INTRODUCTION TO INFORMATION TECHNOLOGY
CSIT 1110

Class Hours: 3.0  Credit Hours: 4.0
Laboratory Hours: 3.0  Revised: Spring 2011

NOTE: This course is not intended for transfer credit.

Catalog Course Description:

A first course in computer science and information technology, providing a comprehensive overview of computer architecture, data organization and communication. This course includes problem solving, logic design, personal computing, operating systems and application software.

Entry Level Standards:

The entry level student is not expected to have familiarity with computers. The student should be able to use a standard keyboard and maintain 28 words per minute error-free typing rate. The student must have writing, verbal and English language skills at the college entry level.

Prerequisites/Corequisites: None

Textbook(s) and Other Course Materials:

The text will be supplied as a series of free PDF documents.

I. Week/Unit/Topic Basis:

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<th>Week</th>
<th>Topic</th>
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<td>Introduction and History</td>
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<td>Information and Binary</td>
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<td>3</td>
<td>Hardware</td>
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<td>Exam 1 - Foundational Topics</td>
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II. Course Goals*

The course will:

A. Enhance student understanding of the history of computer technology and the role it plays in daily life. (II, III, X)

B. Provide students with an understanding of the types of information processed by computers and how this information is encoded using numbers. (II, III)

C. Lead students to an understanding of the binary number system and how information is encoded in binary on computer systems. (II, III)

D. Expand student knowledge of history and role of switching technologies in computer hardware. (II, III, IV)

E. Provide students with an understanding of the evolution of programming languages through discussion of the various programming language generations. (I, II, III, IV, V, VI, VII)

F. Enhance student awareness of the history and functionality of operating system software. (II, III, IV)

G. Expand student understanding of the Internet through a discussion of the client-server architecture, protocols, URLs and HTTP. (II, III)

H. Enhance the ability of students to communicate effectively via the web through the use of HTML and discussions concerning web page design. (I, II, III, IV, V, VI, IX, XI, XII)

I. Provide a basic understanding of network communication hardware. (II, III)

J. Expand student awareness of the history and importance of database management systems. (II, III, IX)

K. Provide students with a basic introduction to Structured Query Language (SQL). (II, III, IV, V, VI, IX)

L. Introduce students to the software development process and discuss the importance of planning and design in the creation of computer software. (II, III, V, VII, X)

M. Expand student understanding of programming languages through the creation of computer software. (II, III, IV, V, VI)

N. Provide students with a framework for learning computer languages through a discussion of the archetypal operations of computer languages. (II, III, VI, X, XI)

O. Enhance student awareness of the various types of malware and other computer security related issues. (II, III, V)
P. Expand student knowledge of various types of computer hacking in order to be able to defend against such attacks. (II, III, V, XII)

Q. Enhance student knowledge of the field of robotics including the history of robots, the difficulties of programming robots, and the current state of the art. (II, III, IV, V, VI, VII, IX, X, XII)

R. Introduce students to the field of Cybernetics. (II, III, XI)

S. Enhance student knowledge of the field of Artificial Intelligence through discussions of neural networks and genetic algorithms. (II, III, V, VI, IX, XI, XII)

T. Expand student awareness of the importance of virtual reality and gaming and of its role in shaping future technology. (II, III, IV, V, VI, VII, X, XII)

U. Enhance student perception of the ubiquity of computer technology and its role in changing and shaping modern culture. (II, III)

V. Expand student knowledge and proficiency in using social media. (I, II, X, XII)

*Roman numerals after course objectives reference goals of the CSIT program.

