CMPINF0010 Big Ideas in Computing and Information

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Catalog Description: Computing and information systems underlie nearly every facet of life in today's highly-networked societies. Accordingly, there are many paths through the degree programs offered by the School of Computing and Information, each focusing on different aspects of the theories, practices, and applications of computing and information. This course will introduce you to a variety of core principles and important themes that cross-cut this array of computing- and information-oriented disciplines, as well as explore the types of work that individuals educated in these disciplines engage in.

Course Objective: Students are able to master the basic knowledge of computer systems, have basic cognition about the computer system, and to learn the computer system as a tool, is used to solve practical problems. Adopt the way of speaking, do course, the experiment courses enable students to master the use of a computer system, help to understand the basic concepts of computer system.By the end of this course, you will be able to:

Articulate intuitive definitions for each of the "big ideas" discussed in class

Uncover and differentiate underlying computational and informational aspects of a variety of natural, social, and engineered systems

Leverage computational and informational abstractions and ideas to navigate the technical and social issues arising at the interfaces between complex, interacting systems

Identify the similarities and differences in methodology, applications, and abstraction that exist between computational and information disciplines

Situate computing and information practices within a socio-cultural context

Develop scripts demonstrating a mastery of basic concepts in the Python programming language (data structures, control flow, functions and modules)

Navigate Unix-based systems, manipulate files, and execute programs

Break down and back up work, as well as collaborate with others using a distributed version control system

Generate, transform, and manipulate data using the Python programming language

Generate and publish mixed media content on the web using Markdown and Static HTML sites

Meeting Times: Mon/Wednes 1:50 - 3:30/16:45 - 16:25

Prerequisites: No

Textbook: New Perspectives on Computer Concepts 2018, Comprehensive 20th Edition, June Jamrich Parsons

Reference: Computer Science illuminated, Seventh Edition, Nell Dale, John Lewis

Weekly Schedule

Week	Topics
1	Digtal Content: Data Representation Basics. Representating Numbers.
2	Device: Processors, Memory, Storage, Input and output
3	Digital Logic: Combinational Logic 1
4	Digital Logic: Combinational Logic 2
5	Digital Logic: Sequential Logic 1
6	Digital Logic: Sequential Logic 2
7	Networks:
8	Web: MIDT
9	Social Media:
10	Software:
11	Practice: Word & Excel
12	Practice: PowerPoint
13	Digital Security:
14	Information Systems:
15	Databases:
16	Programing

Topics Covered:

Mudule 1 Digital Content（4）

Digtal Basics
Data Representation Basics. Representating Numbers. Representating Text. Bits and Bytes. Compression.

Mudule 2 Digital Devices（4）

Section A: Device Basics
Computers, Circuits and Chips, Components, Maintenance
Section B: Device Options
Enterprise Computers, Personal Computers, Niche Devices, Choosing a Digital Device
Section C: Processors and Memory
Microprocessors, How Processors Work, Performance, Random Access Memory, Read-only Memory
Section D: Storage

Storage Basics, Magnetic Storage Technology, Optical Storage Technology, Solid State Storage Technology, Cloud Storage, backup
Section E: Input and output
Add-on Gadgets, Expansion Ports, ...

Digital Logic (16),

Mudule 3 Network（4）

Section A: Network Basics
Communication Systems, ...
Section B: The Internet
Background, Internet Infrastructure, Packets, Internet Addresses, Domain Names
Section C: Internet Acccess
Connection Basics, ...
Section D: Local Area Networks
LAN Basics, ...
Section E: File Sharings
File Sharing Basics, ...

Mudule 4 The Web（4）

Section A: Web Basics
Web Overview, Evolution, Web Sites, Hypertext Links, URLS
Section B: Browsers
Browser Basics, Customization, Browser Cache
Section C: HTML
HTML Basics, ...
Section D: HTTP
HTTP Basics, ...
Section E: Search Engine
Search Engine Basics, ...

Mudule 5 Socail Media（4）

Section A: Social Networking
The Social Media Mix, ...
Section B: Content Communities
Evolution, ...
Section C: Blogs and More
Blogs, Microblogs, Wikis
Section D: Online Communication
Communication Matrix, Email, Online Chat, Voice and Video over IP
Section E: Social Media Values
Identity, Reputation, Privacy

Mudule 6 Software（4）

Section A: Software Basics

Section E: Big Data
Big Data Basics, Big Data Analytics, Big Data Analytics

Mudule 10 Programing（4）

Section A: Program Development
Programming Basics, ...
Section B: Programming Tools
Language Evolution, ...
Section C: Procedural Programming
Algorithms, ...
Section D: Object-Oriented Programs
Objects and Classes, ...
Section E: Declarative Programming
The Declarative Paradigm, ...

Grades

Assignment	20 %
Practice	20% (8 credit hours of practice about WPS/Microsoft office)
1 Review Quiz	20 % (Open book, 10% each)
1 Final exam	40 % (Open book, Final Week)