analytics by taking the following set of courses.

Student must take the following two courses:

- CS 4361 Machine Learning
- CS 4362 Data Mining

Students must take one course from the following list:

- CS 4363 Computer Vision
- CS 4364 Topics in Data Science

University Core Curriculum

The department may make specific suggestions for courses which are most applicable towards your major.

All courses require a C or better

I. Communication (six hours)

Code	Title	Hours
Courses in this category focus on developing ideas and expressing them clearly, considering the effect of the message, fostering understanding, and building the skills needed to communicate persuasively. Courses involve the command of oral, aural, written, and visual literacy skills that enable people to exchange messages appropriate to the subject, occasion, and audience.		
Select six hours of the following:		6
For students whose secondary education was in English:		
COMM 1611	Written and Oral Communication	
ENGL 1313	Writing About Literature	
RWS 1301	Rhetoric & Composition I	
RWS 1302	Rhetoric & Composition 2	
RWS 1601	Rhetoric, Composition & Comm	
For students whose secondary education was not in English:		
ESOL 1311	Expos Engl Compos-Spkr Esl	
ESOL 1312	Res & Crit Writng Spkr Esl	
Total Hours		**6**

II. American History (six hours)

Code	Title	Hours
Courses in this category focus on the consideration of past events and ideas relative to the United States, with the option of including Texas History for a portion of this component area. Courses involve the interaction among individuals, communities, states, the nation, and the world, considering how these interactions have contributed to the development of the United States and its global role.		
HIST 1301	History of U.S. to 1865	3
HIST 1302	History of U.S. Since 1865	3
Total Hours		**6**

III. Language, Philosophy & Culture (three hours)

Code	Title	Hours
Courses in this category focus on how ideas, values, beliefs, and other aspects of culture express and affect human experience. Courses involve the exploration of ideas that foster aesthetic and intellectual creation in order to understand the human condition across cultures.		
Select one of the following:		3
AFST 2300	Intro-African Amer Studies	
CHIC 2302	Latina/o Presence in the U.S.	
ENGL 2311	English Literature	
ENGL 2312	English Literature	

ENGL 2313	Intro to American Fiction	
ENGL 2314	Intro to American Drama	
ENGL 2318	Intro to American Poetry	
FREN 2322	Making of the "Other" Americas	
HIST 2301	World History to 1500	
HIST 2302	World History Since 1500	
PHIL 1301	Introduction to Philosophy	
PHIL 2306	Ethics	
RS 1301	Introduct to Religious Studies	
SPAN 2340	Seeing & Naming: Conversations	
WS 2300	Introduction to Womens Studies	
WS 2350	Global Feminisms	
Total Hours		**3**

IV. Mathematics (three hours)

Code	Title	Hours
Courses in this category focus on quantitative literacy in logic, patterns, and relationships. Courses involve the understanding of key mathematical concepts and the application of appropriate quantitative tools to everyday experience.		
Select one of the following:		3
MATH 1309	College Algebra	
MATH 1310	Trigonometry and Conics	
MATH 1319	Math in the Modern World	
MATH 1320	Math for Social Sciences I	
MATH 1411	Calculus I	
MATH 1508	Precalculus [1,2]	
MATH 2301	Math for Social Sciences II	
STAT 1380	Statistical Literacy	
STAT 2480	Elementary Statistical Methods	
1 A higher-level course in the calculus sequence can be substituted.		
2 TCCN MATH 1314 will also satisfy this requirement.		
Total Hours		**3**

V. Life & Physical Sciences (six hours)

Code	Title	Hours
Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on experiences.		
Select one of the following:		1-4
ASTR 1107	Astronomy Lab I	
ASTR 1307	Elem Astronomy-Solar System	
ASTR 1308	Elem Astr Stars & Galaxies	
BIOL 1103	Introductory Biology Lab	
BIOL 1104	Human Biology Laboratory	
BIOL 1107	Topics in Study of Life I	
BIOL 1108	Organismal Biology Laboratory	
BIOL 1203	Introductory Biology	
BIOL 1304	Human Biology	
BIOL 1305	General Biology	
BIOL 1306	Organismal Biology	
BIOL 2111	Human Anat/Physio Lab I	
BIOL 2113	Human Anat/Physio Lab II	
BIOL 2311	Human Anat/Physiology I	
BIOL 2313	Human Anat/Physiology II	
CHEM 1105	Laboratory for CHEM 1305	

CHEM 1106	Laboratory for CHEM 1306
CHEM 1107	Intro General Chemistry Lab
CHEM 1108	Intro Organic & Biochem Lab
CHEM 1305	General Chemistry
CHEM 1306	General Chemistry
CHEM 1307	Intro to General Chemistry
CHEM 1308	Intro Organic & Biochemistry
ESCI 1101	Environmental Sci. Lab
ESCI 1102	Non-major Lab for ESCI 1301
ESCI 1202	Intro to Environment Science 2
ESCI 1301	Intro to Environmental Sci
GEOG 1106	Laboratory for GEOG 1306
GEOG 1306	Physical Geography
GEOL 1103	Lab for GEOL 1313
GEOL 1104	Lab for GEOL 1314
GEOL 1111	Principles of Earth Sci - Lab
GEOL 1112	Laboratory for Geology 1212
GEOL 1211	Principles of Earth Sciences
GEOL 1212	Principles of Earth Science
GEOL 1230	The Blue Planet
GEOL 1231	Natural Hazards
GEOL 1313	Intro to Physical Geology
GEOL 1314	Intro to Historical Geol
HSCI 2302	Fundamentals of Nutrition
HSCI 2303	Wellness Dynamics
MICR 2330	Microorganisms and Disease
PHYS 1403	General Physics I
PHYS 1404	General Physics II
PHYS 2120	Laboratory for PHYS 2320
PHYS 2121	Laboratory for PHYS 2321
PHYS 2320	Introductory Mechanics
PHYS 2321	Introductory Electromagnetism
Total Hours	**6**

