COMPUTER SCIENCE - B.S.

College of Arts and Sciences
Department of Computer Science
www.kent.edu/cs

About This Program

The Bachelor of Science in Computer Science program provides a rigorous curriculum that covers a wide range of computer science topics. With a focus on problem solving and critical thinking, you will be equipped to tackle real-world challenges and make an impact in the industry. Read more...

Contact Information

- Program Coordinators: **Feodor F. Dragan** and **Augustine Samba** | ugradinfo@cs.kent.edu | 330-672-9120
- Speak with an Advisor
  - Kent Campus
  - Stark Campus
- Chat with an Admissions Counselor: Kent Campus | Regional Campuses

Program Delivery

- **Delivery:**
  - In person
- **Location:**
  - Kent Campus (major and all concentrations)
  - Stark Campus (no concentration and Cybersecurity optional concentration)

Accreditation

The Bachelor of Science degree in Computer Science is accredited by the Computing Accreditation Commission of ABET, https://www.abet.org.

Admission Requirements

The university affirmatively strives to provide educational opportunities and access to students with varied backgrounds, those with special talents and adult students who graduated from high school three or more years ago.

First-Year Students on the Kent Campus: First-year admission policy on the Kent Campus is selective. Admission decisions are based upon cumulative grade point average, strength of high school college preparatory curriculum and grade trends. Students not admissible to the Kent Campus may be administratively referred to one of the seven regional campuses to begin their college coursework. For more information, visit the admissions website for first-year students.

First-Year Students on the Regional Campuses: First-year admission to Kent State's campuses at Ashtabula, East Liverpool, Geauga, Salem, Stark, Trumbull and Tuscarawas, as well as the Twinsburg Academic Center, is open to anyone with a high school diploma or its equivalent. For more information on admissions, contact the Regional Campuses admissions offices.

International Students: All international students must provide proof of English language proficiency (unless they meet specific exceptions) by earning a minimum 525 TOEFL score (71 on the Internet-based version), minimum 75 MELAB score, minimum 6.0 IELTS score or minimum 48 PTE Academic score, or by completing the ELS level 112 Intensive Program. For more information, visit the admissions website for international students.

Transfer Students: Students who have attended any other educational institution after graduating from high school must apply as undergraduate transfer students. For more information, visit the admissions website for transfer students.

Former Students: Former Kent State students or graduates who have not attended another college or university since Kent State may complete the reenrollment or reinstatement form on the University Registrar's website.

Admission policies for undergraduate students may be found in the University Catalog's Academic Policies.

Some programs may require that students meet certain requirements before progressing through the program. For programs with progression requirements, the information is shown on the program's Coursework tab.

Program Requirements

Major Requirements

Code	Title	Credit Hours
Major Requirements (courses count in major GPA)		
CS 13001	COMPUTER SCIENCE I: PROGRAMMING AND PROBLEM SOLVING (min C grade) [1]	4
or CS 13011 & CS 13012	COMPUTER SCIENCE IA: PROCEDURAL PROGRAMMING and COMPUTER SCIENCE IB: OBJECT ORIENTED PROGRAMMING	
CS 23001	COMPUTER SCIENCE II: DATA STRUCTURES AND ABSTRACTION (min C grade)	4
CS 23022	DISCRETE STRUCTURES FOR COMPUTER SCIENCE	3
CS 32301	HUMAN INTERFACE COMPUTING	3
CS 33007	INTRODUCTION TO DATABASE SYSTEM DESIGN	3
CS 33101	STRUCTURE OF PROGRAMMING LANGUAGES	3
CS 33211	OPERATING SYSTEMS	3
CS 33901	SOFTWARE ENGINEERING	3
CS 35101	COMPUTER ORGANIZATION	3
CS 35201	COMPUTER COMMUNICATION NETWORKS	3
CS 44001	COMPUTER SCIENCE III-PROGRAMMING PATTERNS	4
CS 46101	DESIGN AND ANALYSIS OF ALGORITHMS	3
MATH 12002	ANALYTIC GEOMETRY AND CALCULUS I (KMCR)	5
MATH 12013	BRIEF CALCULUS II	3
MATH 20011	DECISION-MAKING UNDER UNCERTAINTY	3
MATH 21002	APPLIED LINEAR ALGEBRA	3
Additional Requirements (courses do not count in major GPA)		
UC 10001	FLASHES 101	1
Foreign Language (see Foreign Language College Requirement below)		8
Science Electives, choose from the following (must include one laboratory):		6-7
BSCI 10110	BIOLOGICAL DIVERSITY (ELR) (KBS) (KLAB)	
BSCI 10120	BIOLOGICAL FOUNDATIONS (ELR) (KBS) (KLAB)	
CHEM 10060	GENERAL CHEMISTRY I (KBS)	

