

# COMPUTER SCIENCE AND ENGINEERING

**Computer Science & Engineering (CSE)** is an academic program at many [universities](#) which comprises scientific and engineering aspects of computing. CSE is also a term often used in Europe to translate the name of [engineering informatics](#) academic programs.

Academic programs vary between colleges. Courses usually include introduction to [programming](#), introduction to [algorithms](#) and [data structures](#), [computer architecture](#), [operating systems](#), [computer networks](#), [parallel computing](#), [embedded systems](#), [algorithms design](#), [circuit analysis](#) and [electronics](#), [digital logic](#) and [processor design](#), [computer graphics](#), [scientific computing](#), [software engineering](#), [database systems](#), [digital signal processing](#), [virtualization](#), [computer simulations](#) and [games](#) programming. CSE programs also include core subjects of theoretical computer science such as [theory of computation](#), [numerical methods](#), [machine learning](#), [programming theory](#) and [paradigms](#). Modern academic programs also cover emerging computing fields like [image processing](#), [data science](#), [robotics](#), [bio-inspired computing](#), [computational biology](#), [autonomic computing](#) and [artificial intelligence](#).<sup>[1]</sup> Most of the above CSE areas require initial [mathematical](#) knowledge, hence the first year of study is dominated by mathematical courses, primarily [discrete mathematics](#), [mathematical analysis](#), [linear algebra](#) and [statistics](#), as well as the basics of [physics - field theory](#) and [electromagnetism](#).