CS 357	Numerical Methods I	3
CS 411	Database Systems	3 or 4
CS 412	Introduction to Data Mining	3 or 4
CS 414	Multimedia Systems	3 or 4
CS 418	Interactive Computer Graphics	3 or 4
CS 419	Production Computer Graphics	3 or 4
CS 420	Parallel Progrmg: Sci & Engrg	3 or 4
CS 421	Programming Languages & Compilers	3 or 4
CS 423	Operating Systems Design	3 or 4
CS 424	Real-Time Systems	3 or 4
CS 425	Distributed Systems	3 or 4
CS 426	Compiler Construction	3 or 4
CS 431	Embedded Systems	3 or 4
CS 434	Real World Algorithms for IoT and Data Science	3 or 4
CS 436	Computer Networking Laboratory	3 or 4
CS 437	Topics in Internet of Things	3 or 4
CS 438	Communication Networks	3 or 4
CS 440	Artificial Intelligence	3 or 4
CS 441	Applied Machine Learning	3 or 4
CS 444	Deep Learning for Computer Vision	3 or 4
CS 446	Machine Learning	3 or 4
CS 450	Numerical Analysis	3 or 4
CS 461	Computer Security I	4
CS 475	Formal Models of Computation	3 or 4
CS 476	Program Verification	3 or 4
CS 477	Formal Software Development Methods	3 or 4
CS 483	Applied Parallel Programming	4
ECE 408	Applied Parallel Programming	4
ECE 411	Computer Organization & Design	4
ECE 412	Microcomputer Laboratory	3
ECE 419	Security Laboratory	3 or 4
ECE 422	Computer Security I	4
ECE 424	Computer Security II	3 or 4
ECE 425	Intro to VLSI System Design	3
ECE 428	Distributed Systems	3 or 4
ECE 435	Computer Networking Laboratory	3 or 4
ECE 438	Communication Networks	3 or 4
ECE 439	Wireless Networks	3 or 4
ECE 448	Artificial Intelligence	3 or 4
ECE 462	Logic Synthesis	3
ECE 470	Introduction to Robotics	4
ECE 478	Formal Software Development Methods	3 or 4
ECE 479	IoT and Cognitive Computing	4
ECE 484	Principles of Safe Autonomy	4
ECE 491	Numerical Analysis	3 or 4
ECE 492	Parallel Progrmg: Sci & Engrg	3 or 4
Select one course from departmentally approved Design Elective list below:		
ECE 411	Computer Organization & Design	4
ECE 445	Senior Design Project Lab	4
ECE 496 & ECE 499	Senior Research Project and Senior Thesis	4

Free Electives

Code	Title	Hours
Additional course work, subject to the Grainger College of Engineering restrictions to Free Electives, so that there are at least 128 credit hours earned toward the degree. (https://go.grainger.illinois.edu/FreeElectives/)		16
Total Hours of Curriculum to Graduate		**128**

for the degree of Bachelor of Science in Computer Engineering

Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence. The curriculum sequence can also be viewed via dynamic and static curricular maps *(*https://grainger.illinois.edu/academics/undergraduate/majors-and-minors/ce-map/*), which include prerequisite sequencing.*

Students must fulfill their Language Other Than English requirement by successfully completing a third level of a language other than English. See the corresponding section on the Degree and General Education Requirements *(*http://catalog.illinois.edu/general-information/degree-general-education-requirements/*).* ECE 445 *or combination of* ECE 496 & ECE 499 *satisfies a technical core requirement and the Campus General Education Advanced Composition requirement. If ECE 411 is selected as the design course, a separate Advanced Composition course also needs to be selected.*

Free Electives: Additional course work, subject to the Grainger College of Engineering restrictions to Free Electives *(*https://go.grainger.illinois.edu/FreeElectives/*), so that there are at least 128 credit hours earned toward the degree.*

First Year

First Semester	Hours		Second Semester	Hours	
ECE 120		4	ECE 110		3
ENG 100		1	ECE 220		4
MATH 221 (MATH 220 may be substituted)		4	MATH 231		3
Language Other Than English (3rd level) course		4	PHYS 211		4
Composition I or General Education (Choose a Humanities or Social/Behavioral Science course)		4-3	General Education (Choose a Humanities or Social/Behavioral Science course) or Composition I course		3-4
		17			**17**

Second Year

First Semester	Hours	Second Semester	Hours
CS 173	3	ECE 210	4
MATH 257	3	CS 225	4
MATH 241	4	MATH 285	3
PHYS 212	4	PHYS 213	2
General Education course (choose a Humanities or Social/Behavioral Science course with Cultural Studies designation)	3	PHYS 214	2
	17		**15**

Third Year

First Semester	Hours	Second Semester	Hours
ECE 313	3	ECE 391	4
ECE 385	3	Technical elective course	3
Technical elective course	3	Technical elective course	4
General Education course (choose a Humanities or Social/Behavioral Science course with Cultural Studies designation)	3	General Education course (choose a Humanities or Social/Behavioral Science course with Cultural Studies designation)	3
Free elective course	3	Free elective course	3
	15		**17**

Fourth Year

First Semester	Hours	Second Semester	Hours
ECE 374	4	Design Elective course	4
Technical elective course	3	Technical elective course	3
Technical elective course	4	Technical elective course	3
Free elective course	3	Technical elective course	3
		Free elective course	3
	14		**16**

Total Hours 128

for the degree of Bachelor of Science Major in Computer Engineering

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Student learning outcomes are based on learning outcomes in line with the ABET accreditation process.

Computer Engineering graduates will have:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

for the degree of Bachelor of Science in Computer Engineering

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Electrical & Computer Engineering Website

Electrical & Computer Engineering Faculty **(**https://ece.illinois.edu/about/directory/faculty/**)**

The Grainger College of Engineering Admissions **(**https://grainger.illinois.edu/admissions/**)**

The Grainger College of Engineering

Computer Science, BS

for the degree of Bachelor of Science in Computer Science

The Computer Science curriculum provides both a broad and deep knowledge of the theory, design, and application of computer systems, with an emphasis on software systems. Because computing is ubiquitous, application areas involve virtually any field imaginable - from developing gene sequencing algorithms via techniques in computational biology, to designing user interfaces for mobile applications; from designing methods for high frequency trading, to creating computer generated graphics and special effects in the gaming industry; and from creating embedded real time systems to be deployed in medical devices, to analyzing social data from internet communication patterns. During the first two years the curriculum provides a strong foundation in mathematics, science, and computation. Advanced coursework both in more technical core areas and in areas of the student's choosing follows in the second two years. Graduates regularly go on to graduate study or leading positions in industry.

Both a combined B.S.-M.S. degree program and a B.S-M.C.S. degree program are available. The admission and course requirements are described on the Computer Science website (https://cs.illinois.edu/academics/graduate/fifth-year-masters-programs/).

Current Program Educational Objectives **(**https://cs.illinois.edu/about/accreditation/**)**

for the degree of Bachelor of Science in Computer Science

Graduation Requirements

Minimum Technical GPA (https://go.grainger.illinois.edu/TechnicalGPA/): **2.0**
TGPA is required for CS and Math courses. See Technical GPA (https://go.grainger.illinois.edu/TechnicalGPA/) to clarify requirements.

Minimum Overall GPA: 2.0
Minimum hours required for graduation: 128 hours
General education: Students must complete the Campus General Education (https://courses.illinois.edu/gened/DEFAULT/DEFAULT/) **requirements including the campus general education language requirement. If the option of** CS 211 **is chosen, it will satisfy a core course requirement and the Campus General Education Advanced Composition requirement.**

Orientation and Professional Development

Code	Title	Hours
ENG 100	Grainger Engineering Orientation Seminar (External transfer students take ENG 300.)	1
Highly recommended, optional 1 credit hour course, CS 100 Computer Science Orientation. Credit hour counts toward free electives.		
CS 210	Ethical & Professional Issues	2 or 3
or CS 211	Ethical and Professional Conduct	
Total Hours		**3-4**

Foundational Mathematics and Science

Code	Title	Hours
Total Hours chosen from the following:		**25**
MATH 221	Calculus I (MATH 220 may be substituted. MATH 220 is appropriate for students with no background in calculus. 4 of 5 credit hours count towards degree.)	4
MATH 231	Calculus II	3
MATH 241	Calculus III	4
MATH 257	Linear Algebra with Computational Applications	3
or MATH 415	Applied Linear Algebra	
or MATH 416	Abstract Linear Algebra	
PHYS 211	University Physics: Mechanics	4
PHYS 212	University Physics: Elec & Mag	4
One Science elective course:		**3**
Students must take one course from the Natural Science & Technology (NST) list, in addition to those taken as part of the General Education requirements. The course must be a course that is allowed for credit by the Grainger College of Engineering.		
Exceptions to the list are: ASTR 100, PHYS 101 and PHYS 102, and CHEM 101.		
Students who select either ASTR 121, ASTR 122, or ASTR 150 to satisfy the Science Elective requirement will not be allowed to take ASTR 131 and ASTR 132 as free elective (maximum of 4 credit hours of ASTR 100-level can count towards graduation requirements for all Grainger College of Engineering Undergraduates).		

Computer Science Technical Core

Code	Title	Hours
CS 124	Introduction to Computer Science I	3
CS 128	Introduction to Computer Science II	3
CS 173	Discrete Structures	3
CS 222	Software Design Lab	1
CS 225	Data Structures	4
CS 233	Computer Architecture	4
CS 341	System Programming	4
CS 357	Numerical Methods I	3
CS 361	Probability & Statistics for Computer Science	3
CS 374	Introduction to Algorithms & Models of Computation	4
CS 421	Programming Languages & Compilers	3
Total Hours		**35**

Technical Electives

Code	Title	Hours
Students must take a minimum of (6) six additional technical electives with at least eighteen (18) cumulative credit hours and chosen from CS 397 **and the** CS 400**-level courses, not including** CS 400**,** CS 401**,** CS 402**,** CS 403 **or** CS 491**.** CS 500**-level courses may be used as technical electives, but only with special permission from the CS Academic Office.** CS 397 **and** CS 499 **may be used with a cumulative maximum of six (6) credits from them counting as technical electives. One "CS-like" course in another department (e.g., ECE) may also be counted as a** CS 400**-level course with permission of the CS Academic Office. Non-CS tech electives will not be considered in focus areas.**		**18**
At least one (1) of the CS courses used for technical electives must be chosen from the list below of CS courses satisfying the team project requirement.		
Team Project Course List:		
CS 417	Virtual Reality	3
CS 427	Software Engineering I	3 or 4
CS 428	Software Engineering II	3 or 4
CS 429	Software Engineering II, ACP	3
CS 437	Topics in Internet of Things	3
CS 465	User Interface Design	4
CS 467	Social Visualization	3 or 4
CS 493	Senior Project II, ACP	3
CS 494	Senior Project II	3
CS 497	CS Team Project	1 to 3
At least three (3) of the CS courses used for technical electives must be chosen from a single focus area, from among the list of focus areas listed below. The team project course may be used as one of them.		
CS 498 Special Topics and CS 598 Special Topics classes may be included in a focus area by department approval.		
Software Foundations:		
CS 407	Cryptography	3 or 4
CS 409	The Art of Web Programming	3
CS 422	Programming Language Design	3 or 4
CS 426	Compiler Construction	3 or 4

CS 427	Software Engineering I	3 or 4
CS 428	Software Engineering II	3 or 4
CS 429	Software Engineering II, ACP	3
CS 474	Logic in Computer Science	3 or 4
CS 476	Program Verification	3 or 4
CS 477	Formal Software Development Methods	3 or 4
CS 492	Senior Project I	3
CS 493	Senior Project II, ACP	3
CS 494	Senior Project II	3
CS 521	Advanced Topics in Programming Systems	4
CS 522	Programming Language Semantics	4
CS 524	Concurrent Progrmg Languages	4
CS 526	Advanced Compiler Construction	4
CS 527	Topics in Software Engineering	4
CS 528	Obj-Oriented Progrmg & Design	4
CS 576	Topics in Automated Deduction	2 to 4
Algorithms and Models of Computation:		
CS 407	Cryptography	3 or 4
CS 413	Intro to Combinatorics	3 or 4
CS 473	Algorithms	4
CS 474	Logic in Computer Science	3 or 4
CS 475	Formal Models of Computation	3 or 4
CS 476	Program Verification	3 or 4
CS 477	Formal Software Development Methods	3 or 4
CS 481	Advanced Topics in Stochastic Processes & Applications	3 or 4
CS 482	Simulation	3 or 4
CS 571	Combinatorial Mathematics	4
CS 572	Extremal Graph Theory	4
CS 573	Algorithms	4
CS 574	Randomized Algorithms	4
CS 575	Methods of Combinatorics	4
CS 576	Topics in Automated Deduction	2 to 4
CS 579	Computational Complexity	4
CS 580	Topics in Algorithmic Game Theory	4
CS 581	Algorithmic Genomic Biology	4
CS 583	Approximation Algorithms	4
CS 584	Embedded System Verification	4
CS 586	Combinatorial Optimization	4
Intelligence and Big Data:		
CS 410	Text Information Systems	3 or 4
CS 411	Database Systems	3 or 4
CS 412	Introduction to Data Mining	3 or 4
CS 414	Multimedia Systems	3 or 4
CS 416	Data Visualization	3 or 4
CS 440	Artificial Intelligence	3 or 4
CS 441	Applied Machine Learning	3 or 4
CS 442	Trustworthy Machine Learning	3 or 4
CS 444	Deep Learning for Computer Vision	3 or 4
CS 445	Computational Photography	3 or 4
CS 446	Machine Learning	3 or 4
CS 447	Natural Language Processing	3 or 4
CS 448	Audio Computing Laboratory	3 or 4
CS 464	Topics in Societal and Ethical Impacts of Computer Technology	3
CS 466	Introduction to Bioinformatics	3 or 4
CS 467	Social Visualization	3 or 4
CS 469	Computational Advertising Infrastructure	3
CS 470	Social and Information Networks	3
CS 510	Advanced Information Retrieval	4
CS 511	Advanced Data Management	4
CS 512	Data Mining Principles	4
CS 514	Advanced Topics in Network Science	4
CS 540	Deep Learning Theory	4
CS 542	Statistical Reinforcement Learning	4
CS 543	Computer Vision	4
CS 544	Optimiz in Computer Vision	4
CS 545	Machine Learning for Signal Processing	4
CS 546	Advanced Topics in Natural Language Processing	4
CS 548	Models of Cognitive Processes	4
CS 562	Advanced Topics in Security, Privacy, and Machine Learning	4
CS 567	Social Signals and Social Media	4
CS 576	Topics in Automated Deduction	2 to 4
CS 582	Machine Learning for Bioinformatics	4
Human and Social Impact:		
CS 409	The Art of Web Programming	3 or 4
CS 416	Data Visualization	3 or 4
CS 417	Virtual Reality	3 or 4
CS 441	Applied Machine Learning	3 or 4
CS 442	Trustworthy Machine Learning	3 or 4
CS 460	Security Laboratory	3 or 4
CS 461	Computer Security I	4
CS 463	Computer Security II	3 or 4
CS 464	Topics in Societal and Ethical Impacts of Computer Technology	3
CS 465	User Interface Design	4
CS 467	Social Visualization	3 or 4
CS 468	Tech and Advertising Campaigns	3
CS 469	Computational Advertising Infrastructure	3
CS 470	Social and Information Networks	3
CS 500	Current Topics in Computing Education Research	4
CS 514	Advanced Topics in Network Science	4
CS 562	Advanced Topics in Security, Privacy, and Machine Learning	4
CS 563	Advanced Computer Security	4
CS 565	Human-Computer Interaction	4
CS 567	Social Signals and Social Media	4
Media:		
CS 409	The Art of Web Programming	3 or 4
CS 414	Multimedia Systems	3 or 4
CS 416	Data Visualization	3 or 4
CS 417	Virtual Reality	3 or 4