CHEM 10061	GENERAL CHEMISTRY II (KBS)
CHEM 10062	GENERAL CHEMISTRY I LABORATORY (KBS) (KLAB)
CHEM 10063	GENERAL CHEMISTRY II LABORATORY (KBS) (KLAB)
CHEM 10970	HONORS GENERAL CHEMISTRY I (KBS)
CHEM 10971	HONORS GENERAL CHEMISTRY II (KBS)
ESCI 21062	ENVIRONMENTAL EARTH SCIENCE (KBS)
GEOG 21062	PHYSICAL GEOGRAPHY (KBS)
GEOG 21063	PHYSICAL GEOGRAPHY LABORATORY (KBS) (KLAB)
PHY 13001	GENERAL COLLEGE PHYSICS I (KBS)
PHY 13002	GENERAL COLLEGE PHYSICS II (KBS)
PHY 13021	GENERAL COLLEGE PHYSICS LABORATORY I (KBS) (KLAB)
PHY 13022	GENERAL COLLEGE PHYSICS LABORATORY II (KBS) (KLAB)
PHY 23101	GENERAL UNIVERSITY PHYSICS I (KBS) (KLAB)
PHY 23102	GENERAL UNIVERSITY PHYSICS II (KBS) (KLAB)
Kent Core Composition	6
Kent Core Humanities and Fine Arts (minimum one course from each)	9
Kent Core Social Sciences (must be from two disciplines)	6
Kent Core Additional	6
General Electives (total credit hours depends on earning 120 credit hours, including 39 upper-division credit hours)	6
Additional Requirements or Concentrations	
Choose from the following:	19
Additional Requirements for Students Not Declaring a Concentration	
Cybersecurity Concentration	
Data Engineering Concentration	
Game Programming Concentration	
Robotics and Embedded Systems Concentration	
Minimum Total Credit Hours:	**120**

[1] A minimum C grade must be earned in CS 13001 or in both CS 13011 and CS 13012 for graduation.

Additional Requirements for Students Not Declaring a Concentration

Code	Title	Credit Hours
Major Requirements (courses count in major GPA)		
CS 49999	CAPSTONE PROJECT (ELR) (WIC) [1]	4
Computer Science (CS) Upper-Division Electives (30000 or 40000 level) [2]		6
Computer Science (CS) Upper-Division Electives (40000 level) [2]		9
Minimum Total Credit Hours:		**19**

[1] A minimum C grade must be earned to fulfill the writing-intensive requirement.

[2] Students may apply a maximum 4 credit hours of CS 33192 and a maximum 6 credit hours of CS 49996, CS 49998 or a combination of the two courses to fulfill computer science upper#division electives.

Cybersecurity Concentration Requirements

Code	Title	Credit Hours
Concentration Requirements (courses count in major GPA)		
CS 43203	SYSTEMS PROGRAMMING	3
CS 43401	SECURE PROGRAMMING	3
or CS 47206	DATA SECURITY AND PRIVACY	
or CS 47207	DIGITAL FORENSICS	
CS 45203	COMPUTER NETWORK SECURITY	3
CS 47205	INFORMATION SECURITY	3
CS 47221	INTRODUCTION TO CRYPTOLOGY	3
CS 49999	CAPSTONE PROJECT (ELR) (WIC) [1]	4
Minimum Total Credit Hours:		**19**

[1] A minimum C grade must be earned to fulfill the writing-intensive requirement.