VI. Political Science (six hours)

Code	Title	Hours
Courses in this category focus on consideration of the Constitution of the United States and the constitutions of the states, with special emphasis on that of Texas. Courses involve the analysis of governmental institutions, political behavior, civic engagement, and their political and philosophical foundations.		
Required Courses:		
POLS 2310	Introduction to Politics	3
POLS 2311	American Gover & Politics	3
Total Hours		**6**

VII. Social and Behavioral Sciences (three hours)

Code	Title	Hours
Courses in this category focus on the application of empirical and scientific methods that contribute to the understanding of what makes us human. Courses involve the exploration of behavior and interactions among individuals, groups, institutions, and events, examining their impact on the individual, society, and culture.		
Select one of the following:		3
ANTH 1301	Intro-Phys Anth/Archeolog	
ANTH 1302	Intro-Cultural Anthropology	
ANTH 1310	Cultural Geography	

ANTH 2320	Intro to Linguistics	
CE 2326	Econ for Engrs & Scientists	
CHIC 2311	Intro to Chicano Studies	
ASIA 2300	Asian American Studies	
COMM 2350	Interpersonal Communication	
COMM 2372	Mass Media and Society	
ECON 2303	Principles of Macroeconomics	
ECON 2304	Principles of Microeconomics	
EDPC 1301	Introduction to Ed Psychology	
EDU 1342	Action Research in Classrooms	
ENGL 2320	Introduction to Linguistics	
GEOG 1310	Cultural Geography	
LEAD 2300	Community Service	
LING 2320	An Intro. to Linguistics	
LING 2340	Lang. Inside & Out: Sel Topics	
PSYC 1301	Introduction to Psychology	
SOCI 1301	Introduction to Sociology	
SOCI 1310	Cultural Geography	
Total Hours		**3**

VIII. Creative Arts (three hours)

Code	Title	Hours
Courses in this category focus on the appreciation and analysis of creative artifacts and works of the human imagination. Courses involve the synthesis and interpretation of artistic expression and enable critical, creative, and innovative communication about works of art.		
Select one of the following:		3
ART 1300	Art Appreciation	
ARTH 1305	History of Art I	
ARTH 1306	History of Art II	
CHIC 1311	Chicana/o Fine Arts Appreciat	
DANC 1304	Dance Appreciation	
FILM 1390	Intro-Art of Motion Pict.	
MUSL 1324	Music Appreciation	
MUSL 1327	Jazz to Rock	
MUSL 2321	Music, Culture, and Society	
THEA 1313	Introduction to Theatre	
Total Hours		**3**

IX. Component Area Option (six hours)

Code	Title	Hours
a. A minimum of 3 SCH must meet the definition and corresponding Core Objectives specified in one of the foundational component areas. b. As an option for up to 3 semester credit hours of the Component Area Option, an institution may select course(s) that: (i) Meet(s) the definition specified for one or more of the foundational component areas; and (ii) Include(s) a minimum of three Core Objectives, including Critical Thinking Skills, Communication Skills, and one of the remaining Core Objectives of the institution's choice.		
BUSN 1301	Intro to Global Business	
COMM 1301	Public Speaking	
COMM 1302	Business/Profession Comm	
CS 1310	Intro-Computational Thinking	
CS 1320	Computer Programming Sci/Engr	
EL 1301	Eng Innovation and Leadership	
LEAD 1300	Introduction to Leadership	
SCI 1301	Inquiry in Math & Science	

Code	Title	Hours
UNIV 1301	Seminar/Critical Inquiry	
Total Hours		**0**

4-Year Sample Degree Plan

BS in Computer Science (Starting with Pre-Calculus)

Code	Title	Hours
BS COMPUTER SCIENCE		
Summer		
(prior to first fall semester if needed)		
MATH 1508	Precalculus	3-5
or MATH 1310	Trigonometry and Conics	
FRESHMAN		
Fall		
CS 1101	Intro to Computer Science Lab	1
CS 1301	Intro to Computer Science	3
CS 1310	Intro-Computational Thinking (*)	3
CS 2101	Discrete Structures I	1
MATH 1411	Calculus I (*)	4
RWS 1301	Rhetoric & Composition I (*)	3
Spring		
CS 2202	Discrete Structures II	2
CS 2401	Elem. Data Struct./Algorithms	4
HIST 1301	History of U.S. to 1865	3
RWS 1302	Rhetoric & Composition 2	3
UNIV 1301	Seminar/Critical Inquiry	3
SOPHOMORE		
Fall		
CS 2302	Data Structures	3
ECE 2103	Lab for ECE 2303	1
ECE 2303	Digital Systems Design I	3
HIST 1302	History of U.S. Since 1865	3
MATH 1312	Calculus II	3
Social and Behavioral Sciences [*]		3
Spring		
CS 3350	Automata/Computabi/Formal Lang	3
PHYS 2320	Introductory Mechanics	3
PHYS 2120	Laboratory for PHYS 2320	1
POLS 2310	Introduction to Politics	3
Creative Arts [*]		3
Language, Philosophy and Culture [*]		3
JUNIOR		
Fall		
CS 3331	Adv. Object-Oriented Programng	3
CS 3432	Computer Organization	4
MATH 3323	Matrix Algebra	3
POLS 2311	American Gover & Politics	3
Additional Math or Science Lecture		3
Spring		
CS 3195	Junior Professionl Orientation	1
CS 4375	Operating Systems Concepts	3
Life and Physical Science Lecture and Lab		4
Technical Elective		3

Technical Elective		3
SENIOR		
Fall		
CS 3360	Programming Language Concepts	3
CS 4310	Software Eng: Requirements Eng	3
CS 4342	Database Systems	3
STAT 3320	Probability and Statistics	3
Technical Elective		3
Spring		
CS 4175	Parallel Computing	1
CS 4311	Software Eng: Design & Implmnt	3
Free Elective		3
Technical Elective		3
Technical Elective		2
Notes:		

- Courses that are part of the University Core Curriculum.

