

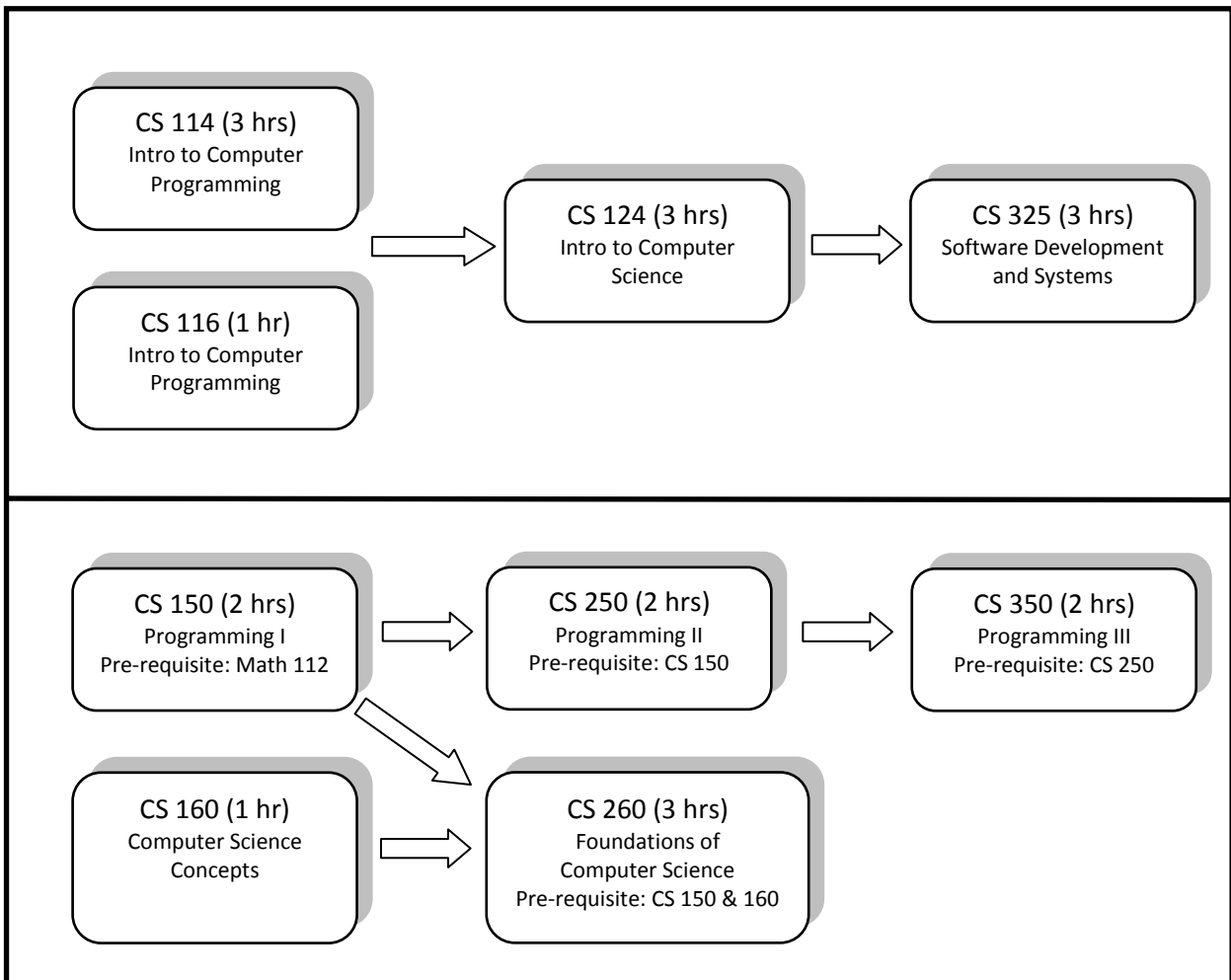
Changes in the Introductory Computer Science Curriculum for Majors

The Computer Science Department is putting into place a new introductory sequence for majors. These changes impact CS 114, CS 116, CS 124 and CS 325. These changes do **not** impact any of our service courses – CS 102, CS 202, CS 205, CS 285, CS 302, CS 340, CS 375, CS 385 and CS 466.

The changes are designed to improve retention and understanding in these foundational courses. The changes realize two distinct advantages over our current framework.

- 1) The new curriculum utilizes a language that is easy to learn, especially for beginners. It focuses on helping you learn how to properly design, code, test and debug your code.
- 2) The new curriculum separates the instruction of a programming language from the academic discussion of the foundations of computing. Issues such as algorithms and complexity and data structures are separated from the issues associated with learning how to program.

The figure below illustrates the old and new course sequences, along with brief descriptions for each of the courses in the new sequence. The back page of this document contains answers to some basic questions regarding the new sequence and its implementation.



Commonly Asked Questions (and Answers) Regarding the New Introductory CS Curriculum for Majors

1. ***Which students will this change impact?***

This change will impact students who are majoring in Computer Science, Management Information Systems, Computer Engineering, Electrical Engineering and Mathematics (all tracks). Students who are getting a minor in Computer Technology and Applications are not impacted at all.

2. ***Why the change to this new sequence?***

The current introductory sequence combines the instruction of programming with fundamental principles of computing. It also utilizes an environment that is geared towards more advanced programmers. The new sequence separates the issues associated with programming from the theoretical foundations of the discipline and also utilizes a language and environment that has recognized benefits for beginner and novice students.

3. ***What is different about CS 150 and 250 and 350?***

These three courses focus solely on the issues associated with programming – algorithm design, coding, testing and debugging. Emphasis is placed on program design and construction. Applications are taken from a number of real-world scenarios.

4. ***What is covered in CS 160?***

CS 160 is a one-hour course that is designed to get students thinking about algorithms and processes. It utilizes Alice and robotics to develop solutions to a number of real-world tasks (such as make the robot trace the perimeter of a square with a four-foot side). These principles are easily translated into foundational programming constructs.

5. ***What is covered in CS 260?***

CS 260 covers the theoretical foundations of the discipline. Issues such as computability, problem complexity and algorithm analysis, efficient searching and sorting techniques, and data structures are introduced and explained.

6. ***What about students in the Computer Based Honors (CBH) program?***

Students in CBH will continue to take CBH 101 and CBH 102. These two courses (six hours) are a direct substitute for the CS 150, 250 and 350 sequence.

7. ***When will this change take place?***

This change will be introduced over three semesters, starting in Spring of 2009, when we will offer CS 150 and CS 160. In the Fall of 2009, we will also offer CS 250 and CS 260. In Spring 2010, we will offer all the courses in the new sequence (150, 160, 250, 260 and 350).

8. ***Have the number of hours changed as a result of this new sequence?***

The number of hours remains the same as the original sequence. Both sequences are 10 hours.

9. ***What about transfer students?***

Students who transfer in a CS I or CS II class will be able to get credit for their previous coursework. Depending on the courses taken and content of those courses, students will be given the appropriate (equivalent) credit in this sequence. For example, a student transferring in a two-semester sequence with a programming emphasis would receive credit for CS 150, 250 and 350.

10. ***What programming language does this sequence use?***

The Python programming language will be utilized extensively in CS 150, 250 and 260. Python is a dynamic object-oriented programming language that supports multiple paradigms for software development. It has a clear, readable syntax and lets an individual write the needed code quickly. It is used in a number of commercial applications, including Google Maps and Gmail and Youtube. We will transition to C++ and Java in CS 350.