Data Engineering Concentration Requirements

Code	Title	Credit Hours
Concentration Requirements (courses count in major GPA)		
CS 43016	BIG DATA ANALYTICS	3
CS 43105	DATA MINING TECHNIQUES	3
CS 43118	GRAPH AND SOCIAL NETWORK ANALYSIS	3
CS 49999	CAPSTONE PROJECT (ELR) (WIC) [1]	4
Computer Science (CS) Upper-Division Elective (30000 or 40000 level) [2]		3
Computer Science (CS) Upper-Division Elective (40000 level) [2]		3
Minimum Total Credit Hours:		**19**

[1] A minimum C grade must be earned to fulfill the writing-intensive requirement.

[2] Students may apply a maximum 4 credit hours of CS 33192 and a maximum 6 credit hours of CS 49996, CS 49998 or a combination of the two courses to fulfill computer science upper#division electives.

Game Programming Concentration Requirements

Code	Title	Credit Hours
Concentration Requirements (courses count in major GPA)		
CS 38101	INTRODUCTION TO GAME PROGRAMMING	3
CS 47101	COMPUTER GRAPHICS	3
CS 48101	GAME ENGINE CONCEPTS	3
CS 48102	GAME DEVELOPMENT PRACTICUM (ELR) (WIC) [1]	4
Computer Science (CS) Upper-Division Electives (40000 level) [2]		6
Minimum Total Credit Hours:		**19**

[1] A minimum C grade must be earned to fulfill the writing-intensive requirement.

[2] Students may apply a maximum 6 credit hours of CS 49996, CS 49998 or a combination of the two courses to fulfill computer science upper#division electives.

Robotic and Embedded Systems Concentration Requirements

Code	Title	Credit Hours
Concentration Requirements (courses count in major GPA)		
CS 33301	EMBEDDED SYSTEM PROGRAMMING	3
CS 33302	INTRODUCTION TO INTELLIGENT ROBOTICS	3
CS 43302	ALGORITHMIC ROBOTICS	3
or CS 43303	INTERNET OF THINGS	
or CS 43334	HUMAN-ROBOT INTERACTION	
CS 49999	CAPSTONE PROJECT (ELR) (WIC) [1]	4
Concentration Electives, choose from the following:		6
CS 43203	SYSTEMS PROGRAMMING	
CS 43301	SOFTWARE DEVELOPMENT FOR ROBOTICS	
CS 43302	ALGORITHMIC ROBOTICS	
CS 43303	INTERNET OF THINGS	
CS 43334	HUMAN-ROBOT INTERACTION	
CS 44201	ARTIFICIAL INTELLIGENCE	
CS 45102	CENTRAL PROCESSING UNIT (CPU) ARCHITECTURES	
CS 45203	COMPUTER NETWORK SECURITY	
CS 45231	INTERNET ENGINEERING	
Minimum Total Credit Hours:		**19**

[1] A minimum C grade must be earned to fulfill the writing-intensive requirement.

Graduation Requirements

Minimum Major GPA	Minimum Overall GPA
2.000	2.000

- A minimum grade may be required in some courses

Foreign Language College Requirement, B.S.

- Students pursuing the Bachelor of Science degree in the College of Arts and Sciences must complete 8 credit hours of foreign language.[1]
- The following programs are exempt from this requirement: The Bachelor of Science in Cybercriminology and the Bachelor of Science in Medical Laboratory Science.[2]
- Minimum Elementary I and II of the same language

[1] All students with prior foreign language experience should take the foreign language placement test to determine the appropriate level at which to start. Some students may start beyond the Elementary I level and will complete the requirement with fewer credit hours and courses. This may be accomplished by (1) passing a course beyond Elementary I through Intermediate II level; (2) receiving credit through one of the alternative credit programs offered by Kent State University; or (3) demonstrating language proficiency comparable to Elementary II of a foreign language. When students complete the requirement with fewer than 8 credit hours and two courses, they will complete remaining credit hours with general electives.