III. Expected Student Learning Outcomes*

The student will be able to:

1. Intelligently discuss the history of computer technology. (A)

2. List the sequence of computer hardware switching technologies and discuss their advantages over previous hardware along with any inherent weaknesses. (A, D)

3. List the sequence of computer language generations and analyze their differences. (A, E)

4. Describe the computer language translation processes of assembly, interpretation and compilation. (A, E)

5. Describe how any type of information might be encoded as a series of numbers. (B)

6. Convert decimal numbers to binary and visa versa. (C)

7. Analyze a simple assembly language program and understand how it is converted to machine code and then executed. (A, E)

8. List the major functions of an operating system. (F)

9. Create a simple web page in HTML using only a text editor. (G, H)

10. Upload a web page to a web server. (G, H)

11. Describe how static and dynamic web page URLs are processed. (H, I)

12. Describe how routers work with TCP/IP to move information from source to destination. (G, I)

13. List the primary advantages of a database management system over older flat-file systems. (J)

14. Recognize the basic SQL data manipulation statements and describe the purpose of simple SQL statements. (K)
15. Create a simple program in MIT’s Scratch visual programming environment. (L, M, N)
16. Describe common security attacks and the best way to defend against them. (O, P)
17. Discuss how viruses, worms and other malware attack computer systems. (O, P)
18. Discuss the general history of robotics including knowledge of current work in the field. (Q)
19. Program the Lego Mindstorm NXT robots. (M, Q)
20. Describe the “Cybernetic Loop” and its importance in the field of robotics. (R)
21. Describe how a neural network is trained. (S)
22. Describe how a computer program can be “evolved” using a genetic algorithm. (S)
23. Discuss the importance of computer gaming as a test bed for state of the art computer science and as a platform for simulation-based training. (T)

* Capital letters after Expected Student Learning Outcomes reference the course goals listed above.

IV. Evaluation:

A. Testing Procedures: 33% of grade

3 Non-comprehensive exams @ 100 points each = 300 total points

B. Laboratory Expectations: 18% of grade

8 laboratory assignments @ 15 points each = 180 total points

C. Field Work: 35% of grade

8 assignments for a total of 350 points

D. Other Evaluation Methods: 17% of grade

11 blog entries for a total of 170 points

E. Grading Scale:

A > 900
B - 800 - 899
C - 700 - 799
D - 600 - 699
F < 600

V. Policies:

A. Attendance Policy:

Pellissippi State expects students to attend all scheduled instructional activities. As a minimum, students in all courses (excluding distance learning courses) must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with the approval of the vice president of the Learning Division, may have requirements that are more stringent. In very specific circumstances, an appeal of the policy may be addressed to the head of the department in which the course was taken. If further action is
warranted, the appeal may be addressed to the vice president of the Learning Division.

B. Academic Dishonesty:

Academic misconduct committed either directly or indirectly by an individual or group is subject to disciplinary action. Prohibited activities include but are not limited to the following practices:
• Cheating, including but not limited to unauthorized assistance from material, people, or devices when taking a test, quiz, or examination; writing papers or reports; solving problems; or completing academic assignments.
• Plagiarism, including but not limited to paraphrasing, summarizing, or directly quoting published or unpublished work of another person, including online or computerized services, without proper documentation of the original source.
• Purchasing or otherwise obtaining prewritten essays, research papers, or materials prepared by another person or agency that sells term papers or other academic materials to be presented as one’s own work.
• Taking an exam for another student.
• Providing others with information and/or answers regarding exams, quizzes, homework or other classroom assignments unless explicitly authorized by the instructor.
• Any of the above occurring within the Web or distance learning environment.

C. Accommodations for disabilities:

Students who need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated should inform the instructor immediately, privately after class or in her or his office. Students must present a current accommodation plan from a staff member in Services for Students with Disabilities (SSWD) in order to receive accommodations in this course. Services for Students with Disabilities may be contacted by going to Goins 127, 132, 134, 135, 131 or by phone: 539-7153 or TTY 694-6429. More information is available at www.pstcc.edu/departments/swd/.

D. Other Policies:

Computer Usage Guidelines:
College-owned or -operated computing resources are provided for use by students of Pellissippi State. All students are responsible for the usage of Pellissippi State's computing resources in an effective, efficient, ethical and lawful manner.

Students are expected to promptly attend all lecture and lab classes as assigned. If a class is missed, student must make up all work and get notes and/or handouts.