



***Intro to Information Science (Advanced)***

***INFSCI 0011***

***3 Credits***

**Description:** This course will introduce both information theory and the design and structure of information systems. You will learn how computers and networks work at a fundamental level. You will explore how social networks, collection of information (databases), and programming languages work. The course will spend particular attention on security and privacy issues. The course will provide you with basic skills such as building web page, programming using simple JavaScript on web pages, design and use of simple databases, and manipulation of digital media. The course meets the quantitative requirement for the School of Arts & Sciences, is designed for students with minimal prior technical coursework, and does not require previous programming experience.

**Prerequisite:** None

**Grading:** The grading in this case is based on assignments, quizzes, and exams.

Evaluation:     60% -- Exams (2 equally-weighted, non-cumulative)  
                   40% -- Six Assignments

Grading Scale:  
99-100 = A+    88-89 = B+    78-79 = C+    68-69 = D+  
94 - 98 = A    84-87 = B     74-77 = C     64-67 = D  
90 - 93 = A-   80-83 = B-     70-73 = C-     60-63 = D-

**Textbook:** *Fluency with Information Technology: Skills, Concepts, and Capabilities*, Edition 6 by Lawrence Snyder. Faculty liaison will consider alternative textbooks on a case-by-case basis.

**Course Requirements:**

- Build a simple web page using html
- Add a JavaScript functionality to a webpage
- Build and use a simple database to store and access information
- Prepare a public private key pair to encrypt and decrypt messages



The following topics are covered in the University of Pittsburgh INFSCI 0011 course:

**1. Information and Information Systems**

- What is information?
- How do we measure it?
- Why is it different?
- How do we build information systems?

**2. Basic technologies and how they work**

- Computers
  - Storage devices
  - Processing of information
  - Input and output of information
- Networks
  - Local area networks
  - The internet
  - Phone networks and cell phones

**3. Playing in the new world and understanding what is happening**

- Google and new search metrics
  - Why is it different than the library
- Facebook and other social networks
  - The basics of network theory
- Playing on the World Wide Web
  - What made “the” Web – HTML, HTTP, and URLs

**4. Some basic skills to use and manage technology**

- Webpage design
- Databases and how they work
- Programming languages in the Large

**5. Cybersecurity threats and mitigations**

- Security Basics
  - Confidentiality
  - Integrity
  - Accessibility
- Attacks
  - Identity Theft
  - Phishing and Spear Phishing
  - Attackers: Cyberterrorism and Cybercrime
  - Denial of Service – DOS and DDOS
  - Insider attacks
  - Attack Vectors
    - Stored Data
    - Network Traffic
    - Software
      - Operating Systems
      - Application Software
      - Plugins
  - Mitigating Attacks and Insuring Privacy
    - Firewalls and System Protection
    - Identity Protection
  - Social Networking:
    - Lurkers
    - Information Leakage
  - Cyber Professions
    - Cyber Forensics
    - Cryptography
    - Authentication and Access Control



**Academic Integrity:** All College in High School teachers, students, and their parents/guardians are required to review and be familiar with the University of Pittsburgh's Academic Integrity Policy located online at [www.as.pitt.edu/fac/policies/academic-integrity](http://www.as.pitt.edu/fac/policies/academic-integrity).

**Grades:** Grade criteria in the high school course may differ slightly from University of Pittsburgh standards. A CHS student could receive two course grades: one for high school and one for the University transcript. In most cases the grades are the same. These grading standards are explained at the beginning of each course.

**Transfer Credit:** University of Pittsburgh grades earned in CHS courses appear on an official University of Pittsburgh transcript, and the course credits are likely to be eligible for transfer to other colleges and universities. Students are encouraged to contact potential colleges and universities in advance to ensure their CHS credits would be accepted. If students decide to attend any University of Pittsburgh campuses, the University of Pittsburgh grade earned in the course will count toward the student grade point average at the University. At the University of Pittsburgh, the CHS course supersedes any equivalent AP credit.

**Drops and Withdrawals:** Students should monitor progress in a course. CHS teacher can obtain a Course Drop/Withdrawal Request form from the CHS office or Aspire. The form must be completed by the student, teacher and parent/guardian and returned to teacher by deadlines listed. Dropping and withdrawing from the CHS course has no effect on enrollment in the high school credits for the course.