Date Submitted: 01/07/26 9:40 am

Viewing: BS-CS-2 : Bachelor of Science in Computer Science

Last approved: 11/01/23 11:30 am

Last edit: 01/07/26 9:40 am

Changes proposed by: bauerm

Catalog Pages Using this Program

Bachelor of Science in Computer Science

Program Status	Active		
Requestor	Name	Matthew Bauer ~~Patty Johnson Winston~~	E-mail bauerm@iit.edu
Origination Date	2026-1-7 ~~2023-11-1~~		
Is this an interdisciplinary program?	No		
Is this stem-eligible?	Yes		
Available for direct application?	Yes		
Academic Unit	Computer Science		
College	College of Computing		
Program Title	Bachelor of Science in Computer Science		
Effective Academic Year	2026 ~~2018~~ - 2027 ~~2019~~	Effective Term	Summer 2026
Academic Level	Undergraduate		

In Workflow

1. CSCI Chair
2. Academic Affairs
3. Undergraduate Academic Affairs
4. CC Dean
5. Undergraduate Studies Committee Chair
6. Faculty Council Chair
7. Academic Affairs

Approval Path

1. 01/06/26 7:27 am Mustafa Bilgic (mbilgic): Approved for CSCI Chair
2. 01/07/26 9:11 am Ayesha Qamer (aqamer): Rollback to Initiator
3. 01/07/26 9:46 am Mustafa Bilgic (mbilgic): Approved for CSCI Chair

History

1. Oct 26, 2017 by clmig-jwehrheim
2. Nov 8, 2017 by Sarah Pariseau (sparisea)
3. Feb 28, 2018 by Sarah Pariseau (sparisea)
4. Mar 15, 2018 by Sarah Pariseau (sparisea)
5. Apr 2, 2018 by Sarah Pariseau

(sparisea)
6. Apr 2, 2018 by Sarah Pariseau (sparisea)
7. Jun 19, 2018 by Sarah Pariseau (sparisea)
8. Oct 30, 2018 by Matthew Bauer (bauerm)
9. Mar 11, 2019 by Matthew Bauer (bauerm)
10. Nov 1, 2023 by Patty Johnson Winston (winston)
11. Nov 1, 2023 by Patty Johnson Winston (winston)

If all courses in a subject in your department are required, please enter each subject followed by the number ranges in the "Quick Add" field in the pop up box when you click the green plus button below. For example: ARCH 100-499.

What courses will factor the major GPA?

Program Type	Degree
Degree Type	Bachelor of Science (BS)

CIP Code

11.0701 - Computer Science.

Is there more than one Academic Unit proposer?

No

Program Code	BS-CS-2

Program Attribute

Total Program Credit Hours	127

Please provide a summary and rationale for the

requested program
revision.

1) Add an Artificial Intelligence specialization (available to both BS in CS and BS in CIS).

2) Update the wording for what courses can be used for a Computer Science elective for BS in CS and BS in CIS degrees.

Removed CS447 from specializations ~~Wording on Data Science specialization.Added "Only two can be counted as CS electives." upon recommendation from Sarah Pariseau.11/01/2023, PJW:Program Iteration Code re-entered and saved for college reorg and due to a previously entered revised program proposal being withdrawn and shredded--See email attachment.~~

Program Narrative and Justification

Narrative description of how the institution determined the need for the program. For example, describe what need this program will address and how the institution became aware of that need. If the program is replacing a current program(s), identify the current program(s) that is being replaced by the new program(s) and provide details describing the benefits of the new program(s). If the program will be offered in connection with, or in response to, an initative by a governmental entity, provide details of that initiative.

Narrative description of how the program was designed to meet local market needs, or for an online program, regional or national market needs. For example, indicate if Bureau of Labor Statistics data or State labor data systems information was used, and/or if State, regional, or local workforce agencies were consulted. Include how the course content, program length, academic level, admission requirements, and prerequisites were decided; including information received from potential employers about course content; and information regarding the target students and employers.

Narrative description of any wage analysis the institution may have performed, including any consideration of Bureau of Labor Statistics wage data related to the new program.

Narrative description of how the program was reviewed or approved by, or developed in conjunction with, one or more of the following: a) business advisory committees; b) program integrity boards; c) public or private oversight or regulatory agencies (not including the state licensing/authorization agency and accrediting agency); and d) businesses that would likely employ graduates of the program. For example, describe the steps taken to develop the program, identify when and with whom discussions were held, provide relevant details of any proposals or correspondence generated, and/or describe any process used to evaluate the program.

Admission Entry Details

What are the enrollment estimates?

Year 1	Year 2	Year 3

Attach Additional Program Justification Document(s): Email- RE_ Computer Science CIM proposal.pdf

Academic Information

Advising

Since quality advising is a key component of good retention, graduation, and career placement, how will students be mentored? What student professional organizations will be formed? How will the department work with the Career Services office to develop industry connections?