• Life and Physical Sciences. In addition to PHYS 2420, students must complete one semester of lecture and associated lab. Acceptable courses are: ASTR 1307 Elem Astronomy-Solar System and ASTR 1107 Astronomy Lab I, PHYS 2421 Introductory Electromagnetism, BIOL 1305 General Biology and BIOL 1107 Topics in Study of Life I, BIOL 1306 Organismal Biology and BIOL 1108 Organismal Biology Laboratory, CHEM 1305 General Chemistry and CHEM 1105 Laboratory for CHEM 1305, CHEM 1306 General Chemistry and CHEM 1106 Laboratory for CHEM 1306, GEOL 1313 Intro to Physical Geology and GEOL 1103 Lab for GEOL 1313, GEOL 1314 Intro to Historical Geology and GEOL 1104 Lab for GEOL 1314. Courses that count towards the core curriculum (2 lectures and a lab associated with one of the 2 lectures) require grade C or better.

• Additional Mathematics or Science Option. Option A: Mathematics: MATH 2313, 2325, 2336, 3320, 3325, 4329, STAT 3381, 4380, 4385 Option B: Science. An additional 3-credit lecture course from the list of Life and Physical Science courses which was not used to satisfy the science lecture/lab requirement.

• Technical Electives: 15 hours from the following: CS 1110 Intro to Problem Solving, CS 1120 Computational Thinking, CS 2210 Algo Thinking in Prob Solv, CS 1190 Special Topics in Computing, CS 1290 Special Topics in Computing, and any CS 3000 or 4000 level courses that are not required upper level CS courses . No more than three credit hours of CS 1XXX and CS 2XXX can count for technical electives. No more than six credit hours of CS 1XXX, CS 2XXX, CS 4390 Special Topics in Computer Sci, CS 4181 Undergraduate Seminar, CS 4371 Computer Science Problems, CS 4X73, CS 4392 Rsrch Methods/Computer Science and/or CS 4393 Senior Project (in any combination) can count for technical electives.

• Free Elective. Courses that may be counted towards the free elective requirement are college-level courses (not remedial) offered by the college of Liberal Arts, Business, Science, or Engineering.

Total Hours	**122-124**

BS in Computer Science (Starting with Calculus)

Code	Title	Hours
BS COMPUTER SCIENCE		
FRESHMAN		
Fall		
RWS 1301	Rhetoric & Composition I (*)	3
CS 1310	Intro-Computational Thinking (*)	3
MATH 1411	Calculus I (*)	4
CS 1301	Intro to Computer Science	3
CS 1101	Intro to Computer Science Lab	1
CS 2101	Discrete Structures I	1
Spring		
HIST 1301	History of U.S. to 1865	3
RWS 1302	Rhetoric & Composition 2	3
UNIV 1301	Seminar/Critical Inquiry	3
CS 2401	Elem. Data Struct./Algorithms	4
CS 2202	Discrete Structures II	2
SOPHOMORE		

Fall

HIST 1302	History of U.S. Since 1865	3
Social and Behavioral Sciences [*]		3
MATH 1312	Calculus II	3
CS 2302	Data Structures	3
ECE 2103	Lab for ECE 2303	1
ECE 2303	Digital Systems Design I	3

Spring

POLS 2310	Introduction to Politics	3
Language, Philosophy and Culture [*]		3
Creative Arts [*]		3
CS 3350	Automata/Computabi/Formal Lang	3
PHYS 2320	Introductory Mechanics	3
PHYS 2120	Laboratory for PHYS 2320	1

JUNIOR

Fall

POLS 2311	American Gover & Politics	3
MATH 3323	Matrix Algebra	3
CS 3331	Adv. Object-Oriented Programng	3
CS 3432	Computer Organization	4
Additional Math or Science Lecture		3

Spring

Life and Physical Science Lecture and Lab		4
CS 3195	Junior Professionl Orientation	1
CS 4375	Operating Systems Concepts	3
Technical Elective		3
Technical Elective		3

SENIOR

Fall

CS 3360	Programming Language Concepts	3
CS 4310	Software Eng: Requirements Eng	3
CS 4342	Database Systems	3
STAT 3320	Probability and Statistics	3
Technical Elective		3

Spring

CS 4175	Parallel Computing	1
CS 4311	Software Eng: Design & Implmnt	3
Free Elective		3
Technical Elective		3
Technical Elective		2

Notes:

• Courses that are part of the University Core Curriculum.

• Life and Physical Sciences. In addition to PHYS 2420, students must complete one semester of lecture and associated lab. Acceptable courses are: ASTR 1307 Elem Astronomy-Solar System and ASTR 1107 Astronomy Lab I, PHYS 2421 Introductory Electromagnetism, BIOL 1305 General Biology and BIOL 1107 Topics in Study of Life I, BIOL 1306 Organismal Biology and BIOL 1108 Organismal Biology Laboratory, CHEM 1305 General Chemistry and CHEM 1105 Laboratory for CHEM 1305, CHEM 1306 General Chemistry and CHEM 1106 Laboratory for CHEM 1306, GEOL 1313 Intro to Physical Geology and GEOL 1103 Lab for GEOL 1313, GEOL 1314 Intro to Historical Geology and GEOL 1104 Lab for GEOL 1314. Courses that count towards the core curriculum (2 lectures and a lab associated with one of the 2 lectures) require grade C or better.

• Additional Mathematics or Science Option. Option A: Mathematics: MATH 2313, 2325, 2336, 3320, 3325, 4329, STAT 3381, 4380, 4385 Option B: Science. An additional 3-credit lecture course from the list of Life and Physical Science courses which was not used to satisfy the science lecture/lab requirement.