[2] The Bachelor of Science in Medical Laboratory Science exemption exists under another college policy (Three-Plus-One Programs). The Bachelor of Science in Cybercriminology exemption is due to its extensive collaboration with and contribution from the Information

Technology program in the College of Applied and Technical Studies, which does not have a foreign language requirement.

Roadmaps
Computer Science Major (No Concentration)

This roadmap is a recommended semester-by-semester plan of study for this major. However, courses designated as critical (!) must be completed in the semester listed to ensure a timely graduation.

	Semester One		Credits
!	CS 13001 or CS 13011 *and* CS 13012	COMPUTER SCIENCE I: PROGRAMMING AND PROBLEM SOLVING or COMPUTER SCIENCE IA: PROCEDURAL PROGRAMMING *and* COMPUTER SCIENCE IB: OBJECT ORIENTED PROGRAMMING	4
	MATH 12002	ANALYTIC GEOMETRY AND CALCULUS I (KMCR)	5
	UC 10001	FLASHES 101	1
	Kent Core Requirement		3
	General Elective		3
	Credit Hours		**16**
	Semester Two		
!	CS 23001	COMPUTER SCIENCE II: DATA STRUCTURES AND ABSTRACTION	4
!	CS 23022	DISCRETE STRUCTURES FOR COMPUTER SCIENCE	3
	MATH 12013	BRIEF CALCULUS II	3
	MATH 20011	DECISION-MAKING UNDER UNCERTAINTY	3
	Kent Core Requirement		3
	Credit Hours		**16**
	Semester Three		
!	CS 33211	OPERATING SYSTEMS	3
!	CS 35101	COMPUTER ORGANIZATION	3
	MATH 21002	APPLIED LINEAR ALGEBRA	3
	Foreign Language		4
	Credit Hours		**13**
	Semester Four		
	CS 33007	INTRODUCTION TO DATABASE SYSTEM DESIGN	3
	CS 35201	COMPUTER COMMUNICATION NETWORKS	3
!	CS 44001	COMPUTER SCIENCE III-PROGRAMMING PATTERNS	4
	Foreign Language		4
	Credit Hours		**14**
	Semester Five		
	CS 32301	HUMAN INTERFACE COMPUTING	3
!	CS 33901	SOFTWARE ENGINEERING	3
!	CS 46101	DESIGN AND ANALYSIS OF ALGORITHMS	3
	Science Elective		3
	Kent Core Requirement		3
	Credit Hours		**15**
	Semester Six		
!	CS 33101	STRUCTURE OF PROGRAMMING LANGUAGES	3
	Computer Science (CS) Upper-Division Elective (30000 or 40000 level)		3
	Science Elective		3
	Kent Core Requirement		3
	Kent Core Requirement		3
	Credit Hours		**15**

Semester Seven

CS 49999	CAPSTONE PROJECT (ELR) (WIC)	4
Computer Science (CS) Upper-Division Elective (30000 or 40000 level)		3
Computer Science (CS) Upper-Division Elective (40000 level)		3
Kent Core Requirement		3
Kent Core Requirement		3
Credit Hours		**16**

Semester Eight

Computer Science (CS) Upper-Division Electives (40000 level)		6
Kent Core Requirement		3
Kent Core Requirement		3
General Elective		3
Credit Hours		**15**
Minimum Total Credit Hours:		**120**

Cybersecurity Concentration

This roadmap is a recommended semester-by-semester plan of study for this major. However, courses designated as critical (!) must be completed in the semester listed to ensure a timely graduation.