CS 418	Interactive Computer Graphics	3 or 4
CS 419	Production Computer Graphics	3 or 4
CS 445	Computational Photography	3 or 4
CS 448	Audio Computing Laboratory	3 or 4
CS 465	User Interface Design	4
CS 467	Social Visualization	3 or 4
CS 468	Tech and Advertising Campaigns	3
CS 469	Computational Advertising Infrastructure	3 or 4
CS 519	Scientific Visualization	4
CS 545	Machine Learning for Signal Processing	4
CS 565	Human-Computer Interaction	4
CS 567	Social Signals and Social Media	4
Scientific, Parallel, and High Perfomance Computing:		
CS 419	Production Computer Graphics	3 or 4
CS 435	Cloud Networking	3 or 4
CS 450	Numerical Analysis	3 or 4
CS 457	Numerical Methods II	3
CS 466	Introduction to Bioinformatics	3 or 4
CS 482	Simulation	3 or 4
CS 483	Applied Parallel Programming	4
CS 484	Parallel Programming	3 or 4
CS 519	Scientific Visualization	4
CS 554	Parallel Numerical Algorithms	4
CS 555	Numerical Methods for PDEs	4
CS 556	Iterative & Multigrid Methods	4
CS 558	Topics in Numerical Analysis	4
Distributed Systems, Networking, and Security:		
CS 407	Cryptography	3 or 4
CS 423	Operating Systems Design	3 or 4
CS 424	Real-Time Systems	3 or 4
CS 425	Distributed Systems	3 or 4
CS 431	Embedded Systems	3 or 4
CS 435	Cloud Networking	3 or 4
CS 436	Computer Networking Laboratory	3 or 4
CS 437	Topics in Internet of Things	3 or 4
CS 438	Communication Networks	3 or 4
CS 439	Wireless Networks	3 or 4
CS 460	Security Laboratory	3 or 4
CS 461	Computer Security I	4
CS 463	Computer Security II	3 or 4
CS 483	Applied Parallel Programming	4
CS 484	Parallel Programming	3 or 4
CS 523	Advanced Operating Systems	4
CS 524	Concurrent Progrmg Languages	4
CS 525	Advanced Distributed Systems	4
CS 537	Advanced Topics in Internet of Things (IoT)	4
CS 538	Advanced Computer Networks	4
CS 562	Advanced Topics in Security, Privacy, and Machine Learning	4
CS 563	Advanced Computer Security	4
Machines:		
CS 423	Operating Systems Design	3 or 4
CS 424	Real-Time Systems	3 or 4
CS 426	Compiler Construction	3 or 4
CS 431	Embedded Systems	3 or 4
CS 433	Computer System Organization	3 or 4
CS 437	Topics in Internet of Things	3 or 4
CS 484	Parallel Programming	3 or 4
CS 523	Advanced Operating Systems	4
CS 526	Advanced Compiler Construction	4
CS 533	Parallel Computer Architecture	4
CS 534	Advanced Topics in Computer Architecture	4
CS 536	Fault-Tolerant Dig Syst Design	4
CS 541	Computer Systems Analysis	4
CS 584	Embedded System Verification	4
CS 588	Autonomous Vehicle System Engineering	4

Computer Science Advanced Electives

Code	Title	Hours
Students must take for a letter grade a minimum of two (2) advanced elective courses comprising at least six (6) credit hours. These advanced elective courses must be distinct from courses used to satisfy the technical electives. They may be chosen from CS 397 Individual Study and the 400-level coursework offered for letter grade in ANY area offered at the University of Illinois at Urbana-Champaign. It is expected that students will select these additional advanced courses in a way that best augments their program of study. Consultation with a faculty mentors is highly encouraged. A maximum of six (6) credit hours of CS 397 may be used in the combination of technical electives and advanced electives.		6
Total Hours		**6**

Free Electives

Code	Title	Hours
Additional course work,subject to the Grainger College of Engineering restrictions to Free Electives,so that there are at least 128 credit hours earned toward the degree. (https://go.grainger.illinois.edu/FreeElectives/)		**24-25**
Total Hours of Curriculum to Graduate		**128**

for the degree of Bachelor of Science in Computer Science

Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence. The curriculum sequence can also be viewed via dynamic and static curricular maps (https://grainger.illinois.edu/academics/undergraduate/majors-and-minors/cs-map/)*, which include prerequisite sequencing.*

Students must fulfill their Language Other Than English requirement by successfully completing a third level of a language other than English. See the corresponding section on the Degree and General Education Requirements (http://catalog.illinois.edu/general-information/degree-general-education-requirements/)*. If the option of* CS 211 *is chosen, it*

will satisfy a core course requirement and the Campus General Education Advanced Composition requirement.

Free Electives: Additional course work, subject to the Grainger College of Engineering restrictions to Free Electives (https://go.grainger.illinois.edu/FreeElectives/)*, so that there are at least 128 credit hours earned toward the degree.*

First Year

First Semester	Hours		Second Semester	Hours	
CS 100 (Optional course, highly recommended, free elective)		1	CS 128		3
CS 124		3	CS 173		3
MATH 221 (MATH 220 may be substituted)		4	MATH 231		3
ENG 100		1	General Education course (Choose a Humanities or Social/Behavioral Science course with Cultural Studies designation)		3
Science elective course		3	General Education (Choose a Humanities or Social/Behavioral Science course) or Composition I course		3-4
Composition I or General Education (Choose a Humanities or Social/Behavioral Science course)		4-3			
		16			**15**

Second Year

First Semester	Hours		Second Semester	Hours	
CS 222		1	CS 233		4
CS 225		4	CS 361		3
MATH 241		4	MATH 257		3
PHYS 211		4	PHYS 212		4
General Education course (choose a Humanities or Social/Behavioral Science course with Cultural Studies designation)		3	Free elective course		3
		16			**17**

Third Year

First Semester	Hours		Second Semester	Hours	
CS 210 (CS 211 may be substituted)		2	CS 374		4
CS 341		4	CS Technical elective course		3
CS 357		3	CS Technical elective course		3
CS Technical elective course		3	General Education course (choose a Humanities or Social/Behavioral Science course with Cultural Studies designation)		3
Language Other Than English (3rd level) course		4	Free elective course		3
		16			**16**

Fourth Year

First Semester	Hours		Second Semester	Hours	
CS 421		3	CS Technical elective course		3
CS Advanced elective course		3	CS Technical elective course		3
CS Advanced elective course		3	CS Technical elective course		3
Free elective course		3	Free elective course		4
Free elective course		4	Free elective course		3
		16			**16**

Total Hours 128

for the degree of Bachelor of Science Major in Computer Science

By the time of graduation, students will have the ability to:

1. Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3. Communicate effectively in a variety of professional contexts.
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
6. Apply computer science theory and software development fundamentals to produce computing-based solutions.

for the degree of Bachelor of Science in Computer Science

Computer Science Website (https://cs.illinois.edu/about/people/department-faculty/)
Computer Science Faculty

The Grainger College of Engineering Admissions (https://grainger.illinois.edu/)
The Grainger College of Engineering

Computer Science + Advertising, BS

for the degree of Bachelor of Science in Computer Science + Advertising

COMPUTER SCIENCE + ADVERTISING is sponsored jointly by the Departments of Computer Science and Advertising. This is a program for students who have an interest in careers in the advertising field with a technology focus. Cloud computing, the availability and ubiquity of data, and the rapid and pervasive adoption of mobile technology have created a paradigm shift in the advertising industry. Projected areas of growth in advertising and communications are in Search Engine Optimization, web analytics, computational advertising, and other emerging areas of technology/media. The degree will prepare students for advanced study at the graduate level as well as immediate entry into the workforce at advertising agencies, businesses with in-house advertising and marketing divisions, and technology companies.

Programs in Advertising

Undergraduate Programs:

major: Advertising, BS (http://catalog.illinois.edu/schools/media/academic-units/advertising/#undergraduatetext)
major: Computer Science & Advertising, BS (http://catalog.illinois.edu/undergraduate/media/departments/advertising/csadv/)
minors: Media (p. 762) | Public Relations (p. 770)

Graduate Programs:

major: Advertising, MS (p. 816)
major: Strategic Brand Communication, MS (p. 1636)

for the degree of Bachelor of Science in Computer Science + Advertising

Please see a computer science advisor in 1210 Siebel Center, as well as an advertising advisor in the College of Media Student Services Center in 18 Gregory Hall.

A Major Plan of Study Form must be completed and submitted to the Department of Computer Science Office of Undergraduate Affairs by the beginning of the fifth semester (60-75 hours).

General education: Students must complete the Campus General Education (https://courses.illinois.edu/gened/DEFAULT/DEFAULT/) requirements including the campus general education language requirement.

All campus general education and foreign language requirements must be met. Minimum hours for graduation are 124, to include a minimum of 40 hours of upper-division coursework at the 300- and 400-level from all elements of the degree. Additional hours needed to reach the minimum of 40 are chosen in consultation with advisor. At least 21 hours of 300- and 400-level course work must be taken on this campus.

To graduate from the Computer Science & Advertising curriculum, a student must complete the following courses, all of which must be taken for a traditional letter grade.

Code	Title	Hours
Computer Science Core		
CS 124	Introduction to Computer Science I	3
CS 128	Introduction to Computer Science II	3
CS 173	Discrete Structures	3
CS 222	Software Design Lab	1
CS 225	Data Structures	4
CS 340	Introduction to Computer Systems	3
CS 374	Introduction to Algorithms & Models of Computation	4
CS 421	Programming Languages & Compilers	3 or 4
Computer Science Technical Electives: Two 400-level courses chosen in consultation with an advisor. These two courses must be above CS 403, not CS 491, and distinct from all other courses used to fulfill program requirements or options.		6
Mathematical Foundations (also fulfills QR I and II gen eds.)		
MATH 220	Calculus	5
or MATH 221	Calculus I	
MATH 231	Calculus II	3
MATH 225	Introductory Matrix Theory	2 or 3
or MATH 257	Linear Algebra with Computational Applications	
CS 361	Probability & Statistics for Computer Science	3
College of Media Foundations		
Select one from:		3-4
ANTH 103	Anthro in a Changing World	
PSYC 100	Intro Psych	
SOC 100	Introduction to Sociology	
ECON 102	Microeconomic Principles	3
ECON 103	Macroeconomic Principles	3
or ECON 302	Inter Microeconomic Theory	
BADM 320	Principles of Marketing	3
Advertising Core		
ADV 250	Advertising and Brand Strategy	3
ADV 281	Advertising Research Methods	3
ADV 284	Consumer Insight	3
ADV 360	Innovations in Advertising	3
or ADV 483	Audience Analysis	
ADV 390	Content Creation	3
ADV 461	Computational Advertising	3
ADV 492	Tech and Advertising Campaigns	3
Advertising Electives: Any ADV courses not already required for the major.		6
Total Hours		**124**

for the degree of Bachelor of Science in Computer Science + Advertising

Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence.

Electives are additional courses to help students achieve 124 hours required for the degree. These can often be any level, but students should check with their advisor for specific guidance.

Students must fulfill their Language Other Than English requirement by successfully completing a third level of a language other than English. See the corresponding section on the Degree and General Education Requirements.

First Year

First Semester	Hours	Second Semester	Hours
Advising Elective	3	ADV 250	3
CS 124	3	CS 128	3
MATH 220 or 221	5-4	CS 173	3
Composition I or General Education course	4-3	MATH 231	3
		General Education course or Composition I	3-4
		General Education course	3
	15		**18**

Second Year

First Semester	Hours	Second Semester	Hours
ADV 281	3	ADV 284	3
CS 222	1	CS 340	3
CS 225	4	CS 361	3
MATH 257	3	General Education course	3
General Education	3	General Education course	3
Elective or Language Other Than English (3rd Level)	4		
	18		**15**

Third Year

First Semester	Hours	Second Semester	Hours
ADV 390	3	ADV 360 or 483	3
CS 374	4	ADV 492	3
BADM 320	3	ECON 103	3
ECON 102	3	ANTH 103, PSYC 100, or SOC 100	3-4
General Education course	3	General Education course	3
	16		**15**

Fourth Year

First Semester	Hours	Second Semester	Hours
CS 421	3	ADV 461	3
Advertising elective course	3	CS Tech elective course	3
CS Tech elective course	3	Elective course	3
General Education course	3	Elective course	3
Elective course	3		
	15		**12**

Total Hours 124

for the degree of Bachelor of Science in Computer Science + Advertising

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1. Evaluate the historical, ethical, economic, legal, and social aspects of modern advertising.
2. Conduct research, visualize data, and apply inference and machine learning methods to extract knowledge.
3. Critically evaluate and select audiences for effective and ethical advertising delivery.
4. Create strategic and evidence-driven brand communications.
5. Develop and implement efficient algorithms to solve problems.
6. Develop, analyze, and test software in the advertising context.
7. Collaborate with diverse teams to develop strategic recommendations for clients.

for the degree of Bachelor of Science in Computer Science + Advertising

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computer science degree information (https://cs.illinois.edu/academics/undergraduate/degree-program-options/cs-x-degree-programs/#requirements)
cs+advertising website (https://media.illinois.edu/degrees-programs/computer-science-advertising/)

advertising email: media-ssc@illinois.edu
computer science email: undergrad@cs.illinois.edu

overview of college admissions & requirements (p. 1998)

college of media website (https://media.illinois.edu/)
grainger college of engineering website (https://grainger.illinois.edu/)

Computer Science + Anthropology, BSLAS

for the degree of Bachelor of Sciences in Liberal Arts & Sciences Major in Computer Science + Anthropology

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for the degree of Bachelor of Sciences in Liberal Arts & Sciences Major in Computer Science + Anthropology

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Please see the computer science advisor as well as the anthropology advisor.

A Major Plan of Study Form must be completed and submitted to the LAS Student Affairs Office by the beginning of the fifth semester

(60-75 hours). Please see the computer science advisor as well as the anthropology advisor.