Program Resources

Which program resources are necessary to offer this program?

Proposed Catalog Entry

Admission Requirements

Course Requirements

Required Courses

Computer Science Requirements		(36)
CS 100	Introduction to the Profession	2
CS 115	Object-Oriented Programming I	2
CS 116	Object-Oriented Programming II [1]	2
CS 330	Discrete Structures	3

CS 331	Data Structures and Algorithms	3
CS 350	Computer Organization and Assembly Language Programming	3
CS 351	Systems Programming	3
CS 425	Database Organization	3
CS 430	Introduction to Algorithms	3
CS 440	Programming Languages and Translators	3
CS 450	Operating Systems	3
CS 485	Computers and Society	3
CS 487	Software Engineering I	3
Computer Science Electives		**(12)**
Select 12 credit hours [2]		12
Mathematics Requirements		**(20)**
MATH 151	Calculus I	5
MATH 152	Calculus II	5
MATH 251	Multivariate and Vector Calculus	4
MATH 332	Elementary Linear Algebra	3
or MATH 333	Matrix Algebra and Complex Variables	
MATH 474	Probability and Statistics	3
or MATH 475	Probability	
Mathematics Elective		**(3)**
Select one of the following:		3
MATH 252	Introduction to Differential Equations	4
MATH 350	Introduction to Computational Mathematics	3
MATH 380	Introduction to Mathematical Modeling	3
MATH 410	Number Theory	3
MATH 435	Linear Optimization	3
MATH 453	Combinatorics	3
MATH 454	Graph Theory and Applications	3
MATH 476	Statistics	3
MATH 481	Introduction to Stochastic Processes	3
Science Requirements		**(8)**
PHYS 123	General Physics I: Mechanics	4

PHYS 221	General Physics II: Electricity and Magnetism	4
Science Electives		**(6)**
Select six credit hours [3]		6
Communication Elective		**(3)**
Select one of the following:		3
COM 421	Technical Communication	3
COM 424	Document Design	3
COM 425	Editing	3
COM 428	Verbal and Visual Communication	3
COM 435	Intercultural Communication	3
Interprofessional Projects (IPRO)		**(6)**
See Illinois Tech Core Curriculum, section E		6
Humanities and Social Sciences Requirements		**(21)**
See Illinois Tech Core Curriculum, sections B and C		21
Free Electives		**(12)**
Select 12 credit hours		12
Total Credit Hours		127

[1] CS 201 is a one-semester, accelerated course equivalent to the two-semester CS 115/CS 116 sequence.

[2] Computer science electives: Any CS course at the 300-level or higher, including graduate CS courses, may be used as a Computer Science elective, except CS 401 and CS 402. Up to 6 credit hours of CS 491 or CS 497 may be used as Computer Science electives. Up to two Computer Science electives can be chosen from CSP 400-level or CSP 500-level courses, or from courses in other departments with significant computation content with Computer Science department's prior approval.

[3] Science electives (no lab required): Chosen from the natural sciences (biology, chemistry, material science, and physics), or courses marked with an (N) (natural science attribute) in the Undergraduate Bulletin. At least one course must be in a field other than physics.

Sample Curriculum/Program Requirements

Bachelor of Science in Computer Science Curriculum

Year 1

Semester 1	Credit Hours	Semester 2	Credit Hours
CS 100	2	CS 116[1]	2
CS 115[1]	2	MATH 152	5

MATH 151	5	PHYS 123	4
Humanities 200-level Course	3	Humanities Elective (300+)	3
Social Sciences Elective	3	Social Sciences Elective (300+)	3
	15		17

Year 2

Semester 1	Credit Hours	Semester 2	Credit Hours
CS 330	3	CS 350	3
CS 331	3	CS 425	3
MATH 251	4	MATH 332 or 333	3
PHYS 221	4	Humanities Elective (300+)	3
Social Sciences Elective (300+)	3	Science Elective[2]	3
	17		15

Year 3

Semester 1	Credit Hours	Semester 2	Credit Hours
CS 351	3	CS 430	3
CS 440	3	CS 450	3
MATH 474 or 475	3	IPRO Elective I	3
Communication Elective[3]	3	Mathematics Elective	3
Computer Science Elective[4]	3	Free Elective	3
	15		15

Year 4

Semester 1	Credit Hours	Semester 2	Credit Hours
CS 487	3	CS 485	3
IPRO Elective II	3	Computer Science Elective[4]	3
Computer Science Elective[4]	3	Computer Science Elective[4]	3
Science Elective[2]	3	Free Elective	3
Humanities or Social Sciences Elective	3	Free Elective	3
Free Elective	3		
	18		15

Total Credit Hours: 127

[1] CS 201 is a one-semester, accelerated course equivalent to the two-semester CS 115/CS 116 sequence.