	Semester One		**Credits**
!	CS 13001 or CS 13011 **and** CS 13012	COMPUTER SCIENCE I: PROGRAMMING AND PROBLEM SOLVING or COMPUTER SCIENCE IA: PROCEDURAL PROGRAMMING **and** COMPUTER SCIENCE IB: OBJECT ORIENTED PROGRAMMING	4
	MATH 12002	ANALYTIC GEOMETRY AND CALCULUS I (KMCR)	5
	UC 10001	FLASHES 101	1
	Kent Core Requirement		3
	General Elective		2
	Credit Hours		**15**
	Semester Two		
!	CS 23001	COMPUTER SCIENCE II: DATA STRUCTURES AND ABSTRACTION	4
!	CS 23022	DISCRETE STRUCTURES FOR COMPUTER SCIENCE	3
	MATH 12013	BRIEF CALCULUS II	3
	MATH 20011	DECISION-MAKING UNDER UNCERTAINTY	3
	Kent Core Requirement		3
	Credit Hours		**16**
	Semester Three		
!	CS 33211	OPERATING SYSTEMS	3
!	CS 35101	COMPUTER ORGANIZATION	3
	CS 47221	INTRODUCTION TO CRYPTOLOGY	3
	MATH 21002	APPLIED LINEAR ALGEBRA	3
	Foreign Language		4
	Credit Hours		**16**
	Semester Four		
!	CS 33007	INTRODUCTION TO DATABASE SYSTEM DESIGN	3
!	CS 35201	COMPUTER COMMUNICATION NETWORKS	3
	CS 43203	SYSTEMS PROGRAMMING	3
!	CS 44001	COMPUTER SCIENCE III-PROGRAMMING PATTERNS	4
	Foreign Language		4
	Credit Hours		**17**
	Semester Five		
!	CS 33901	SOFTWARE ENGINEERING	3

!	CS 46101	DESIGN AND ANALYSIS OF ALGORITHMS	3
!	CS 47205	INFORMATION SECURITY	3
	Science Elective		3
	General Elective		2
	Credit Hours		**14**
	Semester Six		
	CS 32301	HUMAN INTERFACE COMPUTING	3
!	CS 33101	STRUCTURE OF PROGRAMMING LANGUAGES	3
	CS 43401 or CS 47206 or CS 47207	SECURE PROGRAMMING or DATA SECURITY AND PRIVACY or DIGITAL FORENSICS	3
	CS 45203	COMPUTER NETWORK SECURITY	3
	Science Elective		3
	Credit Hours		**15**
	Semester Seven		
	CS 49999	CAPSTONE PROJECT (ELR) (WIC)	4
	Kent Core Requirement		3
	Kent Core Requirement		3
	Kent Core Requirement		3
	Credit Hours		**13**
	Semester Eight		
	Kent Core Requirement		3
	Kent Core Requirement		3
	Kent Core Requirement		3
	Kent Core Requirement		3
	General Elective		2
	Credit Hours		**14**
	Minimum Total Credit Hours:		**120**

Data Engineering Concentration

This roadmap is a recommended semester-by-semester plan of study for this major. However, courses designated as critical (!) must be completed in the semester listed to ensure a timely graduation.

	Semester One		**Credits**
!	CS 13001 or CS 13011 **and** CS 13012	COMPUTER SCIENCE I: PROGRAMMING AND PROBLEM SOLVING or COMPUTER SCIENCE IA: PROCEDURAL PROGRAMMING **and** COMPUTER SCIENCE IB: OBJECT ORIENTED PROGRAMMING	4
	MATH 12002	ANALYTIC GEOMETRY AND CALCULUS I (KMCR)	5
	UC 10001	FLASHES 101	1
	Kent Core Requirement		3
	General Elective		2
	Credit Hours		**15**
	Semester Two		
!	CS 23001	COMPUTER SCIENCE II: DATA STRUCTURES AND ABSTRACTION	4
!	CS 23022	DISCRETE STRUCTURES FOR COMPUTER SCIENCE	3
	MATH 12013	BRIEF CALCULUS II	3
	MATH 20011	DECISION-MAKING UNDER UNCERTAINTY	3
	Kent Core Requirement		3
	Credit Hours		**16**
	Semester Three		
!	CS 33211	OPERATING SYSTEMS	3
!	CS 35101	COMPUTER ORGANIZATION	3
	MATH 21002	APPLIED LINEAR ALGEBRA	3