• Technical Electives: 15 hours from the following: CS 1110 Intro to Problem Solving, CS 1120 Computational Thinking, CS 2210 Algo Thinking in Prob Solv, CS 1190 Special Topics in Computing, CS 1290 Special Topics in Computing, and any CS 3000 or 4000 level courses that are not required upper level CS courses . No more than three credit hours of CS 1XXX and CS 2XXX can count for technical electives. No more than six credit hours of CS 1XXX, CS 2XXX, CS 4390 Special Topics in Computer Sci, CS 4181 Undergraduate Seminar, CS 4371 Computer Science Problems, CS 4X73, CS 4392 Rsrch Methods/Computer Science and/or CS 4393 Senior Project (in any combination) can count for technical electives.

• Free Elective. Courses that may be counted towards the free elective requirement are college-level courses (not remedial) offered by the college of Liberal Arts, Business, Science, or Engineering.

Total Hours		**119**

BS in Computer Science Concentration Data Analytics (Starting with Pre-Calculus)

Code	Title	Hours
BS COMPUTER SCIENCE CONCENTRATION IN DATA ANALYTICS		
Summer		
(prior to first fall semester if needed)		
MATH 1508	Precalculus	3-5
or MATH 1310	Trigonometry and Conics	
FRESHMAN		
Fall		
CS 1101	Intro to Computer Science Lab	1
CS 1301	Intro to Computer Science	3
CS 1310	Intro-Computational Thinking (*)	3
CS 2101	Discrete Structures I	1
MATH 1411	Calculus I (*)	4
RWS 1301	Rhetoric & Composition I (*)	3
Spring		
CS 2202	Discrete Structures II	2
CS 2401	Elem. Data Struct./Algorithms	4
HIST 1301	History of U.S. to 1865	3
RWS 1302	Rhetoric & Composition 2	3
UNIV 1301	Seminar/Critical Inquiry	3
SOPHOMORE		
Fall		
CS 2302	Data Structures	3
ECE 2103	Lab for ECE 2303	1
ECE 2303	Digital Systems Design I	3
HIST 1302	History of U.S. Since 1865	3
MATH 1312	Calculus II	3
Social and Behavioral Sciences *		3
Spring		
CS 3350	Automata/Computabi/Formal Lang	3
PHYS 2320	Introductory Mechanics	3
PHYS 2120	Laboratory for PHYS 2320	1
POLS 2310	Introduction to Politics	3
Creative Arts *		3
Language, Philosophy and Culture *		3
JUNIOR		
Fall		
CS 3331	Adv. Object-Oriented Programng	3
CS 3432	Computer Organization	4
MATH 3323	Matrix Algebra	3
POLS 2311	American Gover & Politics	3
Additional Math or Science Lecture		3

Spring

CS 3195	Junior Professionl Orientation	1
CS 4363	Computer Vision	3
or CS 4364	Topics in Data Science	
CS 4375	Operating Systems Concepts	3
Life and Physical Science Lecture and Lab		4
Technical Elective		3

SENIOR

Fall

CS 3360	Programming Language Concepts	3
CS 4310	Software Eng: Requirements Eng	3
CS 4342	Database Systems	3
CS 4361	Machine Learning	3
STAT 3320	Probability and Statistics	3

Spring

CS 4175	Parallel Computing	1
CS 4311	Software Eng: Design & Implmnt	3
CS 4362	Data Mining	3
Free Elective		3
Technical Elective		2

Notes:

- Courses that are part of the University Core Curriculum.

• Life and Physical Sciences. In addition to PHYS 2420, students must complete one semester of lecture and associated lab. Acceptable courses are: ASTR 1307 Elem Astronomy-Solar System and ASTR 1107 Astronomy Lab I, PHYS 2421 Introductory Electromagnetism, BIOL 1305 General Biology and BIOL 1107 Topics in Study of Life I, BIOL 1306 Organismal Biology and BIOL 1108 Organismal Biology Laboratory, CHEM 1305 General Chemistry and CHEM 1105 Laboratory for CHEM 1305, CHEM 1306 General Chemistry and CHEM 1106 Laboratory for CHEM 1306, GEOL 1313 Intro to Physical Geology and GEOL 1103 Lab for GEOL 1313, GEOL 1314 Intro to Historical Geology and GEOL 1104 Lab for GEOL 1314. Courses that count towards the core curriculum (2 lectures and a lab associated with one of the 2 lectures) require grade C or better.

• Additional Mathematics or Science Option. Option A: Mathematics: MATH 2313, 2325, 2336, 3320, 3325, 4329, STAT 3381, 4380, 4385 Option B: Science. An additional 3-credit lecture course from the list of Life and Physical Science courses which was not used to satisfy the science lecture/lab requirement.

• Technical Electives: 3 hours from CS4363 or CS4364. In addition, the student will have to complete 6 from the following: CS 1110 Intro to Problem Solving, CS 1120 Computational Thinking, CS 2210 Algo Thinking in Prob Solv, CS 1190 Special Topics in Computing, CS 1290 Special Topics in Computing, and any CS 3000 or 4000 level courses that are not required upper level CS courses . No more than three credit hours of CS 1XXX and CS 2XXX can count for technical electives. No more than six credit hours of CS 1XXX, CS 2XXX, CS 4390 Special Topics in Computer Sci, CS 4181 Undergraduate Seminar, CS 4371 Computer Science Problems, CS 4X73, CS 4392 Rsrch Methods/Computer Science and/or CS 4393 Senior Project (in any combination) can count for technical electives.

• Free Elective. Courses that may be counted towards the free elective requirement are college-level courses (not remedial) offered by the college of Liberal Arts, Business, Science, or Engineering.