General education: Students must complete the Campus General Education (https://courses.illinois.edu/) **requirements including the campus general education language requirement.**
Minimum required major and supporting course work: Normally equates to 66 hours. Twelve hours of 300- and 400-level Anthropology courses must be taken on this campus.
Minimum hours required for graduation: 120 hours

Code	Title	Hours
Required Computer Science Coursework		
CS 100	Computer Science Orientation (recommended; CS 100 is an orientation course aimed at first-year students, so students who declare the major after the first year are not required to complete it.)	1
CS 124	Introduction to Computer Science I	3
CS 128	Introduction to Computer Science II	3
CS 173	Discrete Structures	3
CS 225	Data Structures	4
CS 222	Software Design Lab	1
Choose one of the following combinations		8-11
CS 233 & CS 341	Computer Architecture and System Programming	
OR		
CS 340	Introduction to Computer Systems	
& two CS courses at the 400 level above CS 403, excluding CS 421 and CS 491		
Choose one of the following:		
STAT 200	Statistical Analysis	
STAT 212	Biostatistics	
CS 361	Probability & Statistics for Computer Science	
CS 374	Introduction to Algorithms & Models of Computation	4
CS 421	Programming Languages & Compilers	3
Mathematics (may also fulfill the General Education Quantitative Reasoning I and II requirements)		
MATH 221	Calculus I	4-5
or MATH 220	Calculus	
MATH 225	Introductory Matrix Theory	2 or 3
or MATH 257	Linear Algebra with Computational Applications	
MATH 231	Calculus II	3
Required Anthropology Coursework - Minimum of 24 hours		
Required Foundation Courses. Select at least 4 courses from the following. Students may make one course substitution for one of the required foundation courses, choosing from the option listed.		**12-18**
ANTH 101	Introduction to Anthropology	
ANTH 110	Humanizing Science	
ANTH 220	Introduction to Archaeology	
or ANTH 105	World Archaeology	
ANTH 230	Sociocultural Anthropology	
or ANTH 103	Anthro in a Changing World	
ANTH 240	Biological Anthropology	
or ANTH 102	Human Origins and Culture	
ANTH 270	Language in Culture	
or ANTH 104	Talking Culture	
ANTH 374	Anth of Science and Technology	
or ANTH 372	Topics in Lang & Culture	
Electives (Substitutions with permission of advisor)		**6-9**
ANTH 241	Human Biological Variation	
ANTH 268	Images of the Other	
ANTH 368	'America' in the World	
ANTH 375	The Culture of Nature	
ANTH 399	Special Topics (check with advisor for appropriate topics)	
ANTH 411	Research Methods in Socio-Cultural Anthropology	
ANTH 423	Economic Anthropology	
ANTH 453	Landscape Archaeology	
ANTH 499	Topics in Anthropology (check with advisor for appropriate topics)	
Optional Senior Capstone Project (See advisor for details)		

for the degree of Bachelor of Sciences in Liberal Arts & Sciences Major in Computer Science + Anthropology

1. A broad knowledge of cultural, social, linguistic and biological facets of the human condition and the methods anthropologists use to study them.
2. Ability to conduct independent research through data collection, critical analysis, synthesis, and written presentation of findings.
3. An understanding of the ethical and social dimensions of anthropological research and their impacts on society.

for the degree of Bachelor of Sciences in Liberal Arts & Sciences Major in Computer Science + Anthropology

Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence.

Students must fulfill their Language Other Than English requirement by successfully completing a fourth level of a language other than English. See the corresponding section on the Degree and General Education Requirements page *(p. 2).*

First Year

First Semester	Hours	Second Semester	Hours
Free elective course	1	CS 128	3
CS 100	1	CS 173	3
ANTH Foundation course	3	ANTH Foundation course	3
CS 124	3	MATH 220 (or MATH 221)	4

Composition I or General Education course	4	General Education course or Composition I	3
General Education Course	3		
	15		**16**

Second Year

First Semester	Hours	Second Semester	Hours
CS 222	1	CS 233 (or CS 340)	4
CS 225	4	STAT 200 (or STAT 212 or CS 361)	3
MATH 225 (or MATH 257)	3	MATH 231	3
Language Other Than English (3rd level)	4	Language Other Than English (4th level)	4
General Education course	3	General Education Course	3
	15		**17**

Third Year

First Semester	Hours	Second Semester	Hours
CS 341 (or CS 400-level course)	4	CS 374	4
ANTH Foundation course	3	CS 400-level course or Free elective course	3
ANTH Elective course	3	ANTH Elective course	3
General Education Course	3	General Education Course	3
General Education Course	3	General Education Course	3
	16		**16**

Fourth Year

First Semester	Hours	Second Semester	Hours
CS 421	3	ANTH Foundation course	3
ANTH Foundation course	3	General Education Course	3
General Education Course	3	Free elective course	3
Free elective course	4	Free elective course	3
	13		**12**

Total Hours 120

for the degree of Bachelor of Sciences in Liberal Arts & Sciences Major in Computer Science + Anthropology

CS + X Degrees (https://cs.illinois.edu/academics/undergraduate/degree-program-options/cs-x-degree-programs/#requirements)
CS + Anthropology (https://anthro.illinois.edu/academics/undergraduate-programs/computer-science-and-anthropology/)
Anthropology department page (https://anthro.illinois.edu/)
Anthropology email (anthro@illinois.edu)
Computer Science email (undergrad@cs.illinois.edu)

Overview of Liberal Arts & Sciences admissions & requirements (p. 1989)
College of Liberal Arts & Sciences website (https://las.illinois.edu/)

The Grainger College of Engineering website (https://grainger.illinois.edu)

Computer Science + Astronomy, BSLAS

for the degree of Bachelor of Science in Liberal Arts & Sciences Major in Computer Science + Astronomy

for the degree of Bachelor of Science in Liberal Arts & Sciences Major in Computer Science + Astronomy

A Major Plan of Study Form must be completed and submitted to the LAS Student Affairs Office by the beginning of the fifth semester (60-75 hours). Please see the computer science advisor as well as the astronomy advisor.

General education: Students must complete the Campus General Education (https://courses.illinois.edu/) requirements including the campus general education language requirement.

Minimum required major and supporting course work: Normally equates to 68-71 hours. Twelve hours of 300- and 400-level in the major must be taken on this campus.

A Major Plan of Study form must be completed and submitted to the LAS Student Affairs office by the beginning of the fifth semester (60-75 hours). Please see the Computer Science advisor as well as the Astronomy advisor.

Minimum hours required for graduation: 120 hours.

Code	Title	Hours
Required Computer Science Coursework		
CS 100	Computer Science Orientation (recommended; CS 100 is an orientation course aimed at first-year students, so students who declare the major after the freshman year are not required to complete it.)	1
CS 124	Introduction to Computer Science I	3
CS 128	Introduction to Computer Science II	3
CS 173	Discrete Structures	3
CS 225	Data Structures	4
CS 222	Software Design Lab	1
Choose one of the following combinations		8-11
CS 233 & CS 341	Computer Architecture and System Programming	
OR		
CS 340	Introduction to Computer Systems	
& two CS courses at the 400 level above CS 403, excluding CS 421 and CS 491		
Choose one of the following:		3
STAT 200	Statistical Analysis	

STAT 212	Biostatistics	
CS 361	Probability & Statistics for Computer Science	
CS 374	Introduction to Algorithms & Models of Computation	4
CS 421	Programming Languages & Compilers	3
Mathematics (may also fulfill the General Education Quantitative Reasoning I and II requirements)		
MATH 221	Calculus I	4-5
or MATH 220	Calculus	
MATH 225	Introductory Matrix Theory	2 or 3
or MATH 257	Linear Algebra with Computational Applications	
MATH 231	Calculus II	3
Required Astronomy Coursework - Minimum of 27 Hours		
Physics, Mathematics, and Astronomy Foundations		**15**
PHYS 211	University Physics: Mechanics	4
PHYS 212	University Physics: Elec & Mag	4
MATH 241	Calculus III	4
ASTR 210	Introduction to Astrophysics	3
Advanced Astronomy Courses (Minimum 12 total advanced ASTR hours required)		**12-13**
ASTR 310	Computing in Astronomy	3
Select 2 courses from the following list:		6-7
ASTR 404	Stellar Astrophysics	
ASTR 405	Planetary Systems	
ASTR 406	Galaxies and the Universe	
ASTR 414	Astronomical Techniques	
Additional ASTR course(s) at the 300 level or higher		2-3

for the degree of Bachelor of Science in Liberal Arts & Sciences Major in Computer Science + Astronomy

Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence.

Students must fulfill their Language Other Than English requirement by successfully completing a fourth level of a language other than English. See the corresponding section on the Degree General and Education Requirements page *(*http://catalog.illinois.edu/general-information/degree-general-education-requirements/*).*

First Year

First Semester	Hours	Second Semester	Hours
Free elective course	1	CS 128	3
CS 100	1	CS 173	3
CS 124	3	ASTR 210	3
PHYS 211	4	MATH 220 (or MATH 221)	4
Composition I or General Education course	4	General Education Course or Composition I	3
	13		**16**

Second Year

First Semester	Hours	Second Semester	Hours
CS 222	1	CS 233 (or CS 340)	3
CS 225	4	STAT 200 (or STAT 212 or CS 361)	3
MATH 231	3	MATH 241	4
MATH 225 (or MATH 257)	3	General Education Course	3
Language Other Than English (3rd level)	4	Language Other Than English (4th level)	4
	15		**17**

Third Year

First Semester	Hours	Second Semester	Hours
ASTR 310	3	CS 374	4
CS 341 (or CS 400-level course)	4	CS 400-level course or Free elective course	3
PHYS 212	4	Advanced ASTR core course	3
General Education Course	3	General Education Course	3
General Education Course	3	General Education Course	3
	17		**16**

Fourth Year

First Semester	Hours	Second Semester	Hours
CS 421	3	ASTR 300-400 level course	3
Advanced ASTR core course	3	Free elective course	3
General Education Course	3	Free elective course	2
General Education Course	3	Free elective course	3
Free elective course	1	Free elective course	2
	13		**13**

Total Hours 120

for the degree of Bachelor of Science in Liberal Arts & Sciences Major in Computer Science + Astronomy

Undergraduate Computer Science & Astronomy majors will graduate with a demonstrated ability to:

LO1. Understand the hierarchical architecture of the cosmos, increasing in scale from the Solar System to the Galaxy to the Universe, and decreasing in scale to atoms and their nuclei. Understand the interplay among these scales.

LO2. Define and use fundamental principles and techniques of astronomy and astrophysics.

- Identify which principles should be applied to a specified situation
- Show familiarity with astronomical observables and their physical origin.
- Understand and apply basic physics and computational techniques to solve problems in astrophysics, and interpret the results.

LO3. Analyze astronomical data, and quantitative data generally.

- Demonstrate the ability to link observation and theory.
- Demonstrate the ability to draw qualitative conclusions from quantitative information, and vice versa.
- Demonstrate the ability to plan observational programs, use astronomical telescopes and instrumentation, and to analyze and present astronomical data.

LO4. Plan and perform guided research, or attain an advanced-level understanding of a topic of contemporary interest in astronomy and astrophysics.

LO5. Demonstrate the ability to communicate effectively both verbally and in writing.

for the degree of Bachelor of Science in Liberal Arts & Sciences Major in Computer Science + Astronomy

computer science website: CS + X Degrees (https://cs.illinois.edu/academics/undergraduate/degree-program-options/cs-x-degree-programs/#requirements)
astronomy website: CS + Astronomy (https://astro.illinois.edu/academics/undergraduate-program/computer-science-astronomy-major/)
Department of Astronomy (https://astro.illinois.edu/)
overview of college admissions & requirements: Liberal Arts & Sciences (http://catalog.illinois.edu/schools/las/academic-units/)
college websites: https://las.illinois.edu/ **and** https://grainger.illinois.edu (https://grainger.illinois.edu/)
astronomy email: astronomy@illinois.edu
computer science email: undergrad@cs.illinois.edu (academic@cs.illinois.edu)

Computer Science + Bioengineering, BS

Students in the Computer Science + Bioengineering (CS+BioE) Bachelor of Science degree program will develop an integrative understanding of computational and bioengineering principles in order to analyze biomedical data, construct models of biological systems, and design and implement advanced diagnostic and therapeutic techniques to improve human health. As a joint offering through the Departments of Bioengineering and Computer Science, CS+BioE students will receive a rigorous engineering education that prepares graduates to:

secure and excel in jobs as engineers in industries of medical imaging, genomics, medical devices, healthcare informatics and software, and drug discovery,
pursue graduate studies in computer science and bioengineering-related fields, and
pursue professional degrees in the health sciences, law, and business.

In the first and second years, the curriculum provides students with thorough foundations in scientific computing practices as well as introductory bioengineering concepts. In the third and fourth years, technical and free electives facilitate the study of diverse modern applications of computing in medicine and the life sciences so that students are prepared to address emerging problems throughout their careers.

for the degree of Bachelor of Science in Computer Science + Bioengineering

Graduation Requirements

Minimum Technical GPA (https://go.grainger.illinois.edu/TechnicalGPA/): 2.0.

TGPA is required for CS, BIOE, and Math courses. See Technical GPA (https://go.grainger.illinois.edu/TechnicalGPA/) to clarify requirements.
Minimum Overall GPA: 2.0
Minimum hours required for graduation: 128 hours
General education: Students must complete the Campus General Education (https://courses.illinois.edu/) requirements including the campus general education language requirement.

Orientation and Professional Development

Code	Title	Hours
ENG 100	Grainger Engineering Orientation Seminar (External transfer students take ENG 300.)	1
BIOE 100	Bioengineering Seminar	1
BIOE 120	Introduction to Bioengineering	1
Highly recommended, optional 1 credit hour course, CS 100 Freshman Orientation. Credit hour counts toward free electives.		
Total Hours		**3**

Foundational Mathematics and Science

Code	Title	Hours
MATH 221	Calculus I (MATH 220 may be substituted. MATH 220 is appropriate for students with no background in calculus. 4 of 5 credit hours count towards degree.)	4
MATH 231	Calculus II	3
MATH 241	Calculus III	4
MATH 257	Linear Algebra with Computational Applications	3
or BIOE 210	Linear Algebra for Biomedical Data Science	
MATH 285	Intro Differential Equations	3
PHYS 211	University Physics: Mechanics	4
PHYS 212	University Physics: Elec & Mag	4
Choose one of the following:		4
CHEM 102 & CHEM 103	General Chemistry I and General Chemistry Lab I	
OR		
MCB 150	Molec & Cellular Basis of Life	
BIOE 310	Computational Tools for Biological Data	3
Total Hours		**32**

Computer Science Core

Code	Title	Hours
CS 124	Introduction to Computer Science I	3
CS 128	Introduction to Computer Science II	3
CS 173	Discrete Structures	3
CS 222	Software Design Lab	1
CS 225	Data Structures	4
Choose one of the following options:		8-9
CS 233 & CS 341	Computer Architecture and System Programming	
OR		
CS 340	Introduction to Computer Systems	
& Two CS 400-level courses	Any two (2) 400-level CS courses above CS 403, excluding CS 491 and distinct from any 400-level courses taken to satisfy other requirements. If either or both of the courses are chosen for 4 credits, the extra credit hours will count towards free electives.	
CS 374	Introduction to Algorithms & Models of Computation	4
CS 357	Numerical Methods I	3
or CS 421	Programming Languages & Compilers	
CS Technical Elective	Any 400-level CS course above CS 403, excluding CS 491 and distinct from any 400-level courses taken to satisfy other requirements.	3
Total Hours		**32-33**

Bioengineering Core

Code	Title	Hours
BIOE 205	Signals & Systems in Bioengrg	3
BIOE 206	Cellular Bioengineering	3
or BIOE 302	Modeling Human Physiology	
BIOE 404	CS+BIOE Senior Design (CS + BIOE Senior Design)	4
Total Hours		**10**

Bioengineering Technical Electives

Code	Title	Hours
Select 15 hours of technical elective credit from the below list:		**15**
BIOE 303	Quantitative Physiology Lab	2
BIOE 360	Transport & Flow in Bioengrg	3
BIOE 414	Biomedical Instrumentation	3
BIOE 415	Biomedical Instrumentation Lab	2
BIOE 430	Intro Synthetic Biology	3 or 4
BIOE 461	Cellular Biomechanics	4
BIOE 467	Biophotonics	3
BIOE 476	Tissue Engineering	3
BIOE 479	Cancer Nanotechnology	3
BIOE 483	Biomedical Computed Imaging Systems	3 or 4
BIOE 484	Statistical Analysis of Biomedical Images	3 or 4
BIOE 485	Computational Mathematics for Machine Learning and Imaging	4
BIOE 486	Applied Deep Learning for Biomedical Imaging	3 or 4
BIOE 487	Stem Cell Bioengineering	3 or 4
BIOE 488	Applied High-Performance Computing for Imaging Science	3
BIOE 489	Regulations, Ethics and Logistics in Biomedical Applications of Machine Learning	3 or 4
BIOE 498	Special Topics (courses as approved by the department)	1 to 4

Upper Division Technical Electives

Code	Title	Hours
Students should select 6 hours of 300-400 level general technical elective coursework from the following rubrics: AE, ABE, BIOE, CHBE, CHEM, CS, CEE, ECE, IE, MCB, MATH, ME, NE, NEUR, NPRE, PHYS, SE, STAT, and TAM.		6
Total Hours		**6**

Free Electives

Code	Title	Hours
Additional coursework, subject to the Grainger College of Engineering restrictions to Free Electives, so that there are at least 128 credit hours earned toward the degree. (https://go.grainger.illinois.edu/FreeElectives/)		13-14
Total Minimum Hours of Curriculum to Graduate		**128**

for the degree of Bachelor of Science in Computer Science + Bioengineering

Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence.