		Foreign Language	4
		Credit Hours	**13**
	Semester Four		
!	CS 33007	INTRODUCTION TO DATABASE SYSTEM DESIGN	3
!	CS 35201	COMPUTER COMMUNICATION NETWORKS	3
!	CS 44001	COMPUTER SCIENCE III-PROGRAMMING PATTERNS	4
		Science Elective	3
		Foreign Language	4
		Credit Hours	**17**
	Semester Five		
!	CS 33901	SOFTWARE ENGINEERING	3
	CS 43105	DATA MINING TECHNIQUES	3
!	CS 46101	DESIGN AND ANALYSIS OF ALGORITHMS	3
		Science Elective	3
		General Elective	2
		Credit Hours	**14**
	Semester Six		
	CS 32301	HUMAN INTERFACE COMPUTING	3
!	CS 33101	STRUCTURE OF PROGRAMMING LANGUAGES	3
	CS 43016	BIG DATA ANALYTICS	3
		Kent Core Requirement	3
		Kent Core Requirement	3
		Credit Hours	**15**
	Semester Seven		
	CS 43118	GRAPH AND SOCIAL NETWORK ANALYSIS	3
		Computer Science (CS) Upper-Division Elective (30000 or 40000 level)	3
		Kent Core Requirement	3
		Kent Core Requirement	3
		Kent Core Requirement	3
		Credit Hours	**15**
	Semester Eight		
	CS 49999	CAPSTONE PROJECT (ELR) (WIC)	4
		Computer Science (CS) Upper-Division Elective (40000 level)	3
		Kent Core Requirement	3
		Kent Core Requirement	3
		General Elective	2
		Credit Hours	**15**
		Minimum Total Credit Hours:	**120**

Game Programming Concentration

This roadmap is a recommended semester-by-semester plan of study for this major. However, courses designated as critical (!) must be completed in the semester listed to ensure a timely graduation.

	Semester One		**Credits**
!	CS 13001 or CS 13011 *and* CS 13012	COMPUTER SCIENCE I: PROGRAMMING AND PROBLEM SOLVING or COMPUTER SCIENCE IA: PROCEDURAL PROGRAMMING *and* COMPUTER SCIENCE IB: OBJECT ORIENTED PROGRAMMING	4
	MATH 12002	ANALYTIC GEOMETRY AND CALCULUS I (KMCR)	5
	UC 10001	FLASHES 101	1
		Kent Core Requirement	3
		General Elective	2
		Credit Hours	**15**

	Semester Two		
!	CS 23001	COMPUTER SCIENCE II: DATA STRUCTURES AND ABSTRACTION	4
!	CS 23022	DISCRETE STRUCTURES FOR COMPUTER SCIENCE	3
	MATH 12013	BRIEF CALCULUS II	3
	MATH 20011	DECISION-MAKING UNDER UNCERTAINTY	3
		Kent Core Requirement	3
		Credit Hours	**16**
	Semester Three		
!	CS 33211	OPERATING SYSTEMS	3
!	CS 35101	COMPUTER ORGANIZATION	3
	MATH 21002	APPLIED LINEAR ALGEBRA	3
		Foreign Language	4
		Credit Hours	**13**
	Semester Four		
!	CS 33007	INTRODUCTION TO DATABASE SYSTEM DESIGN	3
!	CS 35201	COMPUTER COMMUNICATION NETWORKS	3
!	CS 44001	COMPUTER SCIENCE III-PROGRAMMING PATTERNS	4
		Computer Science (CS) Upper-Division Elective (40000 level)	3
		Foreign Language	4
		Credit Hours	**17**
	Semester Five		
!	CS 33901	SOFTWARE ENGINEERING	3
!	CS 38101	INTRODUCTION TO GAME PROGRAMMING	3
!	CS 46101	DESIGN AND ANALYSIS OF ALGORITHMS	3
		Science Elective	3
		General Elective	2
		Credit Hours	**14**
	Semester Six		
	CS 32301	HUMAN INTERFACE COMPUTING	3
!	CS 33101	STRUCTURE OF PROGRAMMING LANGUAGES	3
!	CS 48101	GAME ENGINE CONCEPTS	3
		Science Elective	3
		Kent Core Requirement	3
		Credit Hours	**15**
	Semester Seven		
!	CS 47101	COMPUTER GRAPHICS	3
		Computer Science (CS) Upper-Division Elective (40000 level)	3
		Kent Core Requirement	3
		Kent Core Requirement	3
		Kent Core Requirement	3
		Credit Hours	**15**
	Semester Eight		
	CS 48102	GAME DEVELOPMENT PRACTICUM (ELR) (WIC)	4
		Kent Core Requirement	3
		Kent Core Requirement	3
		Kent Core Requirement	3
		General Elective	2
		Credit Hours	**15**
		Minimum Total Credit Hours:	**120**

