

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:		
MATH 1508 or MATH 1310 or MATH 1411	Precalculus ((Listed if completed, but not required)) Trigonometry and Conics Calculus I	3-5
PHYS 2320	Introductory Mechanics	3
PHYS 2120	Laboratory for PHYS 2320	1
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
EE 2169	Laboratory for EE 2369	1
EE 2369	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 Professional Orientation	1
CS 3331	Adv. Object-Oriented Programng ^C	3
CS 3350	Automata/Computabi/Formal Lang	3
CS 3360	Design/Implementation Prog Lan	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	Data Base Management	3
CS 4375	Operating Systems Concepts	3
MATH 3323	Matrix Algebra	3

Statistics:

Select one of the following:		3
EE 3384	Intro to Prob. w/ App. in ECE	
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
The objective of the communication component is to enable the student to communicate effectively in clear and correct prose or orally in a style 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
The objectives of the history component are to expand students' knowledge of the origin and history of the U.S., their comprehension of the past and current role of the U.S. in the world, and their ability to critically evaluate and analyze historical evidence. U.S. history courses (three hours must be Texas history) include:		
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
The objective of the humanities component is to expand students' knowledge of the human condition and human cultures, especially in relation to behaviors, ideas, and values expressed in works of human imagination and thought. Through study in disciplines such as literature and philosophy, students engage in critical analysis and develop an appreciation of the humanities as fundamental to the health and survival of any society.		
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
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The objective of the mathematics component is to develop a quantitatively literate college graduate. Every college graduate should be able to apply basic mathematical tools in the solution of real-world problems.

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
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The objective of the study of the natural sciences is to enable the student to understand, construct, and evaluate relationships in the natural sciences, and to enable the student to understand the bases for building and testing theories. The courses listed are for non-majors; the major courses in the discipline can be substituted for the non-major sequence. A minimum of two semesters of lecture and one semester of laboratory associated with one of the courses, or two semesters of combined (3 credit) lecture-laboratory courses (Only six hours apply toward the required 42.):

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
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The objectives of the political science component are to expand students' knowledge of the origin and evolution of the U.S. and Texas political systems, focusing on the growth of political institutions, and on the constitutions of Texas and the United States; and to enhance their understanding of federalism, states rights, and individual civil liberties, rights, and responsibilities.

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
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The objective of the social and behavioral science component is to increase students' knowledge of how social and behavioral scientists discover, describe, and explain the behaviors and interactions among individuals, groups, institutions, events, and ideas. Such knowledge will better equip students to understand themselves and the roles they play in addressing the issues facing humanity.

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
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
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The objective of the visual and performing arts component is to expand students' knowledge and appreciation of the human imagination as expressed through works of visual art, dance, music, theatre and film. Through study in these disciplines, students will form aesthetic judgments and develop an appreciation of the arts as fundamental to the health and survival of any society.

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
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The objective of the institutionally designated option component is to develop the critical thinking skills and academic tools required to be an effective learner. Special emphasis is placed on the use of technology in problem-solving, communications, and knowledge acquisition.

Select two of the following: 6

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

UNIV 1301

Seminar/Critical Inquiry

Total Hours**6****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 or MATH 1310	Precalculus Trigonometry and Conics	3-5
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
EE 2169	Laboratory for EE 2369	1
EE 2369	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	Design/Implementation Prog Lan	3
CS 4310	Software Eng: Requirements Eng	3
CS 4342	Data Base Management	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		
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
EE 2169	Laboratory for EE 2369	1
EE 2369	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	Design/Implementation Prog Lan	3
CS 4310	Software Eng: Requirements Eng	3
CS 4342	Data Base Management	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 or MATH 1310	Precalculus Trigonometry and Conics	3-5
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
EE 2169	Laboratory for EE 2369	1
EE 2369	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 Professional 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	Design/Implementation Prog Lan	3
CS 4310	Software Eng: Requirements Eng	3
CS 4342	Data Base Management	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
EE 2169	Laboratory for EE 2369	1
EE 2369	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	Design/Implementation Prog Lan	3
CS 4310	Software Eng: Requirements Eng	3
CS 4342	Data Base Management	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 or MATH 1310	Precalculus Trigonometry and Conics	3-5
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
EE 2169	Laboratory for EE 2369	1
EE 2369	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	Design/Implementation Prog Lan	3
CS 4177	Software Vulnerabilities	1
CS 4310	Software Eng: Requirements Eng	3
CS 4342	Data Base Management	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
EE 2169	Laboratory for EE 2369	1
EE 2369	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	Design/Implementation Prog Lan	3
CS 4177	Software Vulnerabilities	1
CS 4310	Software Eng: Requirements Eng	3
CS 4342	Data Base Management	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 or MATH 1310	Precalculus Trigonometry and Conics	3-5
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
EE 2169	Laboratory for EE 2369	1

EE 2369	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	Design/Implementation Prog Lan	3
CS 4310	Software Eng: Requirements Eng	3
CS 4342	Data Base Management	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
EE 2169	Laboratory for EE 2369	1
EE 2369	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	Design/Implementation Prog Lan	3
CS 4310	Software Eng: Requirements Eng	3
CS 4342	Data Base Management	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
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