Students must fulfill their Language Other Than English requirement by successfully completing a third level of a language other than English. For more information see the corresponding section on the Degree General and Education Requirements page *(p. 2).*

Free Electives: Additional course work, subject to the Grainger College of Engineering restrictions to Free Electives, so that there are at least 128 credit hours earned toward the degree.

First Year

First Semester	Hours	Second Semester	Hours
ENG 100	1	MATH 231	3
BIOE 100	1	BIOE 120	1
MATH 221 (MATH 220 may be substituted)	4	PHYS 211	4
CS 124	3	CS 128	3

Composition I or General Education course	4-3	CS 173	3
CHEM 102 (& CHEM 103) or (MCB 150)	4	General Education or Composition I course	3-4
	17		**17**

Second Year

First Semester	Hours	Second Semester	Hours
MATH 241	4	MATH 285	3
PHYS 212	4	MATH 257 or BIOE 210	3
CS 222	1	CS 233 or 340	4-3
CS 225	4	BIOE 205	3
General Education course (choose a Humanities or Social/Behavioral Science course with Cultural Studies designation)	3	General Education course (choose a Humanities or Social/Behavioral Science course with Cultural Studies designation)	3
	16		**16**

Third Year

First Semester	Hours	Second Semester	Hours
CS 341 (or CS Technical Elective course)	4	CS 374	4
BIOE 206	3	BIOE 310	3
BIOE Technical Elective course	3	BIOE Technical Elective course	3
Free elective course	2-4	CS Technical Elective course	3
Language Other Than English (3rd level) course	4	Upper Division Technical Elective course	3
	16		**16**

Fourth Year

First Semester	Hours	Second Semester	Hours
CS 357 or 421	3	BIOE 404 (or General Education course)	4
BIOE Technical Elective course	3	BIOE Technical Elective course	3
BIOE Technical Elective course	3	Upper Division Technical Elective course	3
Free elective course	2	Free elective course or CS Technical Elective course	3-4
General Education elective or BIOE 404	3-4	General Education course	3
	14		**16**

Total Hours 128

for the degree of Bachelor of Science in Computer Science + Bioengineering

The Computer Science + Bioengineering Program prepares graduates to achieve the following seven Program Educational Objectives (PEOs 1-7) by the time of graduation:

1. An ability to identify, formulate, and solve complex computational bioengineering problems by applying principles of engineering, science, and mathematics.

   The application and integration of math, science, and engineering are fundamental to the study and practice of computational bioengineering to prepare graduates to attain PEOs 1-3. The integration of math, science, and engineering and their application also prepares graduates to be successful in healthcare informatics and bioinformatics.

2. An ability to apply engineering design to produce computational solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

   Expertise or understanding of experimental design and data analysis and interpretation are critical skills in engineering and science in all careers (industrial, academic, and medical). In addition, the practice of computational bioengineering requires design skills, which are hallmarks of a successful engineer or researcher (PEO 1-2). Significant expertise in computational and engineering skills can contribute, coupled together with other skills, to the advancement of medical, legal, and business fields (PEO 3).

3. An ability to communicate effectively with a range of audiences.

   Effective written and oral communication is essential to the attainment of PEOs 1-4. Technical expertise is required but is not sufficient to attain employment or acceptance into graduate or professional programs. Highly effective communication skills are necessary to be successful and to pursue and secure leadership roles.

4. An ability to recognize ethical and professional responsibilities in computational bioengineering situations and make informed judgments, which must consider the impact of computational bioengineering solutions in global, economic, environmental, and societal contexts.

   The recognition and understanding of ethical responsibility as it contributes to the decision-making process must be undertaken in all aspects of the practice of computational bioengineering and related healthcare fields. This is true in the educational setting, in laboratories, and in industrial settings where engineering decisions may directly impact patient safety and well-being. Additionally, continuous improvement of skill and knowledge are necessary to make the most informed decisions as a responsible professional. This outcome prepares graduates to attain PEOs 1-4.

5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

> Computational bioengineering and related healthcare fields are by nature interdisciplinary. The ability to work with individuals from different, but related disciplines, contributes to the practice of engineering (PEO 1), research (PEO 2), and individual success in engineering and related disciplines (PEO 3).

6. An ability to develop and conduct appropriate experimentation, analysis and interpretation of data, and to use engineering judgment to draw conclusions.

> This outcome prepares graduates to attain PEOs 1-3. An accurate and thoughtful interpretation of data is essential to a successful computational bioengineering career in industry (PEO 1), is one of the hallmarks of research (PEO 2), and contributes to advancement in many alternate career paths (PEO 3).

7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

> The ability to engage in life-long learning prepares graduates for PEO 4. This skill is additionally applicable to PEOs 1-2. Continued growth and skill enhancement are essential for a successful career in industry or research but also benefit those in complementary fields of medicine, law, or business (PEO 3).

for the degree of Bachelor of Science in Bioengineering

Bioengineering Website
Bioengineering Faculty (https://bioengineering.illinois.edu/people/faculty/)

The Grainger College of Engineering Admissions (https://grainger.illinois.edu/admissions/)
The Grainger College of Engineering (https://grainger.illinois.edu/)

Computer Science + Chemistry, BSLAS

for the degree of Bachelor of Science in Liberal Arts and Sciences Major in Computer Science + Chemistry

Undergraduate Degree Programs in Chemistry

For the Degree of Bachelor of Science in Liberal Arts and Sciences

- Major in Computer Science & Chemistry, BSLAS (p. 185)
- Major in Chemistry (Sciences and Letters) (p. 124)
- Major in Chemistry (Sciences and Letters), Chemistry Teaching Concentration (p. 125)

For the Degree of Bachelor of Science in Chemistry

- Major in Chemistry (Specialized Curriculum) (p. 119)
- Major in Chemistry (Specialized Curriculum), Environmental Chemistry Concentration (p. 121)

for the degree of Bachelor of Science in Liberal Arts and Sciences Major in Computer Science + Chemistry

A Major Plan of Study Form must be completed and submitted to the LAS Student Affairs Office by the beginning of the fifth semester (60-75 hours).

Please visit the computer science advisor as well as the Chemical Sciences advising office.

General education: Students must complete the Campus General Education (https://courses.illinois.edu/) **requirements including the campus general education language requirement.**
Minimum required major and supporting course work: Normally equates to 66 hours. Twelve hours of 300- and 400-level in the major must be taken on this campus.
Minimum hours required for graduation: 120 hours.

Code	Title	Hours
Required Computer Science Coursework		
CS 100	Computer Science Orientation (recommended; CS 100 is an orientation course aimed at first-year students, so students who declare the major after the freshman year are not required to complete it.)	1
CS 124	Introduction to Computer Science I	3
CS 128	Introduction to Computer Science II	3
CS 173	Discrete Structures	3
CS 225	Data Structures	4
CS 222	Software Design Lab	1
Choose one of the following combinations		8-11
CS 233 & CS 341	Computer Architecture and System Programming	
OR		
CS 340	Introduction to Computer Systems	
& two CS courses at the 400 level above CS 403, excluding CS 421 and CS 491		
Choose one of the following:		3
STAT 200	Statistical Analysis	
STAT 212	Biostatistics	
CS 361	Probability & Statistics for Computer Science	
CS 374	Introduction to Algorithms & Models of Computation	4
CS 421	Programming Languages & Compilers	3
Mathematics (may also fulfill the General Education Quantitative Reasoning I and II requirements)		
MATH 221	Calculus I	4-5
or MATH 220	Calculus	
MATH 225	Introductory Matrix Theory	2 or 3
or MATH 257	Linear Algebra with Computational Applications	
MATH 231	Calculus II	3
Required Chemistry Coursework - Minimum of 24 hours		
Foundation Courses- 12 hours required		
Select one of the following (General or Accelerated Chemistry):		8

CHEM 102 & CHEM 103 & CHEM 104 & CHEM 105	General Chemistry I and General Chemistry Lab I and General Chemistry II and General Chemistry Lab II	
or		
CHEM 202 & CHEM 203 & CHEM 204	Accelerated Chemistry I and Accelerated Chemistry Lab I and Accelerated Chemistry II	
CHEM 232	Elementary Organic Chemistry I	4
or CHEM 236	Fundamental Organic Chem I	
Advanced Chemistry Courses- 12 hours		
CHEM 440	Physical Chemistry Principles	4
or CHEM 442	Physical Chemistry I	
In consultation with an advisor, choose 8 hours of 300- or 400-level chemistry courses (The following courses may not be used to complete the advanced chemistry hours: CHEM 315, CHEM 397, CHEM 445, CHEM 447, CHEM 492, CHEM 494, CHEM 496, CHEM 497 and CHEM 499; and any course in another unit, such as any BIOC or MCB course.)		8

for the degree of Bachelor of Science in Liberal Arts and Sciences Major in Computer Science + Chemistry

Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence.

Students must fulfill their Language Other Than English requirement by successfully completing a third level of a language other than English. See the corresponding section on the Degree General and Education Requirements page *(*http://catalog.illinois.edu/general-information/degree-general-education-requirements/*).*

First Year

First Semester	Hours	Second Semester	Hours
NEW XXX		NEW XXX (or substitute NEW XXX)	
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
NEW XXX		Language Other than English (3rd level) or Comp. I	4
NEW XXX			
Free elective course		2	
Comp. I or Language Other than English (3rd level)		4	
	6		**4**

Second Year

First Semester	Hours	Second Semester	Hours
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
General Education course		3 NEW XXX	
		Free elective course	3
	3		**3**

Third Year

First Semester	Hours	Second Semester	Hours
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
	0		**0**

Fourth Year

First Semester	Hours	Second Semester	Hours
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
		NEW XXX	
	0		**0**

Total Hours 16

for the degree of Bachelor of Science in Liberal Arts and Sciences Major in Computer Science + Chemistry

By the time of graduation, students will have:

Computer Science:

1. An ability to apply knowledge of computing and mathematics appropriate to the discipline
2. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
3. An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
4. An ability to function effectively on teams to accomplish a common goal
5. An understanding of professional, ethical, legal, security and social issues and responsibilities
6. An ability to communicate effectively with a range of audiences
7. An ability to analyze the local and global impact of computing on individuals, organizations, and society
8. A recognition of the need for and an ability to engage in continuing professional development
9. An ability to use current techniques, skills, and tools necessary for computing practice

10. An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the trade-offs involved in design choices
11. An ability to apply design and development principles in the construction of software systems of varying complexity

Chemistry:

1. A thorough knowledge of the basic principles of chemistry, including atomic and molecular structure, chemical dynamics and the chemical and physical properties of substances.
2. An exposure to the sub-fields of chemistry, including analytical, inorganic, organic and physical chemistry.
3. The ability to read, evaluate, interpret, and present (via oral and written communication) numerical, chemical and general scientific information and literature.
4. The ability to carry out experiments, use appropriate experimental apparatus effectively, and demonstrate proper laboratory safety skills.

Undergraduate Degree Programs in Chemistry

For the Degree of Bachelor of Science in Liberal Arts and Sciences

- Major in Computer Science & Chemistry, BSLAS (p. 185)
- Major in Chemistry (Sciences and Letters) (p. 124)
- Major in Chemistry (Sciences and Letters), Chemistry Teaching Concentration (p. 125)

For the Degree of Bachelor of Science in Chemistry

- Major in Chemistry (Specialized Curriculum) (p. 119)
- Major in Chemistry (Specialized Curriculum), Environmental Chemistry Concentration (p. 121)

for the degree of Bachelor of Science in Liberal Arts and Sciences Major in Computer Science + Chemistry

Chemistry
CS + X Degrees (https://cs.illinois.edu/academics/undergraduate/degree-program-options/cs-x-degree-programs/#requirements)
CS + Chemistry (https://chemistry.illinois.edu/computer-science-chemistry-degree/)
Chemistry Department page (https://chemistry.illinois.edu/)
scs-advising@illinois.edu
College of Liberal Arts & Sciences
Liberal Arts & Sciences College & Admissions requirements (p. 1989)
LAS website (https://las.illinois.edu/)

Grainger College of Engineering
Grainger College of Engineering page (https://grainger.illinois.edu)
undergrad@cs.illinois.edu (academic@cs.illinois.edu)

Computer Science + Economics, BSLAS

for the degree of Bachelor of Science in Liberal Arts and Sciences Major in Computer Science + Economics

Undergraduate Degree Programs in Economics

- Econometrics & Quantitative Economics, BSLAS (p. 232)
- Economics, BALAS (p. 234)
- Computer Science & Economics, BSLAS (p. 187)

For further information, please visit the Economics undergraduate program page (http://www.economics.illinois.edu/undergrad/info/).

for the degree of Bachelor of Science in Liberal Arts and Sciences Major in Computer Science + Economics

Please visit the computer science advisor as well as the economics advising office.

A Major Plan of Study Form must be completed and submitted to the LAS Student Affairs Office by the beginning of the fifth semester (60-75 hours).

General education: Students must complete the Campus General Education **(**https://courses.illinois.edu/**) requirements including the campus general education language requirement.**
Minimum required major and supporting course work: Normally equates to 66 hours. Twelve hours of 300- and 400-level in the major must be taken on this campus.
Minimum hours required for graduation: 120 hours.

