# COMPUTER SCIENCE AND ENGINEERING (BS)

This program was approved for students entering the university in the Summer 2025-Spring 2026 catalog year. For more information about catalog year, go to Catalog Year Information (https://catalog.louisville.edu/undergraduate/university-wide-unit-specific-policies/catalog-year/).

**Bachelor of Science in Computer Science and Engineering**
Unit: Speed School of Engineering (https://engineering.louisville.edu) (SS)
Department: Computer Science and Engineering (http://engineering.louisville.edu/computer/)
Academic Plan Code(s): CECSBCC

## Program Information

The Bachelor of Science in Computer Science and Engineering degree program is accredited by the Engineering Accreditation Commission (EAC) of ABET, https://www.abet.org (https://www.abet.org/), under the Commission's General Criteria and the Program Criteria for Electrical, Computer, Communications, Telecommunication(s) and Similarly Named Engineering Programs.

The Bachelor of Science in Computer Science and Engineering degree program is also accredited by and Computing Accreditation Commission of ABET, https://www.abet.org (https://www.abet.org/), under the Commission's General Criteria and the Program Criteria for Computer Science and Similarly Named Computing Programs.

Students who graduate from ABET-accredited programs are authorized to sit for the Fundamentals of Engineering (FE) exam, and are encouraged to do so. Completion of the FE Exam is not required for any of the Engineering School's degree programs. The FE Exam is a multiple-choice test, administered by the National Council of Examiners for Engineering and Surveying (NCEES). Passing the FE exam is the first step to becoming licensed as a Professional Engineer. Engineers who have successfully passed the FE exam are considered "Engineers in Training (EIT)". Once an EIT has accumulated four years of acceptable work experience in their field of engineering, they are then able to sit for the Principles and Practice of Engineering (PE) exam, in order to become a professionally licensed engineer. The PE exams go beyond testing academic knowledge and require knowledge gained in engineering practice. The requirement to accumulate work experience before taking a PE exam means that the program is not designed to prepare students for immediate licensure.

## Degree Summary

| Code | Title | Hours |
|---|---|---|
| General Education Requirements (https://catalog.louisville.edu/undergraduate/general-education-requirements/) [1] | | 31 |
| | (19 hours of General Education requirements may be satisfied through coursework required by the degree program) | |
| College/School Requirements [1] | | 35 |
| Program/Major Requirements | | 59 |
| Supporting Courses | | 17 |
| **Minimum Total Hours** | | **123** |

[1] Some courses required in this degree program satisfy multiple requirements. To complete the degree **in the minimum number of hours listed**, some hours from the General Education Requirements must be satisfied by courses defined by the unit and/or program. Using other courses to satisfy General Education requirements will require additional hours to complete the degree requirements. See the Degree Requirements and Track tabs for specific coursework.

Specific coursework information can be found on the Degree Requirements tab.

## Incoming Student Admission Criteria

High School Curriculum Requirements: All schools require graduation from an accredited high school and completion of the Kentucky Pre-College Curriculum requirements. In addition, Speed School requires successful completion of the following courses in high school:

- Calculus or pre-calculus
- Chemistry

**Students with ACT / SAT Scores**

- ACT composite and math scores of 25 OR SAT combined CR+M score of 1200 and math score of 590. A 3.0 GPA on a 4.0 scale

OR

- ACT composite and math scores of 24 OR SAT combined CR+M score of 1160 and math score of 570. A 3.5 GPA on a 4.0 scale

**Students without ACT / SAT Scores**

- HS GPA of 3.0 (or better) on a 4.0 scale
- Comprehensive transcript evaluation
- Review of Student Resume

## Transferring to Engineering BS degree programs

Students with 24 hours or more transferable semester hours will have a minimum college grade point average of 2.8 and at least B-minus grades in each of the following courses: ENGR 181 (or equivalent) and Intro to Chemistry (CHEM 101 or equivalent).

It is recommended students successfully complete Physics I (PHYS 298 or equivalent) before transferring to the J.B. Speed School of Engineering.