Total Hours	**122-124**

BS in Computer Science Concentration Data Analytics (Starting with Calculus)

Code	Title	Hours
BS COMPUTER SCIENCE CONCENTRATION IN DATA ANALYTICS		
FRESHMAN		
Fall		
CS 1101	Intro to Computer Science Lab	1
CS 1301	Intro to Computer Science	3
CS 1310	Intro-Computational Thinking (*)	3
CS 2101	Discrete Structures I	1
MATH 1411	Calculus I (*)	4
RWS 1301	Rhetoric & Composition I (*)	3
Spring		

CS 2202	Discrete Structures II	2
CS 2401	Elem. Data Struct./Algorithms	4
HIST 1301	History of U.S. to 1865	3
RWS 1302	Rhetoric & Composition 2	3
UNIV 1301	Seminar/Critical Inquiry	3
SOPHOMORE		
Fall		
CS 2302	Data Structures	3
ECE 2103	Lab for ECE 2303	1
ECE 2303	Digital Systems Design I	3
HIST 1302	History of U.S. Since 1865	3
MATH 1312	Calculus II	3
Social and Behavioral Sciences [*]		3
Spring		
CS 3350	Automata/Computabi/Formal Lang	3
PHYS 2320	Introductory Mechanics	3
PHYS 2120	Laboratory for PHYS 2320	1
POLS 2310	Introduction to Politics	3
Creative Arts [*]		3
Language, Philosophy and Culture [*]		3
JUNIOR		
Fall		
CS 3331	Adv. Object-Oriented Programng	3
CS 3432	Computer Organization	4
MATH 3323	Matrix Algebra	3
POLS 2311	American Gover & Politics	3
Additional Math or Science Lecture		3
Spring		
CS 3195	Junior Professionl Orientation	1
CS 4363	Computer Vision	3
or CS 4364	Topics in Data Science	
CS 4375	Operating Systems Concepts	3
Life and Physical Science Lecture and Lab		4
Technical Elective		3
SENIOR		
Fall		
CS 3360	Programming Language Concepts	3
CS 4310	Software Eng: Requirements Eng	3
CS 4342	Database Systems	3
CS 4361	Machine Learning	3
STAT 3320	Probability and Statistics	3
Spring		
CS 4175	Parallel Computing	1
CS 4311	Software Eng: Design & Implmnt	3
CS 4362	Data Mining	3
Free Elective		3
Technical Elective		2

Notes:

- Courses that are part of the University Core Curriculum.

• Life and Physical Sciences. In addition to PHYS 2420, students must complete one semester of lecture and associated lab. Acceptable courses are: ASTR 1307 Elem Astronomy-Solar System and ASTR 1107 Astronomy Lab I, PHYS 2421 Introductory Electromagnetism, BIOL 1305 General Biology and BIOL 1107 Topics in Study of Life I, BIOL 1306 Organismal Biology and BIOL 1108 Organismal Biology Laboratory, CHEM 1305 General Chemistry and CHEM 1105 Laboratory for CHEM 1305, CHEM 1306 General Chemistry and CHEM 1106 Laboratory for CHEM 1306, GEOL 1313 Intro to Physical Geology and GEOL 1103 Lab for GEOL 1313, GEOL 1314 Intro to Historical Geology and GEOL 1104 Lab for GEOL 1314. Courses that count towards the core curriculum (2 lectures and a lab associated with one of the 2 lectures) require grade C or better.

• Additional Mathematics or Science Option. Option A: Mathematics: MATH 2313, 2325, 2336, 3320, 3325, 4329, STAT 3381, 4380, 4385 Option B: Science. An additional 3-credit lecture course from the list of Life and Physical Science courses which was not used to satisfy the science lecture/lab requirement.

• Technical Electives: 3 hours from CS4363 or CS4364. In addition, the student will have to complete 6 from the following: CS 1110 Intro to Problem Solving, CS 1120 Computational Thinking, CS 2210 Algo Thinking in Prob Solv, CS 1190 Special Topics in Computing, CS 1290 Special Topics in Computing, and any CS 3000 or 4000 level courses that are not required upper level CS courses . No more than three credit hours of CS 1XXX and CS 2XXX can count for technical electives. No more than six credit hours of CS 1XXX, CS 2XXX, CS 4390 Special Topics in Computer Sci, CS 4181 Undergraduate Seminar, CS 4371 Computer Science Problems, CS 4X73, CS 4392 Rsrch Methods/Computer Science and/or CS 4393 Senior Project (in any combination) can count for technical electives.

• Free Elective. Courses that may be counted towards the free elective requirement are college-level courses (not remedial) offered by the college of Liberal Arts, Business, Science, or Engineering.

Total Hours   **119**

BS in Computer Science Concentration Secure Cyber Systems (Starting with Pre-Calculus)

Code	Title	Hours
BS COMPUTER SCIENCE CONCENTRATION IN SECURE CYBER SYSTEMS		
Summer		
(prior to first fall semester if needed)		
MATH 1508	Precalculus	3-5
or MATH 1310	Trigonometry and Conics	
FRESHMAN		
Fall		
CS 1101	Intro to Computer Science Lab	1
CS 1301	Intro to Computer Science	3
CS 1310	Intro-Computational Thinking (*)	3
CS 2101	Discrete Structures I	1
MATH 1411	Calculus I (*)	4
RWS 1301	Rhetoric & Composition I (*)	3
Spring		
CS 2202	Discrete Structures II	2
CS 2401	Elem. Data Struct./Algorithms	4
HIST 1301	History of U.S. to 1865	3
RWS 1302	Rhetoric & Composition 2	3
UNIV 1301	Seminar/Critical Inquiry	3
SOPHOMORE		
Fall		
CS 2302	Data Structures	3
ECE 2103	Lab for ECE 2303	1
ECE 2303	Digital Systems Design I	3
HIST 1302	History of U.S. Since 1865	3
MATH 1312	Calculus II	3
Social and Behavioral Sciences [*]		3
Spring		
CS 3350	Automata/Computabi/Formal Lang	3
PHYS 2320	Introductory Mechanics	3
PHYS 2120	Laboratory for PHYS 2320	1
POLS 2310	Introduction to Politics	3