Code	Title	Hours
Required Computer Science Courses:		
CS 100	Computer Science Orientation (recommended; CS 100 is an orientation course aimed at first-year students, so students who declare the major after the freshman year are not required to complete it.)	1
CS 124	Introduction to Computer Science I	3
CS 128	Introduction to Computer Science II	3
CS 173	Discrete Structures	3
CS 225	Data Structures	4
CS 222	Software Design Lab	1
Choose one of the following combinations		8-11
CS 233 & CS 341	Computer Architecture and System Programming	
OR		
CS 340	Introduction to Computer Systems	
& two CS courses at the 400 level above CS 403, excluding CS 421 and CS 491. These two courses must be distinct from all other courses used to fulfill program requirements or options.		
Choose one of the following:		3
ECON 202	Economic Statistics I	
STAT 200	Statistical Analysis	
STAT 212	Biostatistics	
CS 361	Probability & Statistics for Computer Science	
CS 374	Introduction to Algorithms & Models of Computation	4
CS 421	Programming Languages & Compilers	3

Mathematics (may also fulfill the General Education Quantitative Reasoning I and II requirements):		
MATH 220	Calculus	4-5
or MATH 221	Calculus I	
MATH 225	Introductory Matrix Theory	2 or 3
or MATH 257	Linear Algebra with Computational Applications	
MATH 231	Calculus II	3
Required Economics Coursework -- minimum 24 hours		
ECON 102	Microeconomic Principles	3
ECON 103	Macroeconomic Principles	3
ECON 203	Economic Statistics II	3
ECON 302	Inter Microeconomic Theory	3
Four 400-level courses in Economics selected from an approval list of computation-focused courses		12
Total Hours		**66-71**

for the degree of Bachelor of Science in Liberal Arts and Sciences Major in Computer Science + Economics

Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence.

Students must fulfill their Language Other Than English requirement by successfully completing a third level of a language other than English. See the corresponding section on the Degree General and Education Requirements page *(*http://catalog.illinois.edu/general-information/degree-general-education-requirements/*).*

First Year

First Semester	Hours	Second Semester	Hours
NEW XXX		NEW XXX (or substitute NEW XXX)	
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
NEW XXX		Language Other than English (3rd level) or Comp. I	4
NEW XXX			
Free elective course		2	
Comp. I or Language Other than English (3rd level)		4	
		6	**4**

Second Year

First Semester	Hours	Second Semester	Hours
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
General Education course	3	NEW XXX	
		Free elective course	3
	3		**3**

Third Year

First Semester	Hours	Second Semester	Hours
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
	0		**0**

Fourth Year

First Semester	Hours	Second Semester	Hours
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
NEW XXX		NEW XXX	
		NEW XXX	
	0		**0**

Total Hours 16

-

for the degree of Bachelor of Science in Liberal Arts and Sciences Major in Computer Science + Economics

CS + X Degrees (https://cs.illinois.edu/academics/undergraduate/degree-program-options/cs-x-degree-programs/#requirements)
CS + Economics (https://economics.illinois.edu/academics/undergraduate-program/majors-minor/cs-econ/)

Economics department page (https://economics.illinois.edu/)

College of Liberal Arts & Sciences
overview of college admissions & requirements: Liberal Arts & Sciences (p. 1989)

college websites: https://las.illinois.edu/ and https://grainger.illinois.edu (https://grainger.illinois.edu/)

Economics email (econug@illinois.edu)
Computer Science email (undergrad@cs.illinois.edu)

for the degree of Bachelor of Science in Liberal Arts and Sciences Major in Computer Science + Economics

Computer Science + Education, BS

for the degree of Bachelor of Science Major in Computer Science + Education

The **Computer Science + Education, BS** is sponsored jointly by the Department of Computer Science and the Department of Curriculum & Instruction. The major in Computer Science and Education is a flexible

program for undergraduate students who plan to pursue careers in either field and offers two foci of concentration.

- Learning Sciences (p. 190)
- Secondary Education (p. 192)

The Learning Sciences concentration focuses on how technology can be designed and developed to further education. Social media, virtual and augmented reality, data analytics, mobile and wearable devices have created an opportunity to transform teaching and learning in both formal and informal contexts. This degree will prepare students for advanced study at the graduate level, as well as immediate entry into the workforce at software companies, publishers, school districts, game design companies, and research non-profits.

The Secondary Education concentration provides the coursework and field experience for students to be licensed to teach computer science in grades 5-12. The degree will prepare students to join the workforce as teachers in the state of Illinois, providing them with the knowledge necessary to teach and develop computer science curricula.

for the degree of Bachelor of Science Major in Computer Science + Education

Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence.

Students must fulfill their Language Other Than English requirement by successfully completing a third level of a language other than English. See the corresponding section on the Degree and General Education Requirements page *(*http://catalog.illinois.edu/general-information/degree-general-education-requirements/*).*

First Year

First Semester	Hours	Second Semester	Hours
EDUC 101	1	Composition I or General Education course	4
CS 124	3	CS 128	3
Composition I or General Education course	4	CS 173	3
Language Other Than English (3rd level) or Elective course	4	MATH 231	3
MATH 220 or 221	4	General Education course	3
	16		**16**

Second Year

First Semester	Hours	Second Semester	Hours
CS 222	1	CS 233 or 340	4
CS 225	4	CS 361	3
MATH 225, 227, or 257	3	General Education course (Humanities & Arts with a Cultural Studies designation)	3
General Education course	3	General Education course	3
Concentration course	3	Concentration course	3
	14		**16**

Third Year

First Semester	Hours	Second Semester	Hours
CS 341 (or CS 400-level course)	4	CS 374	4
General Education course	3	Concentration course	3
General Education course	3	Concentration course	3
General Education course	3	Concentration course	3
Concentration course	3	Elective course (or CS 400-level course)	3
	16		**16**

Fourth Year

First Semester	Hours	Second Semester	Hours
CS 357 or 421	3	Concentration course	3
Concentration course	3	Concentration course	3
Concentration course	3	Concentration course	3
Concentration course	3	General Education course	3
Elective course	2		
	14		**12**

Total Hours 120

for the degree of Bachelor of Science Major in Computer Science + Education

College of Education
Education Building
1310 S. Sixth Street
Champaign, IL 61820
College of Education website (https://education.illinois.edu/)

Department of Curriculum & Instruction
306 Education Building
Curriculum & Instruction email (ci@education.illinois.edu)
(217) 244-8286
Department of Curriculum & Instruction website (https://education.illinois.edu/ci/)
Department of Curriculum & Instruction faculty (https://education.illinois.edu/faculty-finder/?dept=Curriculum%20Instruction)

Office of Undergraduate Programs
110 Education Building

Education Student Academic Affairs email (saao@education.illinois.edu) (217) 333-2800
Admissions & Academics website (https://education.illinois.edu/programs/undergrad/)
Student Academic Affairs website (https://education.illinois.edu/student-resources/undergraduate/undergraduate-advising-support/)

Department of Computer Science
Thomas M. Siebel Center for Computer Science
201 N Goodwin Avenue, Urbana IL 61801
Department of Computer Science website (https://cs.illinois.edu/)
Department of Computer Science faculty (https://cs.illinois.edu/about/people/department-faculty/)
Computer Science + Education website (https://cs.illinois.edu/academics/undergraduate/degree-program-options/cs-x-degree-programs/computer-science-education/)

Computer Science + Education: Learning Sciences, BS

for the degree of Bachelor of Science Major in Computer Science + Education, Learning Sciences concentration

The **Computer Science + Education, BS** is sponsored jointly by the Department of Computer Science and the Department of Curriculum & Instruction. The major in Computer Science and Education is a flexible program for undergraduate students who plan to pursue careers in either field and offers two foci of concentration.

The Learning Sciences concentration focuses on how technology can be designed and developed to further education. Social media, virtual and augmented reality, data analytics, mobile and wearable devices have created an opportunity to transform teaching and learning in both formal and informal contexts. This degree will prepare students for advanced study at the graduate level, as well as immediate entry into the workforce at software companies, publishers, school districts, game design companies, and research non-profits.

To graduate from the Computer Science and Education curriculum, a student must complete all courses with a traditional letter grade.

for the degree of Bachelor of Science Major in Computer Science + Education, Learning Sciences concentration

To graduate from the Computer Science and Education curriculum, a student must complete all courses with a traditional letter grade.

Code	Title	Hours
Orientation Seminar		
EDUC 101	Education Orientation Seminar	1

The following degree requirements also meet general education course requirements and must be selected from the campus General Education (https://courses.illinois.edu/) course list.

Code	Title	Hours
General Education Requirements		
Composition		
Composition I		4-6
Advanced Composition		3-4
Quantitative Reasoning		
See Computer Science Core and Mathematical Foundations for specific requirement.		
Natural Sciences and Technology		
From approved campus list		6
Humanities and the Arts		
From approved campus list		6
Social and Behavioral Sciences		
From approved campus list		6
Cultural Studies		
Western Culture(s) from approved campus list		3
U.S. Minority Culture(s) from approved campus list		3
Non-Western Culture(s) from approved campus list		3
Language other than English		
Three years of one language other than English in high school or competion of the third semester of college-level language		0-12
Computer Science Core Requirements (fulfills Quantitative Reasoning)		
CS 124	Introduction to Computer Science I	3
CS 128	Introduction to Computer Science II	3
CS 173	Discrete Structures	3
CS 222	Software Design Lab	1
CS 225	Data Structures	4
CS 374	Introduction to Algorithms & Models of Computation	4
Choose 1 from:		8-9
CS 233 & CS 341	Computer Architecture and System Programming	
OR		
CS 340	Introduction to Computer Systems	
& Two CS 4XX	Any two (2) 400-level CS courses	
Choose 1 from:		3
CS 357	Numerical Methods I	
CS 421	Programming Languages & Compilers	
Mathematical Foundations (fulfills Quantitative Reasoning)		
CS 361	Probability & Statistics for Computer Science	3
MATH 220	Calculus	4-5
or MATH 221	Calculus I	
MATH 231	Calculus II	3
Choose 1 from:		2-3
MATH 225	Introductory Matrix Theory	
MATH 227	Linear Algebra for Data Science	
MATH 257	Linear Algebra with Computational Applications	
Concentration		
Students must complete 36-39 credit hours within one of the following areas of concentration: 1) Learning Science or 2) Secondary Education.		36-39
Electives		
Electives		0-8
Total Hours		**120**

Code	Title	Hours
College of Education Foundations		
EPOL 201	Foundations of Education	3-4
or EPOL 202	Foundations of Education-ACP	
Choose 3 from:		9-10
CI 415	Language Varieties, Cultures and Learning	
EPOL 310	Race and Cultural Diversity	
EPSY 201	Educational Psychology	
EPSY 236	Child Development in Education	
EPSY 400	Psychology of Learning in Education	
SPED 117	The Culture of Disability	
Learning Sciences Core		
CI 210	Introduction to Digital Learning Environments	3
CI 489	Educational Technology Capstone Course	3
Choose 1 from:		3
BCOG 100	Introduction to the Brain and Cognitive Science	
EPSY 408	Learning and Human Development with Educational Technology	
PSYC 224	Cognitive Psych	
PSYC 248	Learning and Memory	
PSYC 414	Brain, Learning, and Memory	
Choose 2 from:		6
CI 424	Child Development & Technology	
CI 482	Social Learning and Multimedia	
EPSY 405	Personality and Soc Dev	
EPSY 407	Adult Learning and Development	
EPSY 490	Developments in Educational Psychology (Learning in Everyday Contexts)	
Choose 3 from:		9
CI 437	Educational Game Design	
CI 438	Computer Programming and the Classroom	
CI 439	Critiques of Educational Technology	
CI 499	Issues and Development in Education (Attention, Learning, and New Technology)	
CI 499	Issues and Development in Education (Designing Learning Spaces)	
Total Hours		**36-38**

for the degree of Bachelor of Science Major in Computer Science + Education, Learning Sciences concentration

Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence. EPOL 202 will satisfy a College of Education Foundations requirement and the Campus General Education Advanced Composition requirement. If EPOL 202 is not selected, a separate Advanced Composition course must be taken.

Students must fulfill their Language Other Than English requirement by successfully completing a third level of a language other than English. For more information, see the corresponding section on the Degree and General Education Requirements page *(p. 2).*

First Year

First Semester	Hours	Second Semester	Hours
EDUC 101	1	CI 210	3
CS 124	3	Composition I or General Education course	4
MATH 220 or 221	4	CS 128	3
Composition I or General Education course	4	CS 173	3
Language Other Than English (3rd level) or General Education course	4	General Education course	3
	16		**16**

Second Year

First Semester	Hours	Second Semester	Hours
CS 222	1	CS 233 or 340	4
CS 225	4	MATH 257, 227, or 225	3
MATH 231	3	EPOL 201 or 202 (EPOL 202 recommended)	3
General Education course	3	General Education course	3
College of Education Foundations course	3	College of Education Foundations course	3
	14		**16**

Third Year

First Semester	Hours	Second Semester	Hours
CS 341 (or CS 400-level course)	4	CS 374	4
CS 361	3	Learning Sciences Core course	3
Learning Sciences Core course	3	Learning Science Core course	3
General Education course	3	Elective course (or CS 400-level course)	3
General Education course	3		
	16		**13**

Fourth Year

First Semester	Hours	Second Semester	Hours
CS 357 or 421	3	CI 489	3
Learning Sciences Core course	3	Learning Sciences Core course	3

College of Education Foundations course	3	Learning Sciences Core course	3
General Education course	3	Elective course	3
Elective course	3	Elective course	2
	15		**14**

Total Hours 120

for the degree of Bachelor of Science Major in Computer Science + Education, Learning Sciences concentration

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College of Education
Education Building
1310 S. Sixth Street, Champaign, IL 61820
College of Education website (https://education.illinois.edu/)

Department of Curriculum & Instruction
306 Education Building
Department of Curriculum & Instruction email (ci@education.illinois.edu)
217-244-8286
Department of Curriculum & Instruction website (https://education.illinois.edu/ci/)
Department of Curriculum & Instruction faculty (https://education.illinois.edu/faculty-finder/?dept=Curriculum%20Instruction)

Office of Undergraduate Programs
110 Education Building
Student Academic Affairs email (saao@education.illinois.edu)
217-333-2800
Admissions & Academics website (https://education.illinois.edu/programs/undergrad/)
Student Academic Affairs website (https://education.illinois.edu/student-resources/undergraduate/undergraduate-advising-support/)

Department of Computer Science
Thomas M. Siebel Center for Computer Science
201 N Goodwin Avenue, Urbana, IL 61801
Department of Computer Science website (https://cs.illinois.edu/)
Department of Computer Science faculty (https://cs.illinois.edu/about/people/department-faculty/)
Computer Science + Education website (https://cs.illinois.edu/academics/undergraduate/degree-program-options/cs-x-degree-programs/computer-science-education/)

Computer Science + Education: Secondary Education, BS

for the degree of Bachelor of Science Major in Computer Science + Education, Secondary Education concentration

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The **Computer Science + Education, BS** is sponsored jointly by the Department of Computer Science and the Department of Curriculum & Instruction. The Secondary Education concentration provides the coursework and field experience for students to be licensed to teach computer science in grades 5-12. The degree will prepare students to join the workforce as teachers in the state of Illinois, providing them with the knowledge necessary to teach and develop computer science curricula.

To graduate from the Computer Science and Education curriculum, a student must complete all courses with a traditional letter grade.