Robotics and Embedded Systems Concentration

This roadmap is a recommended semester-by-semester plan of study for this major. However, courses designated as critical (!) must be completed in the semester listed to ensure a timely graduation.

	Semester One		Credits
!	CS 13001 or CS 13011 *and* CS 13012	COMPUTER SCIENCE I: PROGRAMMING AND PROBLEM SOLVING or COMPUTER SCIENCE IA: PROCEDURAL PROGRAMMING *and* COMPUTER SCIENCE IB: OBJECT ORIENTED PROGRAMMING	4
	MATH 12002	ANALYTIC GEOMETRY AND CALCULUS I (KMCR)	5
	UC 10001	FLASHES 101	1
	Kent Core Requirement		3
	General Elective		2
	Credit Hours		**15**
	Semester Two		
!	CS 23001	COMPUTER SCIENCE II: DATA STRUCTURES AND ABSTRACTION	4
!	CS 23022	DISCRETE STRUCTURES FOR COMPUTER SCIENCE	3
	MATH 12013	BRIEF CALCULUS II	3
	MATH 20011	DECISION-MAKING UNDER UNCERTAINTY	3
	Kent Core Requirement		3
	Credit Hours		**16**
	Semester Three		
!	CS 33211	OPERATING SYSTEMS	3
	CS 33301	EMBEDDED SYSTEM PROGRAMMING	3
!	CS 35101	COMPUTER ORGANIZATION	3
	MATH 21002	APPLIED LINEAR ALGEBRA	3
	Foreign Language		4
	Credit Hours		**16**
	Semester Four		
!	CS 33007	INTRODUCTION TO DATABASE SYSTEM DESIGN	3
!	CS 35201	COMPUTER COMMUNICATION NETWORKS	3
!	CS 44001	COMPUTER SCIENCE III-PROGRAMMING PATTERNS	4
	Foreign Language		4
	Credit Hours		**14**
	Semester Five		
!	CS 33901	SOFTWARE ENGINEERING	3
!	CS 46101	DESIGN AND ANALYSIS OF ALGORITHMS	3
	Concentration Elective		3
	Science Elective		3
	Kent Core Requirement		3
	Credit Hours		**15**
	Semester Six		
	CS 32301	HUMAN INTERFACE COMPUTING	3
!	CS 33101	STRUCTURE OF PROGRAMMING LANGUAGES	3
	CS 33302	INTRODUCTION TO INTELLIGENT ROBOTICS	3
	Science Elective		3
	Kent Core Requirement		3
	Credit Hours		**15**
	Semester Seven		
	CS 43302 or CS 43303 or CS 43334	ALGORITHMIC ROBOTICS or INTERNET OF THINGS or HUMAN-ROBOT INTERACTION	3
	Concentration Elective		3
	Kent Core Requirement		3
	Kent Core Requirement		3
	Kent Core Requirement		3
	Credit Hours		**15**
	Semester Eight		
	CS 49999	CAPSTONE PROJECT (ELR) (WIC)	4
	Kent Core Requirement		3
	Kent Core Requirement		3
	General Electives		4
	Credit Hours		**14**
	Minimum Total Credit Hours:		**120**

University Requirements

All students in a bachelor's degree program at Kent State University must complete the following university requirements for graduation.

