CS 2316 – Where it Fits

College of Computing

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- Georgia Institute of Technology has six Colleges
  - College of Architecture
  - College of Computing
  - College of Engineering
  - Ivan Alan College of Liberal Arts
  - College of Management
  - College of Sciences

College of Computing – That's us!

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  - **College of Computing**
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GaTech Computer Science Requirement

- All students at Georgia Tech must complete courses in math, science, humanities, social science, computing, and health & performance science.
- CS 1371 is one of three classes that fulfills the computing requirement.
- The three classes that fulfill the computing requirement are:
  - CS 1301 – Introduction to Computing (robots)
  - CS 1315 – Media Computation
  - CS 1371 – Introduction to Computing(matlab)

Georgia Tech CS 1 Options:

- CS 1301 – Introduction to Computing
  - Taught in Python with robots.
- CS 1315 – Media Computation
  - Taught in Python, students manipulate media (images/sounds).
- CS 1371 – Introduction to Computing
  - Taught in MATLAB.
  - Taken by all School of Engineering students.

What comes after CS 1301 / 1315 / 1371?

- After completing CS 1, computer science majors typically complete:
    - CS 1331 – Introduction to Object Oriented Programming
    - CS 1332 – Data Structures

CS 2316 – Practical Programming Skills

- 2316 teaches Python programming and data manipulation for industrial and scientific programming.
- It focuses on data manipulation more than 1331.
- 2316 gives more programming practice, and less theory.

CS1331

- CS 1331-Introduction to OOP
  - Taught in Java
  - Introduces Object Oriented Programming
  - Reinforces skills learned in CS1301
- CS 1331 is required by all 8 possible threads in the CS major
- Also a prerequisite for the CS minor.

CS1332

- CS 1332 – Data Structures
  - Taught in Java
  - Teaches data representation and manipulation (advanced data structures).
- CS1332 is required by all but the People thread.

Minor in Computer Science

- CS 1331 (Prerequisite)
- 18 semester hours of computer science coursework, 12 of which must be 3000 level or higher.
  - Usually includes 1332, can include 1803.
- At least 2 courses must be in the same thread to develop a depth in that thread.

College of Computing – Internal Organization

- The College of Computing is currently divided into three schools:
  - School of Computer Science
  - School of Interactive Computing
  - School of Computational Science and Engineering

College of Computing – Undergraduate Degree

- Undergraduate degrees such as the Bachelors of Science (BS) are "owned" by the College of Computing in general, and are not controlled by a School.
- Undergraduate classes are taught by professors from all three schools.
- To receive a bachelors degree in Computer Science, students must complete two "Threads".

Threads

- A thread is a coordinated path through multiple courses so that the end result for the student is expertise in the area of the thread.
- Threads contain both CS courses as well as courses from outside Computer Science.
- A BS in Computer Science at Georgia Tech is defined as completing *any two threads*.

- **Modeling & Simulation:** Computing for representing the world, as in computational sciences. Examples include weather simulations, protein folding, crash simulations, epidemic modeling, etc.
- **Devices:** Computing meets the physical world, in such areas as robotics and real-time embedded systems such as cell phones.

List of Threads (2/4)

- **Theory:** Fundamentals of computing, such as computer science theory. Examples include Algorithmic complexity, Automata Theory, Computability.

- **Information Internetworking:** Computing for storing, recalling, and communicating information. Includes aspects of databases, searching, and networking.

List of Threads (3/4)

- **Intelligence:** Computing as cognition, its representation and processes. Artificial Intelligence, Machine Learning are examples.

- **Media:** Computing for processing, creating, and presenting multimedia. Video compression, special effects, and image enhancement are examples.

- **People:** Computing meets people, including the design of human-centered systems. Examples include user interface design, recommender systems, social networks.

- **Platforms:** Computing across different kinds of hardware, with different characteristics and infrastructures. Computer architecture, operating systems, and programming languages.

Threads related to CS 2316

- CS 2316 is most like the **Information Internetworking** thread.
- This class is a small sample of that thread.