To be recommended for licensure, candidates are required to maintain a cumulative grade point average of 2.5 (A=4.0). Candidates in teacher licensure programs must receive a C- or better in ALL content and professional education coursework. Licensure requirements are subject to change without notice as a result of new mandates from the Illinois State Board of Education or the Illinois General Assembly.

for the degree of Bachelor of Science Major in Computer Science + Education, Secondary Education concentration

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To graduate from the Computer Science and Education curriculum, a student must complete all courses with a traditional letter grade.

In order to be recommended for licensure, candidates are required to maintain University of Illinois at Urbana-Champaign, cumulative, content area, and professional education grade point averages of 2.5 (A=4.0). Candidates in teaching licensure programs must maintain a C- or better in ALL content and professional education coursework. Candidates should consult their adviser or the Council on Teacher Education for the list of courses used to compute these grade point averages. For teacher education licensure requirements applicable to all curricula, see the Council on Teacher Education.

Licensure requirements are subject to change without notice as a result of new mandates from the Illinois State Board of Education or the Illinois General Assembly.

Code	Title	Hours
Orientation Seminar		
EDUC 101	Education Orientation Seminar	1

The following degree requirements also meet general education course requirements and must be selected from the campus General Education (https://courses.illinois.edu/) course list.

Code	Title	Hours
General Education Requirements		
Composition		
Composition I		4-6
Advanced Composition		3-4
Quantitative Reasoning		
See Computer Science Core and Mathematical Foundations for specific requirement.		
Natural Sciences and Technology		
From approved campus list		6
Humanities and the Arts		
From approved campus list		6
Social and Behavioral Sciences		
From approved campus list		6
Cultural Studies		
Western Culture(s) from approved campus list		3
U.S. Minority Culture(s) from approved campus list		3
Non-Western Culture(s) from approved campus list		3
Language other than English		
Three years of one language other than English in high school or competion of the third semester of college-level language		0-12

Computer Science Core Requirements (fulfills Quantitative Reasoning)		
CS 124	Introduction to Computer Science I	3
CS 128	Introduction to Computer Science II	3
CS 173	Discrete Structures	3
CS 222	Software Design Lab	1
CS 225	Data Structures	4
CS 374	Introduction to Algorithms & Models of Computation	4
Choose 1 from:		8-9
CS 233 & CS 341	Computer Architecture and System Programming	
OR		
CS 340	Introduction to Computer Systems	
& Two CS 4XX	Any two (2) 400-level CS courses	
Choose 1 from:		3
CS 357	Numerical Methods I	
CS 421	Programming Languages & Compilers	
Mathematical Foundations (fulfills Quantitative Reasoning)		
CS 361	Probability & Statistics for Computer Science	3
MATH 220 or MATH 221	Calculus Calculus I	4-5
MATH 231	Calculus II	3
Choose 1 from:		2-3
MATH 225	Introductory Matrix Theory	
MATH 227	Linear Algebra for Data Science	
MATH 257	Linear Algebra with Computational Applications	
Concentration		
Students must complete 36-39 credit hours within one of the following areas of concentration: 1) Learning Science or 2) Secondary Education.		36-39
Electives		
Electives		0-8
Total Hours		**120**

Code	Title	Hours
CI 401	Introductory Teaching in a Diverse Society	3
CI 403	Teaching a Diverse High School Student Population	3
CI 404	Teaching and Assessing Secondary School Students	3
CI 473	Disciplinary Literacy	3
EDPR 442	Educational Practice in Secondary Education	12
EDUC 201	Identity and Difference in Education	3
EDUC 202	Social Justice, School and Society	3
EPSY 201	Educational Psychology (Gen Ed PSYC 100 is a prerequisite for EPSY 201)	3
EPSY 485	Assessing Student Performance	3
SPED 405	General Educator's Role in Special Education	3
Total Hours		**39**

for the degree of Bachelor of Science Major in Computer Science + Education, Secondary Education concentration

Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence.

Students must fulfill their Language Other Than English requirement by successfully completing a third level of a language other than English. For more information, see the corresponding section on the Degree and General Education Requirements page *(p. 2).*

First Year

First Semester	Hours	Second Semester	Hours
EDUC 101	1	Composition I or General Education course (PSYC 100 recommended)	4
CS 124	3	EDUC 201	3
Composition I or General Education course (PSYC 100 recommended)	4	CS 128	3
Language Other Than English (3rd level) or Elective course	4	CS 173	3
MATH 220 or 221	4	MATH 231	3
	16		**16**

Second Year

First Semester	Hours	Second Semester	Hours
CS 222	1	CS 233 or 340	4
CS 225	4	CS 361	3
EPSY 201	3	EDUC 202	3
MATH 257, 227, or 225	3	General Education course	3
General Education course	3	General Education course	3
	14		**16**

Third Year

First Semester	Hours	Second Semester	Hours
CS 341 (or CS 400-level course)	4	CI 401	3
General Education course	3	CI 473	3
General Education course	3	CS 374	4
Elective course	3	Elective course (or CS 400-level course)	3

Elective course		2	
		15	**13**

Fourth Year

First Semester	Hours	Second Semester	Hours
CI 403		3 CI 404	3
CS 357 or 421		3 EDPR 442	12
EPSY 485		3	
SPED 405		3	
Elective course		3	
		15	**15**

Total Hours 120

for the degree of Bachelor of Science Major in Computer Science + Education, Secondary Education concentration

College of Education
Education Building
1310 S. Sixth Street, Champaign, IL 61820
College of Education website (https://education.illinois.edu/)

Department of Curriculum & Instruction
306 Education Building
Department of Curriculum & Instruction email (ci@education.illinois.edu)
217-244-8286
Department of Curriculum & Instruction website (https://education.illinois.edu/ci/)
Department of Curriculum & Instruction faculty (https://education.illinois.edu/faculty-finder/?dept=Curriculum%20Instruction)

Office of Undergraduate Programs
110 Education Building
Student Academic Affairs email (saao@education.illinois.edu)
217-333-2800
Admissions & Academics website (https://education.illinois.edu/programs/undergrad/)
Student Academic Affairs website (https://education.illinois.edu/student-resources/undergraduate/undergraduate-advising-support/)

Department of Computer Science
Thomas M. Siebel Center for Computer Science
201 N Goodwin Avenue, Urbana, IL 61801
Department of Computer Science website (https://cs.illinois.edu/)
Department of Computer Science faculty (https://cs.illinois.edu/about/people/department-faculty/)
Computer Science + Education website (https://cs.illinois.edu/academics/undergraduate/degree-program-options/cs-x-degree-programs/computer-science-education/)

Computer Science + Geography & Geographic Information Science, BSLAS

for the degree of Bachelor of Science in Liberal Arts & Sciences Major in Computer Science + Geography & Geographic Information Science

for the degree of Bachelor of Science in Liberal Arts & Sciences Major in Computer Science + Geography & Geographic Information Science

Please see the computer science advisor as well as the geography advisor.

A Major Plan of Study Form must be completed and submitted to the LAS Student Academic Affairs Office by the beginning of the fifth semester (60-75 hours).

General education: Students must complete the Campus General Education (https://courses.illinois.edu/) **requirements including the campus general education language requirement.**
Minimum required major and supporting course work: Normally equates to 66 hours. Twelve hours of 300- and 400-level in the major must be taken on this campus.
Minimum hours required for graduation: 120 hours.

Code	Title	Hours
Required Computer Science Courses:		
CS 100	Computer Science Orientation (recommended; CS 100 is an orientation course aimed at first-year students, so students who declare the major after the freshman year are not required to complete it.)	1
CS 124	Introduction to Computer Science I	3
CS 128	Introduction to Computer Science II	3
CS 173	Discrete Structures	3
CS 225	Data Structures	4
CS 222	Software Design Lab	1
Choose one of the following combinations		8-11
CS 233 & CS 341	Computer Architecture and System Programming	
OR		
CS 340	Introduction to Computer Systems	
& two CS courses at the 400 level above CS 403, excluding CS 421 and CS 491		
Choose one of the following:		3
STAT 200	Statistical Analysis	
STAT 212	Biostatistics	
CS 361	Probability & Statistics for Computer Science (recommended)	
CS 374	Introduction to Algorithms & Models of Computation	4
CS 421	Programming Languages & Compilers	3 or 4
Mathematics (may also fulfill the General Education QR I and II requirements)		
MATH 220	Calculus	5
or MATH 221	Calculus I	
MATH 225	Introductory Matrix Theory	2 or 3
or MATH 257	Linear Algebra with Computational Applications	
MATH 231	Calculus II	3
Required Geographic Information Science Coursework - Minimum of 24 hours		
GGIS 371	Spatial Analysis	
GGIS 379	Introduction to Geographic Information Systems	
GGIS 380	Geographic Information Systems II	
Two (2) additional GIS courses from the following list:		6

GGIS 205	Business Location Decisions
GGIS 224	Environmental Data Science
GGIS/SOC 280	Intro to Social Statistics
GGIS 407	Foundations of CyberGIS & Geospatial Data Science
GGIS 412	Geospatial Technologies & Society
GGIS/ATMS 421	Earth Systems Modeling
GGIS/PATH 439	Health Applications of GIS
GGIS 440	Business Applications of GIS
GGIS 460	Aerial Photo Analysis
GGIS 468	Biological Modeling
GGIS 473	Digital Cartography & Map Design
GGIS 476	Environmental Remote Sensing
GGIS 477	Introduction to Remote Sensing
GGIS 478	Techniques of Remote Sensing
GGIS 479	Advanced Topics in GIS
GGIS 480	Principles of Geographic Information Science
GGIS 489	Programming for GIS
Two (2) human and/or physical geography courses:	6
GGIS 204	Cities of the World
GGIS 210	Social & Environmental Issues
GGIS 221	Geographies of Global Conflict
GGIS 222	Big Rivers of the World
GGIS/NRES 287	Environment and Society
GGIS/ESE 350	Sustainability and the City
GGIS 356	Sustainable Development in South Asia
GGIS 370/ESE 320	Water Planet, Water Crisis
GGIS 384	Population Geography
GGIS/NRES 401	Watershed Hydrology
GGIS 405	Geography Field Course
GGIS 406	Fluvial Geomorphology
GGIS 408	Humans and River Systems
GGIS 410	Green Development
GGIS 436/IB 439	Biogeography
GGIS 438	Geography of Health Care
GGIS 455	Geography of Sub-Saharan Africa
GGIS/LA 446	Sustainable Planning Seminar
GGIS 465	Transportation &Sustainability
GGIS 466	Environmental Policy
GGIS 471	Modern Geographic Thought
GGIS 482	Challenges of Sustainability
GGIS 483	Urban Geography
GGIS 484	Cities, Crime, and Space
GGIS 496	Climate & Social Vulnerability

for the degree of Bachelor of Science in Liberal Arts & Sciences Major in Computer Science + Geography & Geographic Information Science

Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence.

Students must fulfill their Language Other Than English requirement by successfully completing a fourth level of a language other than English. See the corresponding section on the Degree General and Education Requirements page *(*http://catalog.illinois.edu/general-information/degree-general-education-requirements/*).*

First Year

First Semester	Hours	Second Semester	Hours
Free elective course	1	CS 128	3
CS 100	1	CS 173	3
Geographic Information Science course	3	MATH 220 (or MATH 221)	4
CS 124	3	General Education course or Composition I	4
Composition I or General Education course	4		
	12		**14**

Second Year

First Semester	Hours	Second Semester	Hours
CS 222	1	CS 233 (or CS 340)	3
CS 225	4	STAT 200 (or STAT 212 or CS 361)	3
MATH 225 (or MATH 257)	3	MATH 231	3
Language Other Than English (3rd level)	4	Language Other Than English (4th level)	4
General Education Course	3	General Education Course	3
	15		**16**

Third Year

First Semester	Hours	Second Semester	Hours
CS 341 (or CS 400-level course)	4	CS 374	4
Human and/or Physical Geography course	3	CS 400-level course or Free elective course	3
GGIS 371	4	Human and/or Physical Geography course	3
GGIS 379	4	General Education Course	3
General Education Course	3	General Education Course	3
	18		**16**

Fourth Year

First Semester	Hours	Second Semester	Hours
CS 421	3	Geographic Information Science course	3
GGIS 380	4	General Education Course	3
General Education Course	3	General Education Course	3
General Education Course	3	Free elective course	3
Free elective course	3	Free elective course	1
	16		**13**

Total Hours 120

Undergraduate Degree Programs in Geography & Geographic Information Science

For the Degree of Bachelor of Science in Liberal Arts and Sciences

- Major in Computer Science & Geography & GIS, BSLAS (p. 194)
- Major in Geography & Geographic Information Science, Geographic Information Science Concentration, BSLAS (p. 291)
- Major in Geography & Geographic Information Science, Physical Geography Concentration, BSLAS (p. 293)

For the Degree of Bachelor of Arts in Liberal Arts and Sciences

- Major in Geography & Geographic Information Science, General Geography Concentration, BALAS (p. 286)
- Major in Geography & Geographic Information Science, Human Geography Concentration, BALAS (p. 288)

for the degree of Bachelor of Science in Liberal Arts & Sciences Major in Computer Science + Geography & Geographic Information Science

computer science degree information: CS + X Degrees (https://cs.illinois.edu/academics/undergraduate/degree-program-options/cs-x-degree-programs/#requirements)

geography & geographic information science information: CS + GGIS (https://cs.illinois.edu/academics/undergraduate/degree-program-options/cs-x-degree-programs/computer-science-geography/)

department page: https://www.ggis.illinois.edu/ (https://ggis.illinois.edu/)

overview of college admissions & requirements: Liberal Arts & Sciences (http://catalog.illinois.edu/schools/las/academic-units/)

college websites: https://las.illinois.edu/ and https://grainger.illinois.edu/

geography & geographic information email: ggis-advisor@illinois.edu (http://catalog.illinois.edu/undergraduate/eng_las/computer-science-geography-geographic-information-science-bslas/ggis-advisor@illinois.edu)

computer science email: undergrad@cs.illinois.edu (academic@cs.illinois.edu)

Please see the computer science advisor as well as the geography advisor.

for the degree of Bachelor of Science in Liberal Arts & Sciences Major in Computer Science + Geography & Geographic Information Science

Computer Science + Linguistics, BSLAS

for the degree of Bachelor of Science in Liberal Arts & Sciences Major in Computer Science + Linguistics

for the degree of Bachelor of Science in Liberal Arts & Sciences Major in Computer Science + Linguistics

Please see the computer science advisor as well as the linguistics advisor.

A Major Plan of Study Form must be completed and submitted to the LAS Student Affairs Office by the beginning of the fifth semester (60-75 hours).