## General Education Requirements

| Code | Title | Hours |
|---|---|---|
| General Education Requirements (https://catalog.louisville.edu/undergraduate/general-education-requirements/) [1] | | 31 |
| The following courses are required by the program and satisfy the respective General Education Requirement(s): | | |
| CHEM 201 | General Chemistry I - S (https://catalog.louisville.edu/undergraduate/general-education-requirements/) | |

| | | |
|---|---|---|
| CHEM 207 | Introduction to Chemical Analysis I - SL (https://catalog.louisville.edu/undergraduate/general-education-requirements/) | |
| COMM 111 | Introduction to Public Speaking - OC (https://catalog.louisville.edu/undergraduate/general-education-requirements/) | |
| or COMM 112 | Business and Professional Speaking - OC (https://catalog.louisville.edu/undergraduate/general-education-requirements/) | |
| ENGL 101 | Introduction to College Writing - WC (https://catalog.louisville.edu/undergraduate/general-education-requirements/) [3] | |
| ENGL 102 | Intermediate College Writing - WC (https://catalog.louisville.edu/undergraduate/general-education-requirements/) | |
| ENGR 101 | Engineering Analysis I - QR (https://catalog.louisville.edu/undergraduate/general-education-requirements/) | |
| PHYS 298 | Introductory Mechanics, Heat and Sound - S (https://catalog.louisville.edu/undergraduate/general-education-requirements/) | |

All degrees require the completion of the University-wide General Education Program (link provided above). To complete the degree in the **minimum number of hours** listed on the Overview tab, some hours from the General Education Requirements must be satisfied by courses defined by the unit and/or program.

## College/School Requirements

| Code | Title | Hours |
|---|---|---|
| **Speed School Core** | | |
| CHEM 201 | General Chemistry I - S (https://catalog.louisville.edu/undergraduate/general-education-requirements/) [2] | 3 |
| CHEM 207 | Introduction to Chemical Analysis I - SL (https://catalog.louisville.edu/undergraduate/general-education-requirements/) [2] | 1 |
| COMM 111 | Introduction to Public Speaking - OC (https://catalog.louisville.edu/undergraduate/general-education-requirements/) [2] | 3 |
| or COMM 112 | Business and Professional Speaking - OC (https://catalog.louisville.edu/undergraduate/general-education-requirements/) | |
| ENGL 101 | Introduction to College Writing - WC (https://catalog.louisville.edu/undergraduate/general-education-requirements/) [2,3] | 3 |
| ENGL 102 | Intermediate College Writing - WC (https://catalog.louisville.edu/undergraduate/general-education-requirements/) [2,3] | 3 |
| ENGR 101 | Engineering Analysis I - QR (https://catalog.louisville.edu/undergraduate/general-education-requirements/) [2] | 4 |
| ENGR 102 | Engineering Analysis II | 4 |
| ENGR 110 | Engineering Methods, Tools, and Practice I | 2 |
| ENGR 111 | Engineering Methods, Tools and Practice II | 2 |
| ENGR 201 | Engineering Analysis III | 4 |
| ENGR 205 | Differential Equations for Engineering | 2 |
| PHYS 298 | Introductory Mechanics, Heat and Sound - S (https://catalog.louisville.edu/undergraduate/general-education-requirements/) [2] | 4 |
| **Minimum Total Hours** | | **35** |

## Program/Major Requirements

| Code | Title | Hours |
|---|---|---|
| **Computer Science and Engineering Department Requirements** | | |
| CSE 220 | Object Oriented Program Design with Java | 3 |
| CSE 288 | Computer Science and Engineering Cooperative Education Seminar | 0 |
| CSE 289 | Computer Science and Engineering Cooperative Education I | 1 |
| CSE 302 | Data Structures | 3 |
| CSE 310 | Discrete Structures | 3 |
| CSE 311 | Ethics, Social, and Legal Aspects on the Electronic Frontier | 3 |
| CSE 335 | Introduction to Database | 3 |
| CSE 350 | Introduction to Software Engineering | 3 |
| CSE 389 | Computer Science and Engineering Cooperative Education II | 1 |
| CSE 412 | Introduction to Embedded Systems | 3 |
| CSE 419 | Introduction to Algorithms | 3 |
| CSE 420 | Design of Operating Systems | 3 |
| CSE 489 | Computer Science and Engineering Cooperative Education III | 1 |
| CSE 504 | Automata Theory | 3 |
| CSE 516 | Fundamentals of Computer Communications and Networks | 3 |
| CSE 525 | Microcomputer Design | 4 |
| CSE 596 | CSE Capstone Design - CUE (https://catalog.louisville.edu/undergraduate/general-education-requirements/) | 3 |
| CSE Electives (see below) [4] | | 12 |
| **Computer Science and Engineering Core** | | |
| CSE 130 | Introduction to C and C++ Programming Languages | 3 |
| PHYS 295 | Introductory Laboratories I - SL (https://catalog.louisville.edu/undergraduate/general-education-requirements/) | 1 |
| **Minimum Total Hours** | | **59** |

| Code | Title | Hours |
|---|---|---|
| **Supporting Courses** | | |
| ECE 210 | Logic Design | 3 |
| ECE 211 | Logic Design Laboratory | 1 |
| ECE 252 | Introduction to Electrical Engineering | 3 |
| ISE 360 | Probability and Statistics for Engineers | 3 |
| PHYS 296 | Introductory Laboratories II - SL (https://catalog.louisville.edu/undergraduate/general-education-requirements/) | 1 |
| PHYS 299 | Introductory Electricity, Magnetism and Light | 4 |
| ENGR 330 | Linear Algebra for Engineering | 2 |
| **Minimum Total Hours** | | **17** |

