CSCE 155* : Computer Science I

Introductory Computer Science Course Options

Or, "What flavor do you savor"

What CSCE 155* is About

- Introduction to Computer Science
- *Not* a programming course (though programming is a tool we will use)
- About: Problem Solving; Computational Thinking, Fundamental CS topics
- The world is process; the world is computation (biological, physical, economic, engineering, etc.)

Essential Topics (all flavors of 155)

- Mastery of the fundamentals of programming in a high-level language
- Problem solving methodology (specifications, design, refinement, testing, prototyping, best practices, etc.)
- Software Development principles
- Data: abstraction, modeling, processing
- Control structures: conditionals, repetition, error handling
- Algorithms: design & analysis, searching, sorting, recursion
- Exposure to Graphical User Interface & Event-driven programming
- Exposure to Databases and DB access

CSCE 155A

- Language: Java
- Recommended for Computer Science Majors
- Orientation toward software design
- Evolved from the "classic" CS 1 which prepared students for more advanced Computer Science courses
- Could be used as a stand-alone programming course in Java

CSCE 155E

- Systems Engineering Focus
- Language: C (C++, Java are object-oriented descendants of C)
- Recommended for Computer Engineering and required for Electrical Engineering Majors
- Recommended for those interested in systems engineering: operating systems, mobile computing, embedded systems

CSCE 155H

- Honors section (UNL Honors Program, CSE Honors Program, or by invitation)
- Smaller section, faster pace, greater depth; recommended for CS and CE majors
- Language: Java and C are *both* covered
- Fall semesters only
- Contracting for Honors in another 155 is always an option, contact the instructor

CSCE 155N: MATLAB

- Systems Engineering & Science Focus
- Language: MATLAB (easy to use, interactive)
- Recommended for those interested in numerical and graphing applications in engineering and science
- Satisfies all engineering majors except EE
- Powerful matrix processing functions
- Offered spring, fall, summer

CSCE 155N: FORTRAN

- Systems Engineering & Science Focus
- Language: FORTRAN (history goes back to 1954)
- Exclusive to meteorology students
- Offered Spring only
- Recommended for those interested in "number crunching" applications in engineering & science
- Good lead-in to Interactive Data Language, used extensively in Astronomy, Medical Imaging, satellite data processing (NASA), etc.

CSCE 155T

- Humanities Focus
- Languages: various (Fall: Python, Spring: Ruby)
- Emphasis on natural language processing and data analysis
- Offered Spring semesters
- Recommended for those interested in data and information processing such as library and database applications, online commerce and bioinformatics

Which languages are the "best"?

- Transparent Language Popularity Index: http://lang-index.sourceforge.net/
- TIOBE Index: http://www.tiobe.com/index.php/content/paperinfo/tpci/index.html
- http://readwrite.com/2014/01/08/in-demand-tech-skills-of-2013-java#awesm=~osHlnh85FoCR0S
- Best job prospects? Java, C/C++, PHP, VB, Python, C#, JavaScript, Perl, Ruby
- The real answer? NONE! Any CS1 course will give you a solid foundation in problem solving and basic CS topics: you should be able to pickup any other language with ease!

Isaac Asimov – 1964

- "The world of A.D. 2014 will have few routine jobs that cannot be done better by some machine than by any human being. Mankind will therefore have become largely a race of machine tenders. Schools will have to be oriented in this direction…. All the high-school students will be taught the fundamentals of computer technology, will become proficient in binary arithmetic and will be trained to perfection in the use of the computer languages that will have developed out of those like the contemporary 'Fortran'."