General education: Students must complete the Campus General Education (https://courses.illinois.edu/) requirements including the campus general education language requirement.
Minimum required major and supporting course work: Normally equates to 66 hours. At least 12 hours of 300- and 400-level course work in the major must be taken on this campus.
Minimum hours required for graduation: 120 hours

Code	Title	Hours
Required Computer Science Coursework		
CS 100	Computer Science Orientation (recommended; CS 100 is an orientation course aimed at first-year students, so students who declare the major after the freshman year are not required to complete it.)	1
CS 124	Introduction to Computer Science I	3
CS 128	Introduction to Computer Science II	3
CS 173	Discrete Structures	3
CS 225	Data Structures	4
CS 222	Software Design Lab	1
Choose one of the following combinations		8-11
CS 233 & CS 341	Computer Architecture and System Programming	
OR		
CS 340	Introduction to Computer Systems	
& two CS courses at the 400 level above CS 403, excluding CS 421 and CS 491. These two courses must be distinct from all other courses used to fulfill program requirements or options.		
Choose one of the following:		
STAT 200	Statistical Analysis	
STAT 212	Biostatistics	
CS 361	Probability & Statistics for Computer Science	

CS 374	Introduction to Algorithms & Models of Computation	4
CS 421	Programming Languages & Compilers	3
Mathematics (may also fulfill the General Education Quantitative Reasoning I and II requirements)		
MATH 221	Calculus I	4-5
or MATH 220	Calculus	
MATH 225	Introductory Matrix Theory	2 or 3
or MATH 257	Linear Algebra with Computational Applications	
MATH 231	Calculus II	3
Required Linguistics Coursework - Minimum of 24 hours		
LING 100	Intro to Language Science	3
LING 301	Elements of Syntax	3
LING 307	Elmnts Semantics & Pragmatics	3
LING 406	Introduction to Computational Linguistics	3
Advanced Coursework- select at least three of the following		**9**
TRST 415	Machine Translation: History and Applications	
LING 490	Special Topics in Linguistics (Check with advisor for appropriate topics. May be repeated to meet this requirement if topics vary)	
CS 446	Machine Learning	
Linguistics Breadth Course		**3**
Any 200-level or higher Linguistics Course (with the exception of ESL and language courses)		

for the degree of Bachelor of Science in Liberal Arts & Sciences Major in Computer Science + Linguistics

Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence.

Students must fulfill their Language Other Than English requirement by successfully completing a fourth level of a language other than English. For more information see the corresponding section on the Degree General and Education Requirements page *(p. 2).*

First Year

First Semester	Hours		Second Semester	Hours
Free elective course	1		CS 128	3
CS 100	1		CS 173	3
LING 100	3		200 - 400 level Linguistics Breadth course	3
CS 124	3		MATH 220 (or MATH 221)	4
Composition I or General Education course	4		General Education Course or Composition I	3
Free elective course	2			
	14			**16**

Second Year

First Semester	Hours		Second Semester	Hours
CS 222	1		STAT 200 (or STAT 212 or CS 361)	3
CS 225	4		CS 233 (or CS 340)	3
MATH 225 (or MATH 257)	3		MATH 231	3
General Education course	3		General Education Course	3
Language Other Than English (3rd level)	4		Language Other Than English (4th level)	4
	15			**16**

Third Year

First Semester	Hours		Second Semester	Hours
CS 341 (or CS 400-level course)	4		CS 374	4
LING 301	3		CS 400-level course or Free elective course	3
TRST 415	3		LING 307	3
General Education Course	3		General Education Course	3
General Education Course	3		General Education Course	3
	16			**16**

Fourth Year

First Semester	Hours		Second Semester	Hours
CS 421	3		CS 446	3
LING 406	3		LING 490	3
General Education Course	3		Free elective course	3
Free elective course	3		Free elective course	2
Free elective course	2		Free elective course	2
	14			**13**

Total Hours 120

for the degree of Bachelor of Science in Liberal Arts & Sciences Major in Computer Science + Linguistics

1. An ability to apply knowledge of computing and mathematics appropriate to the discipline.
2. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
3. An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
4. An ability to function effectively on teams to accomplish a common goal.

5. An understanding of professional, ethical, legal, security and social issues and responsibilities
6. An ability to communicate effectively with a range of audiences
7. An ability to analyze the local and global impact of computing on individuals, organizations, and society
8. A recognition of the need for and an ability to engage in continuing professional development
9. An ability to use current techniques, skills, and tools necessary for computing practice
10. An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the trade-offs involved in design choices
11. An ability to apply design and development principles in the construction of software systems of varying complexity
12. An ability to apply knowledge of linguistics appropriate to the discipline.
13. An ability to analyze a problem, and identify and define the computing as well as the linguistics requirements appropriate to its solution.
14. An ability to design, implement, and evaluate a computational linguistics-based system, process, component, or program to meet desired text processing needs.
15. An ability to analyze the local and global impact of computing, language, as well as language technologies on individuals, organizations, and society.
16. An ability to use current linguistics and computational techniques, skills, and tools necessary for computational linguistics practice.
17. An understanding of Linguistics and Computer Science sufficient to be able to apply computational processes to solve problems naturally arising in language.

for the degree of Bachelor of Science in Liberal Arts & Sciences Major in Computer Science + Linguistics

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CS + X Degree Information (https://cs.illinois.edu/academics/undergraduate/degree-program-options/cs-x-degree-programs/#requirements)
CS + Linguistics Information (https://linguistics.illinois.edu/academics/undergraduate-program/degrees-offered/cs-linguistics/)

Linguistics
Linguistics Department webpage
Computer Science
Computer Science website

College of Liberal Arts & Sciences
Liberal Arts & Sciences catalog page (http://catalog.illinois.edu/schools/las/academic-units/)
Liberal Arts & Sciences website (https://las.illinois.edu/)

Grainger College of Engineering
Grainger College of Engineering website

Admissions
overview of college admissions & requirements: Liberal Arts & Sciences (http://catalog.illinois.edu/schools/las/academic-units/)

computer science email: undergrad@cs.illinois.edu (academic@cs.illinois.edu)

linguistics advising: https://linguistics.illinois.edu/academics/undergraduate-program/undergraduate-advising (https://linguistics.illinois.edu/academics/undergraduate-program/undergraduate-advising/)

Please see the computer science advisor as well as the linguistics advisor.

Computer Science + Music, BS

for the degree of Bachelor of Science in Computer Science + Music

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The Bachelor of Science in Computer Science & Music (CS + Music) is designed for students who plan to pursue a career in music technology, as well as students who want to push the state-of-the-art in music composition and explore new avenues of expression. This degree will prepare students for advanced study at the graduate level for many existing programs in music and audio technology, as well as equip them with the proper skills to successfully join and lead a vibrant workforce centered around the creation and distribution of entertainment media through constantly evolving technological platforms.

The CS + Music curriculum provides a broad knowledge of the theory, design, and application of computer systems integrated with the theory, history, and application of music. The curriculum is formed around courses in music, mathematics, science, and computation. Advanced coursework includes either a senior thesis or a senior project. A minimum of 120 hours is required for graduation.

For admission requirements for the Bachelor of Science in CS + Music, please see the School of Music's Admissions website (listed above) or contact the Music Admissions Office:

Music Admissions Office
School of Music
1114 West Nevada Street
Urbana, IL 61801
(217) 244-7899

for the degree of Bachelor of Science in Computer Science + Music

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Minimum hours required for graduation: 120 hours

General Education and College Orientation

Code	Title	Hours
Orientation to Fine & Applied Arts and Music		
FAA 101	Arts at Illinois	1
MUS 100	First-year Seminar for Music Majors	0
General Education and Graduation Requirements		
Composition I		4
Advanced Composition		3
Humanities and the Arts - fulfilled by MUS 313 and MUS 314		6
Cultural Studies: Western/Comparative Culture(s)		3
Cultural Studies: Non-Western Culture(s)		3
Cultural Studies: U.S. Minority Culture(s)		3
Natural Sciences and Technology		6
Social and Behavioral Sciences		6
Quantitative Reasoning I and II - fulfilled by CS 124 and CS 128		6

Language Other Than English	0-12

Specifics of the language requirements are listed in the Course Explorer. (https://courses.illinois.edu/gened/DEFAULT/DEFAULT/)

Music Core

Code	Title	Hours
Music Theory and Musicianship		
MUS 101	Music Theory and Practice I	2
MUS 102	Music Theory and Practice II	2
MUS 201	Music Theory and Practice III	2
MUS 202	Music Theory and Practice IV	2
MUS 107	Musicianship I	2
MUS 108	Musicianship II	2
MUS 207	Musicianship III	2
MUS 208	Musicianship IV	2
Musicology		
MUS 110	Introd Art Mus: Intl Perspect	3
MUS 313	The History of Music I	3
MUS 314	The History of Music II	3
Keyboard Proficiency		
All students, except keyboard students, must demonstrate keyboard competency when they audition, by proficiency examination when they matriculate, or by enrolling in MUS 172 and/or MUS 173.		
MUS 172	Grp Instr Pno for Mus Major I	2
MUS 173	Grp Instr Pno for Mus Maj II	2

CS + Music Studies

Code	Title	Hours
Music		
MUS 105	Computation and Music I	2
MUS 205	Computation and Music II	2
MUS 299	Thesis/Adv UG Honors in Music	1 or 2
MUS 305	Computation and Music III	3
MUS 407	Elect Music Techniques I	3
MUS 409	Elec Music Techniques II	2
Senior Project or Senior Thesis		
Computer Science		
CS 124	Introduction to Computer Science I	3
CS 128	Introduction to Computer Science II	3
CS 173	Discrete Structures	3
CS 222	Software Design Lab	1
CS 225	Data Structures	4
Choose one of the following CS combinations:		
CS 233 & CS 341	Computer Architecture and System Programming	8
or		
CS 340 Introduction to Computer Systems		
and any two 400-level CS courses above CS 403, excluding CS 421 and CS 491 (6-8 hours)		
CS 361	Probability & Statistics for Computer Science	3

Students who are more interested in systems building can substitute CS 427 for CS 361.

CS 374	Introduction to Algorithms & Models of Computation	4
CS 421	Programming Languages & Compilers	3
CS 448	Audio Computing Laboratory	3 or 4
Engineering		
ECE 402	Electronic Music Synthesis	3
Math		
MATH 220	Calculus (Students must take the ALEKS placement exam for course entry)	4 or 5
or MATH 221	Calculus I	
MATH 231	Calculus II	3
MATH 225	Introductory Matrix Theory	2 or 3
or MATH 257	Linear Algebra with Computational Applications	
Total Hours		**120**

for the degree of Bachelor of Science in Computer Science + Music

Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence.

Students must fulfill their Language Other Than English requirement by successfully completing a third level of a language other than English. See the corresponding section on the Degree and General Education Requirements *(*http://catalog.illinois.edu/general-information/degree-general-education-requirements/*).*

Free Electives: Additional course work, so that there are at least 120 credit hours earned toward the degree.

First Year

First Semester	Hours	Second Semester	Hours
FAA 101	1	MUS 102	2
MUS 100	0	MUS 108	2
MUS 101	2	MUS 105	2
MUS 107	2	CS 128	3
CS 124	3	CS 173	3
MATH 220 or 221	5-4	General Education course or Composition I	3-4
Composition I or General Education course	4-3		
	17		**15**

Second Year

First Semester	Hours	Second Semester	Hours
MUS 201	2	MUS 202	2
MUS 207	2	MUS 208	2
MUS 205	2	MUS 305	3
CS 222	1	MUS 172	2

CS 225	4	CS 233	4
MATH 231	3	CS 361	3
MATH 225 or 257	2-3		
	16		**16**

Third Year

First Semester	Hours	Second Semester	Hours
MUS 173	2	MUS 110	3
CS 341	4	CS 374	4
ECE 402	3	CS 448	3
General Education or Free Elective course	3	General Education or Free Elective course	4
General Education or Free Elective course	3		
	15		**14**

Fourth Year

First Semester	Hours	Second Semester	Hours
MUS 299	1	MUS 299	1
MUS 313	3	MUS 314	3
MUS 407	3	MUS 409	2
CS 421	3	General Education or Free Eective course	3
General Education or Free elective course	3	General Education or Free Elective course	3
		Free Elective course	2
	13		**14**

Total Hours 120

or the degree of Bachelor of Science in Computer Science + Music

By the end of the program, students will be able to:

for the degree of Bachelor of Science in Computer Science + Music

Computer Science "CS + X" degree information (https://cs.illinois.edu/academics/undergraduate/degree-program-options/cs-x-degree-programs/#requirements)

School of Music website (https://music.illinois.edu/)

Overview of Music Admissions & Requirements (https://music.illinois.edu/application-process/)

Music Admissions email (musicadmissions@illinois.edu)

Computer Science + Philosophy, BSLAS

for the degree of Bachelor of Sciences in Liberal Arts & Sciences Major in Computer Science + Philosophy

for the degree of Bachelor of Sciences in Liberal Arts & Sciences Major in Computer Science + Philosophy

Please see the computer science advisor as well as the philosophy advisor.

A Major Plan of Study Form must be completed and submitted to the LAS Student Affairs Office by the beginning of the fifth semester (60-75 hours).

General education: Students must complete the Campus General Education (https://courses.illinois.edu/) **requirements including the campus general education language requirement.**
Minimum required major and supporting course work: Normally equates to 71-73 hours. Twelve hours of 300- and 400-level Philosophy courses must be taken on this campus.
Minimum hours required for graduation: 120 hours

Code	Title	Hours
Required Computer Science Courses		
CS 100	Computer Science Orientation (recommended; CS 100 is an orientation course aimed at first-year students, so students who declare the major after the freshman year are not required to complete it.)	1
CS 124	Introduction to Computer Science I	3
CS 128	Introduction to Computer Science II	3
CS 173	Discrete Structures	3
CS 225	Data Structures	4
CS 222	Software Design Lab	1
Choose one of the following combinations		8-11
CS 233 & CS 341	Computer Architecture and System Programming	
OR		
CS 340	Introduction to Computer Systems	
& two CS courses at the 400 level above CS 403, excluding CS 421 and CS 491. These two courses must be distinct from all other courses used to fulfill program requirements or options.		
Choose one of the following:		
STAT 200	Statistical Analysis	
STAT 212	Biostatistics	
CS 361	Probability & Statistics for Computer Science	
CS 374	Introduction to Algorithms & Models of Computation	4
CS 421	Programming Languages & Compilers	3
Mathematics (may also fulfill the General Education Quantitative Reasoning I and II requirements)		
MATH 220	Calculus	4-5
or MATH 221	Calculus I	
MATH 225	Introductory Matrix Theory	2 or 3
or MATH 257	Linear Algebra with Computational Applications	
MATH 231	Calculus II	3
Required Philosophy coursework		

PHIL 222	Philosophical Foundations of Computer Science	3
PHIL 223	Minds & Machines	3
PHIL 421	Ethical Theories	3
Choose one of the following:		3
PHIL 426	Metaphysics	
PHIL 430	Theory of Knowledge	
Choose one of the following:		3
PHIL 425	Philosophy of Mind	
PHIL 438	Philosophy of Language	
PHIL 439	Philosophy of Mathematics	
PHIL 477	Philosophy of Psychology	
PHIL 454	Advanced Symbolic Logic	3
PHIL 499	Capstone Seminar	3
In consultation with an advisor, choose at least 9 additional hours of coursework in philosophy, with at least 6 of those hours being at the 300- or 400-level.		9
Total Hours		**68-74**

for the degree of Bachelor of Sciences in Liberal Arts & Sciences Major in Computer Science + Philosophy

Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence.

