Intro Courses Explained

Introductory Computer Science Courses Explained

The Computer Science department offers four introductory courses. The purpose of this communication is to describe and contrast the courses in order to help students decide which course might be most appropriate for them. This choice may depend on various factors, including his or her particular interests, the degree requirements of the major, etc. Unless there are specific reasons to learn a particular programming language though, the choice of language is a less important factor than the focus and nature of the courses themselves.

The four introductory CS courses are CS 101, 102, 105, and 125. All of the courses with the exception of CS 102 offer significant programming experience. The amount of programming from least to most is as follows: CS 102, CS 105, CS 101, and CS 125. CS 101 satisfies the "Quant II" general education requirement. All others satisfy the "Quant I" requirement. None of these courses is a prerequisite for any of the others.

**CS 101.** "Intro Computing for Engineering and Science", is primarily a programming course with engineering applications, as its name suggests. It currently teaches programming using the Python language, with problems and applications drawn from the engineering and physical sciences, as well as the use of a mathematical programing environment such as MATLAB to model, visualize, and solve mathematical problems. The course is appropriate for students satisfying their computing requirement in the Engineering College and others interested in applications of computing to technical/mathematical problems.

**CS 102** (cross-listed as INFO 102), "Little Bits to Big Ideas", is a breadth/survey course of the field of computing, covering many different computer science concepts and application areas of the field. Themes include (1) demystifying computing (how computers work), (2) understanding algorithms and how different types of problems can be solved, and (3) surveying different CS areas such as artificial intelligence, bioinformatics, databases, simulation, etc.; topics may vary, and often include some not seen until much later in a CS curriculum (though at a more introductory level). It is not a programming course, although there may be some programming in lab sections. This course is appropriate for students who want to understand what the field of Computer Science is about.

**CS 105.** "Intro Computing: Non-Tech", has three threads: (1) Components of Computer Science (e.g. architecture, algorithms, search, sort, networking, web, etc). The goal is build a working vocabulary and instill confidence when speaking about technology. (2) Using spreadsheets such as Excel for data analytics, and (3) introduction to programming (in Python). This course is appropriate for students interested in the particular applications (spreadsheets) and who would like some programming experience. This course is required for students in the College of Business, and for Informatics Minors.

**CS 125.** "Introduction to Computer Science", is a rigorous first course in computing for CS majors. This 4 credit course requires a significant amount of out-of-class study time including pre-lecture reading, online activities, and weekly programming challenges. It is often the largest component of a student's weekly workload. The course introduces many CS concepts that are not discussed in the other courses. Many students taking this course have had some prior programming experience, although a technically-capable and hard-working student can do well in the course even without such prior experience. The course is required for CS majors, CS minors, and is recommended for those with a deep interest in the field, or those considering transferring into the CS department. Non-majors looking for a more manageable and less rigorous introduction to programming might consider taking CS 101 or CS 105 first.

**A final note:** Most higher-level courses in Computer Science require CS 125 (which is a prerequisite for CS 225, which in turn is a prerequisite for most upper level CS courses). Thus, students interested in pursuing more advanced CS courses should take CS 125, perhaps preceded by one of CS 101 or 105. New courses are being designed for non-CS-majors that follow CS 101 and CS 105. Keep your eyes on this space for future developments.