Computer Science

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.

Degree Requirements

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

Freshman Year

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

Second Semester	
EGR 103 Engineering Exploration II †	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
PHY 241 General University Physics Laboratory ‡	1
CS 215 Introduction to Program Design, Abstraction, and Problem Solving Techniques	4

Sophomore Year

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

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

Junior Year

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

Second Semester	
CS 375 Logic and Theory of Computing	3
Computer Science Elective [C]	3
Computer Science Elective [C]	3
Technical Elective [T]	3
UK Core – Citizenship - US	3
Natural Science Elective [N]	3

Senior Year

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

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

§ *Transfer students will take EGR 215, Introduction to the Practice of Engineering for Transfer Students, in place of EGR 101 and EGR 103.*

† *Students must complete both EGR 101 and EGR 103 to fulfill the UK Core Arts and Creativity requirement. Transfer students may satisfy the UK Core Arts and Creativity requirement by taking EGR 215.*

° *Based on advisor consult.*

‡ *Only if enrolled in PHY 231.*

[T] *Any additional 300-level or higher classes selected from computer science, electrical engineering, mathematics (including MA 214: Calculus IV and excluding MA 308: Problem Solving-Middle School and MA 310: Mathematics Problem Solving-Teachers), College of Business and Economics, or by the Department of Computer Science's approval.*

[S] *Science Elective (3 credit hours)- must be selected from UK core natural science list, UK core social science list, or approved by the Department of Computer Science. Natural science course cannot be an elementary version of a required course.*

[C] *Computer Science Elective (18 credit hours) – include 300-level and above computer science courses with three classes to be selected from: CS 316, CS 335, CS 378, CS 405G, CS 441G, CS 450G, CS 460G and CS 463G.*

[N] *Natural Science (3 credit hours) – Any natural science course to be selected from the UK core natural science list or approved by the Department of Computer Science. Natural science course cannot be an elementary version of a required course.*

[E] *Free Elective (10 credit hours) – can be any course that earns college credit and is not a more elementary version of a required course. 6 credits are not to be selected from computer science, mathematics, natural science and engineering.*

**Graduation Composition and Communication Requirement (GCCR) course.*