Students must fulfill their Language Other Than English requirement by successfully completing a fourth level of a language other than English. See the corresponding section on the Degree General and Education Requirements page *(*http://catalog.illinois.edu/general-information/degree-general-education-requirements/*).*

First Year

First Semester	Hours	Second Semester	Hours
Free elective course	1	CS 128	3
CS 100	1	CS 173	3
CS 124	3	PHIL 223	3
PHIL 222	3	MATH 220 (or MATH 221)	3
Composition I or General Education course	4	General Education course or Composition I	3
General Education Course	3		
	15		**15**

Second Year

First Semester	Hours	Second Semester	Hours
CS 222	1	CS 233 (or CS 340)	3
CS 225	4	STAT 200 (or STAT 212 or CS 361)	3
MATH 225 (or MATH 257)	2	MATH 231	3
Language Other Than English (3rd level)	4	Language Other Than English (4th level)	4
General Education Course	3	General Education Course	3
	14		**16**

Third Year

First Semester	Hours	Second Semester	Hours
CS 341 (or CS 400-level course)	4	CS 374	4
PHIL 426 (or PHIL 430)	3	CS 400-level course or Free elective course	3
PHIL 421	3	PHIL 400 - level course from list	3
PHIL course	3	PHIL 454	3
General Education Course	3	General Education Course	3
	16		**16**

Fourth Year

First Semester	Hours	Second Semester	Hours
CS 421	3	PHIL 499	3
PHIL 300 - 400 level course	3	PHIL 300-400 level course	3
General Education Course	3	General Education Course	3
Free elective course	3	Free elective course	4
Free elective course	3		
	15		**13**

Total Hours 120

for the degree of Bachelor of Sciences in Liberal Arts & Sciences Major in Computer Science + Philosophy

CS + X Degrees (https://cs.illinois.edu/academics/undergraduate/degree-program-options/cs-x-degree-programs/#requirements)

CS + Philosophy (https://philosophy.illinois.edu/academics/undergraduate-studies/cs-philosophy-major/)

department page: http://www.philosophy.illinois.edu/

overview of college admissions & requirements: Liberal Arts & Sciences (http://catalog.illinois.edu/schools/las/academic-units/)

college websites: https://las.illinois.edu/ and https://grainger.illinois.edu (https://grainger.illinois.edu/)

philosophy advising: Philosophy Advising (https://philosophy.illinois.edu/academics/undergraduate-studies/advising/)

computer science email: undergrad@cs.illinois.edu (academic@cs.illinois.edu)

Please see the computer science advisor as well as the philosophy advisor.

for the degree of Bachelor of Sciences in Liberal Arts & Sciences Major in Computer Science + Philosophy

Computer Science + Physics, BS

Physics focuses on quantitative descriptions for the behavior of physical systems. Computer science has a natural place in the study of physics. Computer science enables much more advanced computation than that available using pen and paper. These computational advances dramatically increase the complexity of physical systems that can be described quantitatively.

The Illinois CS+Physics program blends our physics and computer science degrees to give students the skills to both understand and carry out quantitative models of physical systems. This collaboration between Computer Science and Physics provides an innovative program for students who are interested in the intersection between computing and physics.

Students in the CS + Physics program will develop mastery in areas ranging from numerical methods and machine learning to algorithms for computational science and quantum computing. The program combines the domain expertise in Physics, including its computational aspects, with the broad-based expertise in computing from Computer Science. This unique approach allows students to bridge these two areas.

Students enrolled in CS+Physics have ample opportunity to explore both their interests in Physics and Computer Science through the selection of technical electives. In consultation with the academic advisor, each student will elect a set of technical courses broadening their knowledge of both Physics and Computer Science. Technical electives add a minimum of seventeen (17) hours to the core Physics and Computer Science combined curriculum.

The top-10 rated Physics and Computer Science programs provide students the unique opportunity to receive instruction from the top scientists in both subjects.

for the degree of Bachelor of Science in Computer Science plus Physics

Graduation Requirements

Minimum Technical GPA (http://catalog.illinois.edu/undergraduate/engineering/computer-science-physics-bs/go.grainger.illinois.edu/TechnicalGPA/): 2.0.
TGPA is required for CS, Math, and Physics courses. See Technical GPA (https://go.grainger.illinois.edu/TechnicalGPA/) to clarify requirements.
Minimum Overall GPA: 2.0
Minimum hours required for graduation: 128 hours
General education: Students must complete the Campus General Education (https://courses.illinois.edu/) requirements including the campus general education language requirement.

Orientation and Professional Development

Code	Title	Hours
ENG 100	Grainger Engineering Orientation Seminar (External transfer students take ENG 300.)	1
PHYS 110	Physics Careers	0
Highly recommended, optional 1 credit hour course, CS 100 Computer Science Orientation. Credit hour counts toward free electives.		
Total Hours		**1**

Foundational Mathematics and Science

Code	Title	Hours
MATH 221	Calculus I (MATH 220 may be substituted. MATH 220 is appropriate for students with no background in calculus. 4 of 5 credit hours count towards degree.)	4
MATH 231	Calculus II	3
MATH 241	Calculus III	4
MATH 257	Linear Algebra with Computational Applications	3-4
or MATH 416	Abstract Linear Algebra	
MATH 285	Intro Differential Equations	3
PHYS 211	University Physics: Mechanics	4
PHYS 212	University Physics: Elec & Mag	4
PHYS 213	Univ Physics: Thermal Physics	2
PHYS 214	Univ Physics: Quantum Physics	2
CS 361	Probability & Statistics for Computer Science	3-4
or STAT 400	Statistics and Probability I	
Total Hours		**32-34**

Computer Science Core

Code	Title	Hours
CS 124	Introduction to Computer Science I	3
CS 128	Introduction to Computer Science II	3
CS 173	Discrete Structures	3
CS 222	Software Design Lab	1
CS 225	Data Structures	4
Choose one of the following options:		8-9
CS 233 & CS 341	Computer Architecture and System Programming	
OR		
CS 340	Introduction to Computer Systems	
& Two CS 400-level courses	Any two (2) 400-level CS courses above CS 403, excluding CS 491 and distinct from any 400-level courses taken to satisfy other requirements. If either or both of the courses are chosen for 4 credits, the extra credit hours will count towards free electives.	
CS 374	Introduction to Algorithms & Models of Computation	4
CS 357	Numerical Methods I	3
or CS 450	Numerical Analysis	

CS Technical Elective	Any 400-level CS course above CS 403, excluding CS 491, and distinct from any 400-level courses taken to satisfy other requirements.	3
Total Hours		**32-33**

Physics Core

Code	Title	Hours
PHYS 225	Relativity & Math Applications	2
PHYS 246	Physics on the Silicon Prairie: An Introduction to Modern Computational Physics	2
PHYS 325	Classical Mechanics I	3
PHYS 435	Electromagnetic Fields I	3
PHYS 486	Quantum Physics I	3-4
or PHYS 485	Atomic Phys & Quantum Theory	
PHYS 446	Modern Computational Physics	3
PHYS technical elective: Choose from CS or PHYS 300- or 400-level courses		14
Total Hours		**30-31**

Free Electives

Code	Title	Hours
Additional coursework, subject to the Grainger College of Engineering restrictions to Free Electives, so that there are at least 128 credit hours earned toward the degree. (https://go.grainger.illinois.edu/FreeElectives/)		13 - 17
Total Minimum Hours of Curriculum to Graduate		**128**

for the degree of Bachelor of Science in Computer Science plus Physics

Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence.

Students must fulfill their Language Other Than English requirement by successfully completing a third level of a language other than English. For more information see the corresponding section on the Degree General and Education Requirements page (p. 2)*.*

Free Electives: Additional course work, subject to the Grainger College of Engineering restrictions to Free Electives, so that there are at least 128 credit hours earned toward the degree.

First Year

First Semester	Hours	Second Semester	Hours
MATH 221 (MATH 220 may be substituted)	4	MATH 231	3
PHYS 110	0	PHYS 211	4
ENG 100 (External transfer students take ENG 300.)	1	CS 128	3
CS 124	3	CS 173	3
Composition I or General Education course	4-3	General Education or Composition I ourse	3-4
General Education course (choose a Humanities or Social/Behavioral Science course with Cultural Studies designation)	3		
	15		**16**

Second Year

First Semester	Hours	Second Semester	Hours
MATH 241	4	MATH 285	3
PHYS 212	4	PHYS 213	2
PHYS 225	2	PHYS 214	2
CS 225	4	PHYS 246	2
General Education course (choose a Humanities or Social/Behavioral Science course with Cultural Studies designation)	3	CS 233 or 340	4-3
		CS 222	1
		General Education course (choose a Humanities or Social/Behavioral Science course with Cultural Studies designation)	3
	17		**17**

Third Year

First Semester	Hours	Second Semester	Hours
MATH 257 (MATH 416 may be substituted.)	3	CS 357 (or CS 450)	3
PHYS 325	3	PHYS 435	3
CS 361 (STAT 400 may be substituted)	3	CS Technical Elective course	3
PHYS Technical Elective course	3	PHYS Technical Elective course	3

Free elective course		3 Language Other Than English (3rd level) course	4
	15		**16**

Fourth Year

First Semester	Hours	Second Semester	Hours
PHYS 485 (PHYS 486 may be substituted)	3	PHYS 446	3
CS 374	4	PHYS Technical Elective course	4
Free elective course or CS Technical Elective course	3	PHYS Technical Elective course	4
Free elective course	3	CS 341 (or CS Technical Elective course)	4
Free elective course	3	Free elective course	2
	16		**16**

Total Hours 128

for the degree of Bachelor of Science in Computer Science plus Physics

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The Department of Physics Undergraduate Studies Office—together with guidance from the Physics Undergraduate Studies Committee—will work to collect, compile, evaluate, and report on the learning outcomes for its courses. This work will include, but not be limited to:

1. Informal Early Feedback:
   Students in each major-specific course will be invited to participate in a survey to help the department and instructors evaluate the students' understanding of the course learning objectives, outcomes, and course goals. Summary reports will be made available to instructors and the department leadership.
2. Evaluation of Direct Student Learning and Other Summative Learning Assessments:
   Final examinations (i.e., questions and student work) will be collected for evaluation of learning outcomes. This will include evaluation of the assessments' usefulness in evaluation of learning outcomes, as well as the mastery of the outcomes by students. Anonymized student work will be used for the evaluation. Summary reports will be made available to instructors and the Department leadership. Additionally, CS will follow its standard student outcomes assessment process for the core CS courses, in the same manner as it uses for continuous assessment of the CS BS program.
3. Indirect Evaluation of Student Learning:
   Indirect measures of student learning will include current enrollment, including demographic information.
4. Degree completion rates, including information regarding:
   - Semesters to completion
   - Degree program requirements
   - Semesters to complete specified intra-degree program requirements
   - Choke-points in degree completion progression
   - Course updates and revisions
   - Desirable new courses
   - Demographic trends

for the degree of Bachelor of Science in Computer Science plus Physics

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Physics Website
Physics Faculty **(**https://physics.illinois.edu/people/directory/**)**

The Grainger College of Engineering Admissions **(**https://grainger.illinois.edu/admissions/**)**
The Grainger College of Engineering

Creative Writing, BALAS

for the degree of Bachelor of Arts in Liberal Arts & Sciences Major in Creative Writing

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Undergraduate Degree Programs in English

Majors:

English, BALAS (p. 263) with concentrations:

English, English Concentration, BALAS (p. 264)

English, English Teaching Concentration, BALAS (p. 266)

English, Topics in English Concentration, BALAS (p. 268)

Creative Writing, BALAS (p. 204)

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for the degree of Bachelor of Arts in Liberal Arts & Sciences Major in Creative Writing

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General education: Students must complete the Campus General Education (https://courses.illinois.edu/) requirements.

Minimum required coursework equates to 36 hours in CW and ENGL courses. Twelve hours of 300- or 400-level courses in the major must be taken on this campus, of which at least three (3) hours must be Creative Writing Courses CW 404 and CW 406

Minimum hours required for graduation: 120 hours

Code	Title	Hours
Major Requirements		
Literature for Creative Writers		**6**
CW 100	Intro to Creative Writing	
CW 200	Reading for Writers	
Craft		**3**
CW 243	The Craft Essay: Creative Reading, Reflection, and Revision	
Creative Writing Workshops		**12**
12 hours of Creative Writing Workshops, including at least one of the following		
3-course (9-hour) Workshop sequences:		
CW 106 & CW 206 & CW 406	Poetry Workshop I and Poetry Workshop II and Poetry Workshop III	

or		
CW 104 & CW 204 & CW 404	Fiction Workshop I and Fiction Workshop II and Fiction Workshop III	
The remaining 3 hours in this category can be satisfied by a fourth CW Workshop outside of the chosen sequence. [1]		
Writing and Literature		**3**
3 hours of Writing and Literature coursework, either:		
3 hours of non-Workshop CW coursework (CW 460, or another approved non-Workshop CW course) [2]		
or		
3 hours of ENGL coursework [3]		
Additional Literature Coursework [4]		**12**
12 additional hours of approved ENGL coursework, including:		
9 hours of approved ENGL Literature coursework [5]		
3 hours of an ENGL Difference & Diaspora course [6]		
Total Hours		**36**

1. CW 404 and CW 406 may be repeated once for credit, but may not be repeated to fulfill this requirement.
2. Some sections of CW 199, CW 202, and CW 463 may or may not count as a non-Workshop class, depending on the topics offered in a given semester.
3. These hours must be taken at the 200-level or above.
4. A maximum of 3 hours of 100-level coursework may be counted towards the Additional Literature Coursework requirement.
5. Chosen from a list maintained by the Creative Writing Program and the English Advising Office.
6. Chosen from the *Difference & Diaspora* list maintained by the English Program and the English Advising office.

for the degree of Bachelor of Arts in Liberal Arts & Sciences Major in Creative Writing

Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence.

Students must fulfill their Language Other Than English requirement by successfully completing a fourth level of a language other than English. See the corresponding section on the Degree General and Education Requirements page *(*http://catalog.illinois.edu/general-information/degree-general-education-requirements/*).*

First Year

First Semester	Hours		Second Semester	Hours
Free elective course		1	CW 104 or 106	3
CW 100		3	General Education course	3
General Education course		3	Language Other than English (4th level)	4
Language Other than English (3rd level)		4	General Education course or Composition I	3
Composition I or General Education course		4	Free elective course	3
		15		**16**

Second Year

First Semester	Hours		Second Semester	Hours
CW 204 or 206		3	ENGL Literature coursework	3
CW 200		3	CW 243	3
General Education course		3	General Education course	3
General Education course		3	General Education course	3
Free elective course		3	Free elective course	2
		15		**14**

Third Year

First Semester	Hours		Second Semester	Hours
CW 404 or 406		3	Creative Writing Workshop coursework	3
ENGL Difference & Diaspora course		3	General Education course	3
General Education course		3	Free elective course	3
General Education course		3	Free elective course	3
Free elective course		3	Free elective course	3
		15		**15**

Fourth Year

First Semester	Hours		Second Semester	Hours
Writing & Literature coursework		3	ENGL Literature coursework	3
ENGL Literature coursework		3	Free elective course	3
Free elective course		3	Free elective course	3
Free elective course		3	Free elective course	3
Free elective course		3	Free elective course	3
		15		**15**

Total Hours 120

for the degree of Bachelor of Arts in Liberal Arts & Sciences Major in Creative Writing

1. **Concepts:** Students will identify, analyze, and use the elements of literary craft appropriate for their chosen writing genre.