[2] Science electives (no lab required): Chosen from the natural sciences (biology, chemistry, material science, and physics), or courses marked with an (N) (natural science attribute) in the Undergraduate Bulletin. At least one course must be in a field other than physics.

[3] Communication elective must be COM 421, COM 424, COM 425, COM 428, or COM 435.

[4] Computer science electives: Any CS course at the 300-level or higher, including graduate CS courses, may be used as a Computer Science elective, except CS 401 and CS 402. Up to 6 credit hours of CS 491 or CS 497 may be used as Computer Science electives. Up to two Computer Science electives can be chosen from CSP 400-level or CSP 500-level courses, or from courses in other departments with significant computation content with Computer Science department's prior approval.

Specialization Requirements

Artificial Intelligence ~~Computer Science Honors Research~~

A minimum of four courses ~~13 credit hours~~ are required for this specialization.

~~CS 425~~	~~Database Organization~~	~~3~~
~~CS 482~~	~~Information and Knowledge Management Systems~~	~~3~~
~~Select a minimum of two courses from the following:~~		~~6~~
CS 480	Introduction to Artificial Intelligence	3
Select a minimum of three courses from the following:		9
CS 422	Data Mining	3
CS 429	Information Retrieval	3
CS 481	Artificial Intelligence Language Understanding	3
CS 484	Introduction to Machine Learning	3
CS 512	Computer Vision	3
CS 577	Deep Learning	3
CS 579	Online Social Network Analysis	3
CS 581	Advanced Artificial Intelligence	3
CS 584	Machine Learning	3
CS 585	Natural Language Processing	3
CSP 571	Data Preparation and Analysis	3

Computer Science Honors Research

A minimum of 13 credit hours are required for this specialization.

CS 492	Introduction to Computer Science Research [1]	1
CS 491	Undergraduate Research [2]	6
or CS 497	Special Projects	
Graduate Computer Science Electives [3]		6

1 Students will be required to take CS 492 in their first or second year.

2 Students must complete an ambitious research project and associated honors thesis, advised by a computer science faculty member. The thesis/project culminates in a presentation to a committee for approval in their last semester (six credit hours of CS 491 or CS 497).

3 Students must take at least two adviser approved 500-level computer science courses.

Data Science

A minimum of four courses are required for this specialization. Only two courses may be applied as computer science electives.

BUS 371	Marketing Fundamentals	3
CS 422	Data Mining	3
or CS 584	Machine Learning	
CS 451	Introduction to Parallel and Distributed Computing	3
MATH 481	Introduction to Stochastic Processes	3
or MATH 483	Design and Analysis of Experiments	

Note: MATH 481 has prerequisites of MATH 332 or MATH 333 and MATH 475; MATH 483 has a prerequisite of MATH 476.

Distributed and Cloud Computing

A minimum of four courses are required for this specialization.

CS 442	Mobile Applications Development	3
CS 451	Introduction to Parallel and Distributed Computing	3
CS 455	Data Communications	3
CS 553	Cloud Computing	3

Information and Knowledge Management Systems

A minimum of four courses are required for this specialization.

CS 480	Introduction to Artificial Intelligence	3
Select a minimum of three courses from the following:		9
CS 422	Data Mining	3
CS 429	Information Retrieval	3
CS 481	Artificial Intelligence Language Understanding	3
CS 484	Introduction to Machine Learning	3
CS 512	Computer Vision	3
CS 577	Deep Learning	3
CS 579	Online Social Network Analysis	3
CS 581	Advanced Artificial Intelligence	3
CS 584	Machine Learning	3

CS 585	Natural Language Processing	3
CSP 571	Data Preparation and Analysis	3

Information Security

A minimum of four courses are required for this specialization.

CS 425	Database Organization	3
CS 458	Introduction to Information Security	3
CS 455	Data Communications	3
CS 549	Cryptography and Network Security	3
or CS 558	Advanced Computer Security	

Program Outcomes and Assessment Process

What are your learning objectives in this program? Please list each learning objective in the boxes below:

Note: These should be the same as described in your assessment plan at the bottom of this form.

Upload your assessment plan here:

Undergraduate Program Requirements

What courses will factor the major GPA?

Undergraduate Degree Requirements

Minimum credit hours 127

Specialization required?
Optional

Notes about specialization requirement

Minor required?
No

Proposed General Curriculum

Degree credit hours required 127

Specialization credit hour requirement 12

List Major Course Requirements

List Mathematics Requirements

List Science Requirements

List Computer Science Requirements

List Humanities and Social Sciences Requirements

List Interprofessional

Project (IPRO) Requirements	
List Technical Elective Course Options	
List Free Elective Credit Hours (if applicable)	12
Semester-by-semester plan of study for the degree program	

Specialization

Reviewer Comments

Ayesha Qamer (aqamer) (01/07/26 9:11 am): Rollback: Please remove CS 447 course if it no longer exists from the Distributed and Cloud Computing specialization as well as the information security specialization.

Key: 43