Candidates for the Bachelor of Science degree must be in good standing (university GPA ≥ 2.25) and must attain a grade point average of at least 2.25 for all courses used to satisfy degree requirements.

| Code | Title | Hours |
|---|---|---|
| **Culminating Undergraduate Experience (Graduation requirement)** | | |
| Requirement fulfilled by completing: | | |
| CSE 596 | CSE Capstone Design - CUE (https://catalog.louisville.edu/undergraduate/general-education-requirements/) | 3 |

| Code | Title | Hours |
|---|---|---|
| **Computer Science and Engineering Electives** | | |
| CSE 522 | Performance Evaluation of Computer Systems | 3 |
| CSE 528 | Game Design and Programming | 3 |
| CSE 530 | Design of Compilers | 3 |
| CSE 532 | Python and Data Analytics | 3 |
| CSE 538 | Graph Database and Graph Analytics | 3 |
| CSE 545 | Artificial Intelligence | 3 |
| CSE 546 | Introduction to Machine Learning | 3 |
| CSE 547 | Deep Learning Algorithms and Methods | 3 |
| CSE 551 | Data Visualization for Data Science | 3 |
| CSE 564 | Introduction to Cryptography | 3 |
| CSE 565 | Software Security | 3 |
| CSE 566 | Information Security | 3 |
| CSE 568 | Computer Forensics | 3 |
| CSE 570 | Mobile Device Programming | 3 |
| CSE 590 | Special Topics in Computer Science and Engineering | 1-6 |
| CSE 593 | Independent Study in Computer Science and Engineering | 1-6 |

[1] To complete the degree in the minimum number of hours listed, some hours from the General Education Requirements must be satisfied by courses defined by the unit and/or program. Using other courses to satisfy General Education requirements will require additional hours to complete the degree requirements.

[2] This course is a General Education requirement for the program; see louisville.edu/provost/ger/ (http://www.louisville.edu/provost/ger/) for the listing, by academic year, of AH/D1/D2/SB/SBH Electives which satisfy the University-wide General Education requirements.

[3] Students completing ENGL 105 in lieu of ENGL 101 or ENGL 102 satisfy the General Education and Engineering Fundamentals requirements for Written Communication. However, an additional 3-hr Writing (WR) course or honors Written Communication (WC) course may be needed to satisfy program credit hour requirements.

[4] The CSE Electives must be chosen from the approved list (above) or with departmental consent for additional CSE 5XX or 6XX courses.

## Flight Plan

| | | |
|---|---|---|
| **Year 1** | | |
| **Fall** | | **Hours** |
| CHEM 201 | General Chemistry I - S (https://catalog.louisville.edu/undergraduate/general-education-requirements/) | 3 |
| CHEM 207 | Introduction to Chemical Analysis I - SL (https://catalog.louisville.edu/undergraduate/general-education-requirements/) | 1 |
| ENGL 101 | Introduction to College Writing - WC (https://catalog.louisville.edu/undergraduate/general-education-requirements/) | 3 |
| ENGR 101 | Engineering Analysis I - QR (https://catalog.louisville.edu/undergraduate/general-education-requirements/) | 4 |
| ENGR 110 | Engineering Methods, Tools, and Practice I | 2 |
| General Education: Cardinal Core Arts & Humanities, Social & Behavioral Sciences, or Social & Behavioral Sciences Historical Persepective US Diversity - AHD1, SBD1, or SBHD1 | | 3 |
| | **Hours** | **16** |
| **Spring** | | |
| CSE 130 | Introduction to C and C++ Programming Languages | 3 |
| ENGL 102 | Intermediate College Writing - WC (https://catalog.louisville.edu/undergraduate/general-education-requirements/) | 3 |
| ENGR 102 | Engineering Analysis II | 4 |
| ENGR 111 | Engineering Methods, Tools and Practice II | 2 |
| PHYS 295 | Introductory Laboratories I - SL (https://catalog.louisville.edu/undergraduate/general-education-requirements/) | 1 |
| PHYS 298 | Introductory Mechanics, Heat and Sound - S (https://catalog.louisville.edu/undergraduate/general-education-requirements/) | 4 |
| | **Hours** | **17** |
| **Summer** | | |
| CSE 220 | Object Oriented Program Design with Java | 3 |
| ENGR 201 | Engineering Analysis III | 4 |
| PHYS 296 | Introductory Laboratories II - SL (https://catalog.louisville.edu/undergraduate/general-education-requirements/) | 1 |
| PHYS 299 | Introductory Electricity, Magnetism and Light | 4 |
| | **Hours** | **12** |
| **Year 2** | | |
| **Fall** | | |
| CSE 288 | Computer Science and Engineering Cooperative Education Seminar | 0 |
| CSE 302 | Data Structures | 3 |
| ECE 210 | Logic Design | 3 |
| ECE 211 | Logic Design Laboratory | 1 |
| CSE 335 | Introduction to Database | 3 |
| ENGR 205 | Differential Equations for Engineering | 2 |
| General Education: Cardinal Core Arts & Humanities, Social & Behavioral Sciences, or Social & Behavioral Sciences Historical Persepective US Diversity - AHD1, SBD1, or SBHD1 | | 3 |
| | **Hours** | **15** |
| **Spring** | | |
| CSE 289 | Computer Science and Engineering Cooperative Education I | 1 |
| | **Hours** | **1** |
| **Summer** | | |
| CSE 310 | Discrete Structures | 3 |
| COMM 111 or COMM 112 | Introduction to Public Speaking - OC (https://catalog.louisville.edu/undergraduate/general-education-requirements/) or Business and Professional Speaking - OC (https://catalog.louisville.edu/undergraduate/general-education-requirements/) | 3 |
| CSE 350 | Introduction to Software Engineering | 3 |
| General Education: Cardinal Core Arts & Humanities, Social & Behavioral Sciences, or Social & Behavioral Sciences Historical Persepective - AH, SB, or SBH | | 3 |
| | **Hours** | **12** |

