William Paterson University of New Jersey
Department of Computer Science
College of Science and Health
Course Outline

1. <u>TITLE OF COURSE AND COURSE NUMBER</u>: Computer and Information Technology for Educators; CS215; Credits: 3 (cannot be used to fulfill the CS major requirement – Elementary and Early Childhood Education students can bypass this course if they get at least 60 % on the concept and the hands-on parts of this course test-out exam)

2. <u>DESCRIPTION OF THE COURSE</u>: This course is designed to meet the ISTE National Educational Technology Standards for Teachers. It introduces the concepts, the skill, and the capabilities necessary to effectively use computers and information technology. With an emphasis on fundamentals, students can easily adapt to the rapid change of computing technologies. The basic concepts include hardware and software fundamentals, telecommunications computer networking, electronic media, and data processing. The legal, ethical, cultural, and societal issues related to technology are also discussed.

3. <u>COURSE PREREQUISITES</u>: None

4. <u>COURSE OBJECTIVES</u>: To introduce the skills, the concepts, and the capabilities necessary to effectively use computers and information technology.

5. <u>STUDENT LEARNING OUTCOMES</u>:

   Upon completion of this course, a prospective student will be able to do the following:
   1. Demonstrate a sound understanding of technology concepts, systems, and operations. (T1)
   2. Demonstrate proficiency in the use of common input and output devices; solve routine hardware and software problems; and make informed choices about technology systems, resources, and services. (T1)
   3. Use a variety of technologies to access, evaluate, collect, and mange data, information, and datasets. (T2)
   4. Use technology tools to process data and reports results. (T2)
   5. Use technology tools and resources for managing and communicating information (e.g., finances, schedules, addresses, purchases, and correspondence). (T2)
   6. Evaluate and select new information resources and technological innovations based on their appropriateness to specific tasks. (T1)
   7. Use a variety of media and formats, including telecommunications, to collaborate, publish, and interact with peers, experts, and other audiences. (T2)
   8. Understanding the impact of technology on themselves, their culture, their environment, and their society. (T3)
   9. Practice legal and ethical behaviors in the context of technology. (T4)
   10. Exhibit positive attitudes towards technology uses that support lifelong learning, collaboration, personal pursuits, and productivity. (T3)
   11. Discuss diversity issues related to electronic media. (T3)
   12. Discuss the health and safety issues related to technology use. (T3)

6. <u>TOPICAL OUTLINE OF THE COURSE CONTENT</u>:

1. Introduction to Computers
   a. What is a Computer?
   b. The Components of a Computer
   c. Advantages and Disadvantages of Using Computers
   d. Networks and the Internet
   e. Computer Software
   f. Categories of Computers
   g. Examples of Computer Usage
   h. Computer Applications in Society
   i. Hands-on Exercises:
      - Learn How To: use the book online companion.
      - Using Google Maps.
2. Using Storage to Hold Information
   a. Storage Media and Drives
   b. Files and Folders
   c. My Computer
   d. How to Create a New Folder?
   e. Path Name of a File or Folder.
   f. Performing Tasks on Files/Folders
   g. Printing a File
   h. Compressing Files
   i. Extracting Files from a Compressed Folder
3. The Internet and the World Wide Web
   a. The Internet
   b. The World Wide Web
   c. Other Internet Services
   d. Netiquette
   e. Hands-on Exercises:
      - How to change a Web browser's.
      - Learn How To 2: How to search the Web for driving directions, addresses, and telephone numbers (using MapQuest).
      - Web Research: Search Sleuth and Blogs.
      - Web exercises: Research Web Exercise and Blogs Web Exercises.
      - Extra Credits: Exercises on social network, travel, environment, finance, etc.
4. Using Blogger to Create a Blog.
5. Using Audacity to Create Podcasts.
6. Application Software
   a. The Role of System Software
   b. Working with Application software
   c. Business Software
   d. Graphics and multimedia software
   e. Software for home, personal, and educational use
   f. