# Bachelor of Science in Computer Science

KENNESAW STATE UNIVERSITY

*Updated 7/16/2024*

**Catalog Year: 2024-2025**

Total Degree Credit Hours: 120

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|---|---|---|---|---|
| **I**<br>Institutional Priority | **2 Classes**<br>5 Credit Hours | **Complete the following course:**<br>ECON 1000 | **AND** | **Complete <u>one</u> course from the following:**<br>AMST 1102, ASIA 1102, BLCK 1102, COMM 1100, GWST 1102, LALS 1102, LDRS 2300, PAX 1102, ISD 2700, POLS 2401, RELS 1102 |
| **M**<br>Mathematics & Quantitative Skills | **1 Class**<br>3-4 Credit Hours | **Complete the following course:**<br>MATH 1113<br><br>***Computing-related Science Majors****: Students must take MATH 1113 or higher*<br>***Computing-related Engineering Majors****: Students must take MATH 1190 or higher* | | |
| **P**<br>Political Science and U.S. History | **2 Classes**<br>6 Credit Hours | **Complete the following course:**<br>POLS 1101 | **AND** | **Complete <u>one</u> course from the following:**<br>HIST 2111, HIST 2112 |
| **A**<br>Arts, Humanities, and Ethics | **2 Classes**<br>6 Credit Hours | **Select <u>one</u> course from the following:**<br>CHIN 1001 **or** CHIN 1002, ENGL 2110, ENGL 2120, ENGL 2130, ENGL 2140, FREN 1001 **or** FREN 1002, GRMN 1001 **or** GRMN 1002, HEBR 1001 or HEBR 1002, ITAL 1001 **or** ITAL 1002, JAPN 1001 **or** JAPN 1002, KOR 1001 **or** KOR 1002, LATN 1001 **or** LATN 1002, PHIL 2010, PORT 1001 **or** PORT 1002, RUSS 1001 **or** RUSS 1002, SPAN 1001 **or** SPAN 1002, WLC 1002, WLC 2209 | **AND** | **Complete <u>one</u> course from the following:**<br>ART 1107, DANC 1107, MUSI 1107, TPS 1107 |
| **C**<br>Communication in Writing | **2 Classes**<br>6 Credit Hours | **Complete the following course:**<br>ENGL 1101 | **AND** | **Complete the following course:**<br>ENGL 1102 |
| **T**<br>Technology, Mathematics, and Science | **3 Classes**<br>10-12 Credit Hours | **Complete <u>one</u> course from the following:**<br>MATH 1190, MATH 2202<br><br>***Computing-related Science Majors****: Students must take MATH 1190 or higher*<br>***Computing-related Engineering Majors****: Students must take MATH 2202* | **AND** | **<u>Science Majors and Engineering Majors</u>**: Select <u>two</u> course pairs from the following (8 Credit Hours)<br>CHEM 1211 **and** CHEM 1211L<br>CHEM 1212 **and** CHEM 1212L<br>PHYS 1111 **and** PHYS 1111L<br>PHYS 1112 **and** PHYS 1112L<br>PHYS 2211 **and** PHYS 2211L<br>PHYS 2212 **and** PHYS 2212L<br>BIOL 1107 **and** BIOL 1107L<br>BIOL 1108 **and** BIOL 1108L<br>*Please note: Students cannot take both PHYS 1111/L and PHYS 2211/L nor PHYS 1112/L and PHYS 2212/L.* |
| **S**<br>Social Sciences | **2 Classes**<br>6 Credit Hours | **Complete <u>one</u> course from the following:**<br>HIST 1100, HIST 1111, HIST 1112 | **AND** | **Complete <u>one</u> course from the following:**<br>CRJU 1101, GEOG 1101, PSYC 1101, SOCI 1101, STS 1101, ANTH 1102, ECON 2106 |

## Core Field of Study

| | Prerequisites | | |
|---|---|---|---|
| **CSE 1321/L** Programming & Problem Solving I | Lecture & Lab must be taken at the same time | 4 | |
| **CSE 1322/L** Programming & Problem Solving II | Min. grade of 'B' in CSE 1321/L & MATH 1113/1190/2202* | 4 | |
| **MATH 2202** Calculus II | MATH 1190 | 4 | |
| **MATH 2345** Discrete Mathematics | MATH 1113 *or* 1190 | 3 | |
| **TCOM 2010** Technical Writing | ENGL 1102 | 3 | |

CSE 1321/L and CSE 1322/L must have a minimum grade of 'B.'

*Concurrent prerequisite

### Free Electives

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Select 5 credit hours of 1000-4000 level coursework from the University Catalog.