NOTE: University requirements may be fulfilled in this program by specific course requirements. Please see Program Requirements for details.

Flashes 101 (UC 10001)	1 credit hour
Course is not required for students with 30+ transfer credits (excluding College Credit Plus) or age 21+ at time of admission.	
Diversity Domestic/Global (DIVD/DIVG)	2 courses
Students must successfully complete one domestic and one global course, of which one must be from the Kent Core.	
Experiential Learning Requirement (ELR)	varies
Students must successfully complete one course or approved experience.	
Kent Core (see table below)	36-37 credit hours
Writing-Intensive Course (WIC)	1 course
Students must earn a minimum C grade in the course.	
Upper-Division Requirement	39 credit hours
Students must successfully complete 39 upper-division (numbered 30000 to 49999) credit hours to graduate.	
Total Credit Hour Requirement	120 credit hours

Kent Core Requirements

Kent Core Composition (KCMP)	6
Kent Core Mathematics and Critical Reasoning (KMCR)	3
Kent Core Humanities and Fine Arts (KHUM/KFA) (min one course each)	9
Kent Core Social Sciences (KSS) (must be from two disciplines)	6
Kent Core Basic Sciences (KBS/KLAB) (must include one laboratory)	6-7
Kent Core Additional (KADL)	6
Total Credit Hours:	**36-37**

Program Learning Outcomes

Graduates of this program will be able 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.

The educational objectives of the program are the following:

1. To have successful careers, constructed with sound ethical judgments and professional skills acquired in the program, while designing computing solutions and systems by applying principles of computing in areas such as software, hardware, network, data and algorithmic design.
2. To enjoy continued professional growth and advancement in the fast-evolving fields of computer science, built on the academic foundation and professional skills acquired in the program.
3. To become a lifelong learner staying abreast of emerging technologies, obtaining new skills and developing proficiencies with new software, networking and computing tools.
4. In addition to building a successful career, to also strive to be an impactful and contributing member of the global innovation ecosystem by applying the knowledge and skills of computer science, coupled with a well-rounded liberal education, and to practice ethical, legal and responsible computing, as acquired by the program, toward building a better and more inclusive world.

Full Description

The Bachelor of Science degree in Computer Science seeks to prepare students for careers as computing professionals, developing, managing and building software in a variety of industries, including finance, health care, entertainment, telecommunications and manufacturing. The U.S. Bureau of Labor Statistics lists the following as top occupation choices for computer science majors: computer network architect; software developer; information security analyst; database administrator; computer systems analyst; computer programmer; and network and computer systems administrator.

The Computer Science major includes the following optional concentrations:

- The **Cybersecurity** concentration prepares students to meet the security needs of industry and government through coursework that provides a thorough understanding of security, privacy and cryptographic techniques and protocols used in computing and communication.
- The **Data Engineering** concentration prepares students to perform the data analysis and modeling needed by organizations and to process structured, semi-structured and unstructured data using statistical and semantic analysis techniques to meet their employers' needs.
- The **Game Programming** concentration provides students with a solid understanding of the algorithms, techniques and software used to construct interactive virtual environments. Students work in teams with content specialists and artists to develop the teamwork skills required in this multidisciplinary field, which includes a range of opportunities, from the game industry to education to training design.
- The **Robotics and Embedded Systems** concentration prepares students to work with devices that combine hardware and software.

Such devices include robots and most high tech mechanical devices like cars, planes, farm equipment and construction equipment.

Students may declare the program with no concentration and develop a plan of study to meet their educational and career goals.

Computer Science students may apply early to the M.S. degree in Computer Science and double count 9 credit hours of graduate courses toward both degree programs. See the Combined Bachelor's/Master's Degree Program policy in the University Catalog for more information.