Computer Science

College of Engineering

The computer science program prepares students to identify computational problems in all areas of modern life, to design, implement, and analyze algorithmic solutions, and to build software for a variety of applications. Through required, elective and special topics courses students are exposed to the foundations and current practices of computing and algorithms, software engineering, programming languages, operating systems, graphics and multimedia, scientific computing and numerical analysis, databases, artificial intelligence and networks.

Admission to the degree program is selective. Students should refer to the UK *Bulletin* for general information concerning admission and graduation requirements.

Degree Requirements

In addition to satisfying UK Core requirements, each student completes the following:

Freshman Year

First Semester	Hours
EGR 101 Engineering Exploration I Δ §	1
EGR 102 Fundamentals of Engineering Computing	2
CHE 105 General College Chemistry I or PHY 231 General University Physics●	4
PHY 241 General University Physics Laboratory‡	1
CIS/WRD 110 Composition and Communication I	3
MA 113 Calculus I	4

Second Semester	
EGR 103 Engineering Exploration II Δ	2
CIS/WRD 111 Composition and Communication II	3
MA 114 Calculus II	4
PHY 231 General University Physics or CHE 105 General College Chemistry I●	4
CS 215 Introduction to Program Design, Abstraction, and Problem Solving	4

Sophomore Year

First Semester	Hours
CS 216 Introduction to Software Engineering Techniques	3
EE 280 Design of Logic Circuits	3
MA 213 Calculus III	4
CS 275 Discrete Mathematics	4
UK Core (Social Sciences)	3

Second Semester	
CS 270 Systems Programming	3
CS 315 Algorithm Design and Analysis	3
Technical Elective [T]	3
Science Elective [S]	3
UK Core (Humanities)	3

Junior Year

First Semester	Hours
CS 371 Introduction to Computer Networking	3
CS/MA 321 Introduction to Numerical Methods or MA 322 Matrix Algebra	3
CS Elective [C]	3
CS Elective [C]	3
STA 381 Engineering Statistics: A Conceptual Approach	3

Second Semester	
CS 375 Logic and Theory of Computing	3
CS Elective [C]	3
CS Elective [C]	3
Natural Science Elective [N]	3
Technical Elective [T]	3
UK Core (Citizenship – USA)	3

Senior Year

First Semester	Hours
CS 498 Software Engineering for Senior Project	3
CS Elective [C]	3
Technical Elective [T]	3
Free Elective [E]	4
UK Core (Global Dynamics)	3

Second Semester	
CS 499 Senior Design Project*	3
CS Elective [C]	3
Technical Elective [T]	3
Non-Technical Elective [E]	3
Free Elective [E]	3

[N] – Any natural science course excluding more elementary versions of completed required courses.

[C] – Computer Science Elective (18 credit hours) – include 300-level and above computer science courses with at least three to be selected from: CS 335, CS 378, CS 405G, CS 441G, CS 450G, CS 460G and CS 463G. Students are encouraged to take advantage of special topics courses, cooperative education, independent studies and undergraduate research.

[T] – Technical Elective–include any 300-level and above courses in computer science, electrical engineering, mathematics and business and economics. MA 214 is also an acceptable technical elective. Cooperative education credit may be used to satisfy this requirement.

[E] – Elective–including one Free Elective and Non-Technical Elective. At least two of the electives (6 credits) cannot be in computer science, mathematics, science or engineering. Free Elective (3 credits) can be any course that carries college credit and is not a more elementary version of a required course. Note: At least 128 credit hours; a foreign language requirement.

[S] – Science Elective-must be selected from either UK Core Natural Science or Social Science approved list or by consent of academic advisor.

Δ Both classes must be taken to fulfill UK Core: Arts & Creativity requirement.

**Graduation Composition and Communication Requirement (GCCR) course.*
● Based on advisor consult
‡ Only if enrolled in PHY 231

§ Transfer students who declare a major will take EGR 112 Engineering Exploration for Transfer Students in place of EGR 101.

Computer Science

The Academic Minor

Many departments have designed academic minors for the convenience of undergraduate students.

A minor is a structured group of courses that leads to considerable knowledge and understanding of a subject, although with less depth than a major. Some employers consider minors desirable, and the corresponding major requirements at the University may stipulate a minor. Some students choose to complement their major program with a minor in a related field or even in an entirely different field of interest. Students interested in pursuing an academic minor should contact their college dean's office and the department responsible for the minor program for guidance and advising.

Please note that undergraduate students can only complete a minor *in addition* to and as *a complement* to a major. The University does not award stand-alone minors.

Minor in Computer Science

The minor in computer science requires a minimum of 19-20 hours of course work in CS, to include the following:

EGR102 (2) or CS 115 (3), CS 215 (4), CS 216 (3), CS 275 (4), CS 315 (3), or equivalent, plus three additional hours of upper-division courses (300 or higher) in computer science. A GPA of at least 2.5 across these courses is required. At least 10 of the credit hours required to complete the minor must be earned at the University of Kentucky.