Language, Philosophy and Culture *		3
Creative Arts *		3
JUNIOR		
Fall		
CS 3331	Adv. Object-Oriented Programng	3
CS 3432	Computer Organization	4
MATH 3323	Matrix Algebra	3
POLS 2311	American Gover & Politics	3
Additional Math or Science Lecture		3
Spring		
CS 3195	Junior Professionl Orientation	1
CS 4316	Computer Networks	3
CS 4351	Computer Security	3
CS 4375	Operating Systems Concepts	3
Life and Physical Science Lecture and Lab		4
SENIOR		
Fall		
CS 3360	Programming Language Concepts	3
CS 4177	Software Vulnerabilities	1
CS 4310	Software Eng: Requirements Eng	3
CS 4342	Database Systems	3
STAT 3320	Probability and Statistics	3
Technical Elective		2
Spring		
CS 4175	Parallel Computing	1
CS 4311	Software Eng: Design & Implmnt	3
CS 4318	Wireless Networks	3
CS 4379	Software Reverse Engineering	3
Free Elective		3

Notes:

- Courses that are part of the University Core Curriculum.

• Life and Physical Sciences. In addition to PHYS 2420, students must complete one semester of lecture and associated lab. Acceptable courses are: ASTR 1307 Elem Astronomy-Solar System and ASTR 1107 Astronomy Lab I, PHYS 2421 Introductory Electromagnetism, BIOL 1305 General Biology and BIOL 1107 Topics in Study of Life I, BIOL 1306 Organismal Biology and BIOL 1108 Organismal Biology Laboratory, CHEM 1305 General Chemistry and CHEM 1105 Laboratory for CHEM 1305, CHEM 1306 General Chemistry and CHEM 1106 Laboratory for CHEM 1306, GEOL 1313 Intro to Physical Geology and GEOL 1103 Lab for GEOL 1313, GEOL 1314 Intro to Historical Geology and GEOL 1104 Lab for GEOL 1314. Courses that count towards the core curriculum (2 lectures and a lab associated with one of the 2 lectures) require grade C or better.

• Additional Mathematics or Science Option. Option A: Mathematics: MATH 2313, 2325, 2336, 3320, 3325, 4329, STAT 3381, 4380, 4385 Option B: Science. An additional 3-credit lecture course from the list of Life and Physical Science courses which was not used to satisfy the science lecture/lab requirement.

• Technical Electives: 2 hours from the following: CS 1110 Intro to Problem Solving, CS 1120 Computational Thinking, CS 2210 Algo Thinking in Prob Solv, CS 1190 Special Topics in Computing, CS 1290 Special Topics in Computing, and any CS 3000 or 4000 level courses that are not required upper level CS courses . No more than three credit hours of CS 1XXX and CS 2XXX can count for technical electives. No more than six credit hours of CS 1XXX, CS 2XXX, CS 4390 Special Topics in Computer Sci, CS 4181 Undergraduate Seminar, CS 4371 Computer Science Problems, CS 4X73, CS 4392 Rsrch Methods/Computer Science and/or CS 4393 Senior Project (in any combination) can count for technical electives.

• Free Elective. Courses that may be counted towards the free elective requirement are college-level courses (not remedial) offered by the college of Liberal Arts, Business, Science, or Engineering.

Total Hours **123-125**

BS in Computer Science Concentration Secure Cyber Systems (Starting with Calculus)

Code	Title	Hours
BS COMPUTER SCIENCE CONCENTRATION IN SECURE CYBER SYSTEMS		
FRESHMAN		
Fall		
CS 1101	Intro to Computer Science Lab	1
CS 1301	Intro to Computer Science	3
CS 1310	Intro-Computational Thinking (*)	3
CS 2101	Discrete Structures I	1
MATH 1411	Calculus I (*)	4
RWS 1301	Rhetoric & Composition I (*)	3
Spring		
CS 2202	Discrete Structures II	2
CS 2401	Elem. Data Struct./Algorithms	4
HIST 1301	History of U.S. to 1865	3
RWS 1302	Rhetoric & Composition 2	3
UNIV 1301	Seminar/Critical Inquiry	3
SOPHOMORE		
Fall		
CS 2302	Data Structures	3
ECE 2103	Lab for ECE 2303	1
ECE 2303	Digital Systems Design I	3
HIST 1302	History of U.S. Since 1865	3
MATH 1312	Calculus II	3
Social and Behavioral Sciences [*]		3
Spring		
CS 3350	Automata/Computabi/Formal Lang	3
PHYS 2320	Introductory Mechanics	3
PHYS 2120	Laboratory for PHYS 2320	1
POLS 2310	Introduction to Politics	3
Language, Philosophy and Culture [*]		3
Creative Arts [*]		3
JUNIOR		
Fall		
CS 3331	Adv. Object-Oriented Programng	3
CS 3432	Computer Organization	4
MATH 3323	Matrix Algebra	3
POLS 2311	American Gover & Politics	3
Additional Math or Science Lecture		3
Spring		
CS 3195	Junior Professionl Orientation	1
CS 4316	Computer Networks	3
CS 4351	Computer Security	3
CS 4375	Operating Systems Concepts	3
Life and Physical Science Lecture and Lab		4
SENIOR		
Fall		
CS 3360	Programming Language Concepts	3
CS 4177	Software Vulnerabilities	1
CS 4310	Software Eng: Requirements Eng	3
CS 4342	Database Systems	3
STAT 3320	Probability and Statistics	3

Technical Elective		2
Spring		
CS 4175	Parallel Computing	1
CS 4311	Software Eng: Design & Implmnt	3
CS 4318	Wireless Networks	3
CS 4379	Software Reverse Engineering	3
Free Elective		3

Notes:

- Courses that are part of the University Core Curriculum.

