A Unified Approach to CS1

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The first computer science course in a liberal arts curriculum should introduce all the topics that a student taking only one CS course should learn. At the same time, it should expose students to the rigor and beauty of implementing algorithms in computer programs. Our approach is to offer just one introductory computer science course for all students, whether or not they intend to pursue further study in CS. This course assumes no prior experience with computer science or programming. We take a breadth-based approach, integrating topics traditionally from CS0 with topics traditionally from CS1. Sample elements of breadth topics include data representation, computer architecture, programming languages, privacy and security, operating systems, networks and the world-wide web, artificial intelligence, and computability. Sample elements of traditional CS1 topics include abstraction, problem-solving, programming, and elementary analysis of algorithms. This approach means that students need not decide before taking their first CS course whether they are non-majors or potential majors. It also give studens continuing in CS the benefit of breadth material in the introductory course.

URL: http://www.cs.middlebury.edu/~cs101