| | | |
|---|---|---|
| **Year 3** | | |
| **Fall** | | |
| CSE 389 | Computer Science and Engineering Cooperative Education II | 1 |
| | **Hours** | **1** |
| **Spring** | | |
| CSE 311 | Ethics, Social, and Legal Aspects on the Electronic Frontier | 3 |
| CSE 412 or ECE 412 | Introduction to Embedded Systems or Introduction to Embedded Systems | 3 |
| CSE 419 | Introduction to Algorithms | 3 |
| ENGR 330 | Linear Algebra for Engineering | 2 |
| ISE 360 | Probability and Statistics for Engineers | 3 |
| ECE 252 | Introduction to Electrical Engineering | 3 |
| | **Hours** | **17** |
| **Summer** | | |
| CSE 489 | Computer Science and Engineering Cooperative Education III | 1 |
| | **Hours** | **1** |
| **Year 4** | | |
| **Fall** | | |
| CSE 420 | Design of Operating Systems | 3 |
| CSE 504 | Automata Theory | 3 |
| CSE 525 | Microcomputer Design | 4 |
| CSE Elective | | 3 |
| CSE Elective | | 3 |
| | **Hours** | **16** |
| **Spring** | | |
| CSE 516 | Fundamentals of Computer Communications and Networks | 3 |
| General Education: Cardinal Core Arts & Humanities, Social & Behavioral Sciences, or Social & Behavioral Sciences Historical Persepective - AH, SB, or SBH | | 3 |
| CSE Elective | | 3 |
| CSE Elective | | 3 |
| CSE 596 | CSE Capstone Design - CUE (https://catalog.louisville.edu/undergraduate/general-education-requirements/) | 3 |
| | **Hours** | **15** |
| | **Minimum Total Hours** | **123** |

The Flight Plan outlined above is intended to demonstrate one possible path to completing the degree within four years. Course selection and placement within the program may vary depending on course offerings and schedule, elective preferences, and other factors (study abroad, internship availability, etc.). Please consult your advisor for additional information about building a flight plan that works for you.

**Degree Audit Report**

Degree Audit reports illustrate how your completed courses fulfill the requirements of your academic plan, and which requirements are still outstanding. Degree audits also take transfer credits and test credits into account. "What-if" reports allow you to compare the courses you have completed in your current academic plan to the courses required in another academic plan. Should you have questions about either report, please consult with your academic advisor.

**Flight Planner**

The Flight Planner tool is available for you to create a personalized Flight Plan to graduation. Advisors have access to review your Flight Planner and can help you adjust it to ensure you remain on track to graduate in a timely manner.

**To create these reports:**

1. Log into your ULink account.
2. Click on the Academic Progress tile.
3. Select the appropriate report.
   a. To run a Degree Audit report, click on "View my Degree Audit."
   b. To create a What-if report, click on "What-if Advisement Report."
   c. To run a Flight Planner report, click on "Use My Flight Planner."

Click here to run a Degree Audit report, create a What-if report, or run a Flight Planner report. (https://ulink.louisville.edu)