• Life and Physical Sciences. In addition to PHYS 2420, students must complete one semester of lecture and associated lab. Acceptable courses are: ASTR 1307 Elem Astronomy-Solar System and ASTR 1107 Astronomy Lab I, PHYS 2421 Introductory Electromagnetism, BIOL 1305 General Biology and BIOL 1107 Topics in Study of Life I, BIOL 1306 Organismal Biology and BIOL 1108 Organismal Biology Laboratory, CHEM 1305 General Chemistry and CHEM 1105 Laboratory for CHEM 1305, CHEM 1306 General Chemistry and CHEM 1106 Laboratory for CHEM 1306, GEOL 1313 Intro to Physical Geology and GEOL 1103 Lab for GEOL 1313, GEOL 1314 Intro to Historical Geology and GEOL 1104 Lab for GEOL 1314. Courses that count towards the core curriculum (2 lectures and a lab associated with one of the 2 lectures) require grade C or better.

• Additional Mathematics or Science Option. Option A: Mathematics: MATH 2313, 2325, 2336, 3320, 3325, 4329, STAT 3381, 4380, 4385 Option B: Science. An additional 3-credit lecture course from the list of Life and Physical Science courses which was not used to satisfy the science lecture/lab requirement.

• Technical Electives: 2 hours from the following: CS 1110 Intro to Problem Solving, CS 1120 Computational Thinking, CS 2210 Algo Thinking in Prob Solv, CS 1190 Special Topics in Computing, CS 1290 Special Topics in Computing, and any CS 3000 or 4000 level courses that are not required upper level CS courses . No more than three credit hours of CS 1XXX and CS 2XXX can count for technical electives. No more than six credit hours of CS 1XXX, CS 2XXX, CS 4390 Special Topics in Computer Sci, CS 4181 Undergraduate Seminar, CS 4371 Computer Science Problems, CS 4X73, CS 4392 Rsrch Methods/Computer Science and/or CS 4393 Senior Project (in any combination) can count for technical electives.

• Free Elective. Courses that may be counted towards the free elective requirement are college-level courses (not remedial) offered by the college of Liberal Arts, Business, Science, or Engineering.

Total Hours	**120**

BS in Computer Science Concentration Software Engineering (Starting with Pre-Calculus)

Code	Title	Hours
BS COMPUTER SCIENCE CONCENTRATION IN SOFTWARE ENGINEERING		
(Starting with Pre-Calculus)		
Summer		
MATH 1508	Precalculus	3-5
or MATH 1310	Trigonometry and Conics	
FRESHMAN		
Fall		
CS 1101	Intro to Computer Science Lab	1
CS 1301	Intro to Computer Science	3
CS 1310	Intro-Computational Thinking (*)	3
CS 2101	Discrete Structures I	1
MATH 1411	Calculus I (*)	4
RWS 1301	Rhetoric & Composition I (*)	3
Spring		
CS 2202	Discrete Structures II	2
CS 2401	Elem. Data Struct./Algorithms	4
HIST 1301	History of U.S. to 1865	3
RWS 1302	Rhetoric & Composition 2	3
UNIV 1301	Seminar/Critical Inquiry	3
SOPHOMORE		
Fall		
CS 2302	Data Structures	3
ECE 2103	Lab for ECE 2303	1

ECE 2303	Digital Systems Design I	3
HIST 1302	History of U.S. Since 1865	3
MATH 1312	Calculus II	3
Social and Behavioral Sciences [*]		3
Spring		
CS 3350	Automata/Computabi/Formal Lang	3
PHYS 2320	Introductory Mechanics	3
PHYS 2120	Laboratory for PHYS 2320	1
POLS 2310	Introduction to Politics	3
Creative Arts [*]		3
Language, Philosophy and Culture [*]		3
JUNIOR		
Fall		
CS 3331	Adv. Object-Oriented Programng	3
CS 3432	Computer Organization	4
MATH 3323	Matrix Algebra	3
POLS 2311	American Gover & Politics	3
Additional Math or Science Lecture		3
Spring		
CS 3195	Junior Professionl Orientation	1
CS 4375	Operating Systems Concepts	3
Life and Physical Science Lecture and Lab		4
Technical Elective		3
Technical Elective		3
SENIOR		
Fall		
CS 3360	Programming Language Concepts	3
CS 4310	Software Eng: Requirements Eng	3
CS 4342	Database Systems	3
CS 4374	Software Construction	3
STAT 3320	Probability and Statistics	3
Spring		
CS 4175	Parallel Computing	1
CS 4311	Software Eng: Design & Implmnt	3
CS 4387	Software Integration and V&V	3
Technical Elective		3
Free Elective		3
Notes:		

- Courses that are part of the University Core Curriculum.

• Life and Physical Sciences. In addition to PHYS 2420, students must complete one semester of lecture and associated lab. Acceptable courses are: ASTR 1307 Elem Astronomy-Solar System and ASTR 1107 Astronomy Lab I, PHYS 2421 Introductory Electromagnetism, BIOL 1305 General Biology and BIOL 1107 Topics in Study of Life I, BIOL 1306 Organismal Biology and BIOL 1108 Organismal Biology Laboratory, CHEM 1305 General Chemistry and CHEM 1105 Laboratory for CHEM 1305, CHEM 1306 General Chemistry and CHEM 1106 Laboratory for CHEM 1306, GEOL 1313 Intro to Physical Geology and GEOL 1103 Lab for GEOL 1313, GEOL 1314 Intro to Historical Geology and GEOL 1104 Lab for GEOL 1314. Courses that count towards the core curriculum (2 lectures and a lab associated with one of the 2 lectures) require grade C or better.