## Major Core Requirements

| | Prerequisites | | |
|---|---|---|---|
| **CS 3305** Data Structures | MATH 2345 & CSE 1322/L | 3 | |
| **CS 3503** Computer Organization & Architecture | CSE 1322/L | 3 | |
| **CS 3502** Operating Systems | CS 3503 & CS 3305 | 3 | |
| **SWE 3313** Intro to Software Engineering | CSE 1322/L | 3 | |
| **CS 3410** Introduction to Database Systems | CSE 1322/L | 3 | |
| **CS 3622** Fundamentals of Data Communications | CSE 1322/L | 3 | |
| **CS 4306** Algorithm Analysis | CS 3305 | 3 | |
| **CS 4504** Parallel and Distributed Computing | CS 3305, CS 3503, CS 3502 * | 3 | |
| **CS 4308** Concepts of Programming Languages | CS 3503 & CS 3305 | 3 | |
| **CSE 3801** Professional Practices and Ethics | CSE 1322/L | 2 | |
| **CS 4850** Senior Project | CS 3502 & SWE 3313 | 3 | |
| **STAT 2332** Probability and Data Analysis | MATH 1190 | 3 | |
| **MATH 3260** Linear Algebra I | MATH 1190 | 3 | |

All major courses must have a minimum grade of 'C,' except for CSE 1321/L & CSE 1322/L, which must have a minimum grade of 'B.'

**+ 2 hours Technology, Mathematics, and Sciences (C or better)**

# Major Electives OR Concentration (15 credit hours)

Students must complete at least 9 credit hours 'CS' prefix courses. You may mix and match electives OR complete all requirements of one of the listed concentrations. If you are not doing a concentration, you may still take **CS courses** listed within the concentrations as electives.

Choose a concentration

## Data Science

| | | Prerequisites | |
|---|---|---|---|
| 1 | **CS 4265** Big Data Analytics | CS 3305 & CS 3410 | |
| 2 | **CS 4412** Data Mining | CS 3305 & CS 3410 | |
| 3 | **CS 4422** Information Retrieval | CS 3305 & CS 3410 | |
| 4 | **CS 4522** HPC & Parallel Prog. | CS 4504 | |
| 5 | **Choose 1** | | |
| **CS 4524** Cloud Computing | | CS 4504 | |
| **CS 4722** Comp. Graphics & Multimedia | | CS 3305 | |
| Additional options below | | | |

## Cyber and Network Security

| | | Prerequisites | |
|---|---|---|---|
| 1 | **CS 3626** Cryptography | MATH 2345 & CS 3305* | |
| 2 | **CS 4612** Software Security | CS 3502 & CS 3626 | |
| 3 | **CS 4622** Computer Networks | CS 3503 & CS 3622 | |
| 4 | **CS 4626** Computer & Network Sec. | CS 3626 & CS 4622 | |
| 5 | **Choose 1** | | |
| **IT 4823** Information Security Admin | | MATH 2345 & CS 3503 | |
| **IT 4833** Wireless Security | | CS 4622 | |
| **IT 4843** Ethical Hacking | | CS 4622 | |
| **IT 4853** Computer Forensics | | CS 4622 | |
| **IT 4883** Infrastructure Defense | | CS 4622 | |
| Additional options below | | | |

**Additional 5th course options for any concentration:** CS 4491 Adv. Topics in CS, CS 4492 Research, and CSE 4983 Computing Internship

## Artificial Intelligence

| | | Prerequisites | |
|---|---|---|---|
| 1 | **CS 3642** Artificial Intelligence | CS 3305 | |
| 2 | **CS 4267** Machine Learning | CS 3642 | |
| 3 | **CS 4732** Machine Vision | CS 3642 | |
| 4 | **CS 4742** Natural Language Processing | CS 3642 | |
| 5 | **Choose 1** | | |
| **CS 4277** Deep Learning | | CS 3642 & CS 4267* | |
| Additional options below | | | |

**OR**

Choose 5 electives

| Course | Prerequisites | |
|---|---|---|
| CS | | |
| CS | | |
| CS | | |
| | | |
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You may choose from any CS 3000 or 4000 level course not already required, including concentration courses. All CS courses are 3 hours, except CS 4400 Directed Studies, which can be 1-3 hours. You may choose up to 6 credit hours from the list below.

| | Prerequisites |
|---|---|
| **SWE 3633** Software Architecture and Design | SWE 3313 *or* CPE 3000 |
| **SWE 3643** Software Testing & Quality Assurance | SWE 3313 *or* CPE 3000 |
| **SWE 3683** Embedded Systems Analysis & Design | CS 3305 |
| **SWE 4633** Cloud Software Development | CS 3305 |
| **CSE 4983** Computing Internship | Dept. Approval |