• Additional Mathematics or Science Option. Option A: Mathematics: MATH 2313, 2325, 2336, 3320, 3325, 4329, STAT 3381, 4380, 4385 Option B: Science. An additional 3-credit lecture course from the list of Life and Physical Science courses which was not used to satisfy the science lecture/lab requirement.

• Technical Electives: 3 credit hours from (CS4330, CS4339, CS4371, CS4373, or CS4381). In addition, the student must complete 6 hours from the following: CS 1110 Intro to Problem Solving, CS 1120 Computational Thinking, CS 2210 Algo Thinking in Prob Solv, CS 1190 Special Topics in Computing, CS 1290 Special Topics in Computing, and any CS 3000 or 4000 level courses that are not required upper level CS courses . No more than three credit hours of CS 1XXX and CS 2XXX can count for technical electives. No more than six credit hours of CS 1XXX, CS 2XXX, CS 4390 Special Topics in Computer Sci, CS 4181 Undergraduate Seminar, CS 4371 Computer Science Problems, CS 4X73, CS 4392 Rsrch Methods/Computer Science and/or CS 4393 Senior Project (in any combination) can count for technical electives.

• Free Elective. Courses that may be counted towards the free elective requirement are college-level courses (not remedial) offered by the college of Liberal Arts, Business, Science, or Engineering.

Total Hours		**123-125**

BS in Computer Science Concentration Software Engineering (Starting with Calculus)

Code	Title	Hours
BS COMPUTER SCIENCE CONCENTRATION IN SOFTWARE ENGINEERING		
FRESHMAN		
Fall		
CS 1101	Intro to Computer Science Lab	1
CS 1301	Intro to Computer Science	3
CS 1310	Intro-Computational Thinking (*)	3
CS 2101	Discrete Structures I	1
MATH 1411	Calculus I (*)	4
RWS 1301	Rhetoric & Composition I (*)	3
Spring		
CS 2202	Discrete Structures II	2
CS 2401	Elem. Data Struct./Algorithms	4
HIST 1301	History of U.S. to 1865	3
RWS 1302	Rhetoric & Composition 2	3
UNIV 1301	Seminar/Critical Inquiry	3
SOPHOMORE		
Fall		
CS 2302	Data Structures	3
ECE 2103	Lab for ECE 2303	1
ECE 2303	Digital Systems Design I	3
HIST 1302	History of U.S. Since 1865	3
MATH 1312	Calculus II	3
Social and Behavioral Sciences [*]		3
Spring		
CS 3350	Automata/Computabi/Formal Lang	3
PHYS 2320	Introductory Mechanics	3
PHYS 2120	Laboratory for PHYS 2320	1
POLS 2310	Introduction to Politics	3
Creative Arts [*]		3
Language, Philosophy and Culture [*]		3
JUNIOR		
Fall		
CS 3331	Adv. Object-Oriented Programng	3
CS 3432	Computer Organization	4
MATH 3323	Matrix Algebra	3
POLS 2311	American Gover & Politics	3
Additional Math or Science Lecture		3
Spring		
CS 3195	Junior Professionl Orientation	1
CS 4375	Operating Systems Concepts	3
Life and Physical Science Lecture and Lab		4

Technical Elective		3
Technical Elective		3
SENIOR		
Fall		
CS 3360	Programming Language Concepts	3
CS 4310	Software Eng: Requirements Eng	3
CS 4342	Database Systems	3
CS 4374	Software Construction	3
STAT 3320	Probability and Statistics	3
Spring		
CS 4175	Parallel Computing	1
CS 4311	Software Eng: Design & Implmnt	3
CS 4387	Software Integration and V&V	3
Technical Elective		3
Free Elective		3

Notes:

- Courses that are part of the University Core Curriculum.

• Life and Physical Sciences. In addition to PHYS 2420, students must complete one semester of lecture and associated lab. Acceptable courses are: ASTR 1307 Elem Astronomy-Solar System and ASTR 1107 Astronomy Lab I, PHYS 2421 Introductory Electromagnetism, BIOL 1305 General Biology and BIOL 1107 Topics in Study of Life I, BIOL 1306 Organismal Biology and BIOL 1108 Organismal Biology Laboratory, CHEM 1305 General Chemistry and CHEM 1105 Laboratory for CHEM 1305, CHEM 1306 General Chemistry and CHEM 1106 Laboratory for CHEM 1306, GEOL 1313 Intro to Physical Geology and GEOL 1103 Lab for GEOL 1313, GEOL 1314 Intro to Historical Geology and GEOL 1104 Lab for GEOL 1314. Courses that count towards the core curriculum (2 lectures and a lab associated with one of the 2 lectures) require grade C or better.

• Additional Mathematics or Science Option. Option A: Mathematics: MATH 2313, 2325, 2336, 3320, 3325, 4329, STAT 3381, 4380, 4385 Option B: Science. An additional 3-credit lecture course from the list of Life and Physical Science courses which was not used to satisfy the science lecture/lab requirement.

• Technical Electives: 3 credit hours from (CS4330, CS4339, CS4371, CS4373, or CS4381). In addition, the student must complete 6 hours from the following: CS 1110 Intro to Problem Solving, CS 1120 Computational Thinking, CS 2210 Algo Thinking in Prob Solv, CS 1190 Special Topics in Computing, CS 1290 Special Topics in Computing, and any CS 3000 or 4000 level courses that are not required upper level CS courses . No more than three credit hours of CS 1XXX and CS 2XXX can count for technical electives. No more than six credit hours of CS 1XXX, CS 2XXX, CS 4390 Special Topics in Computer Sci, CS 4181 Undergraduate Seminar, CS 4371 Computer Science Problems, CS 4X73, CS 4392 Rsrch Methods/Computer Science and/or CS 4393 Senior Project (in any combination) can count for technical electives.

• Free Elective. Courses that may be counted towards the free elective requirement are college-level courses (not remedial) offered by the college of Liberal Arts, Business, Science, or Engineering.

Total Hours	**120**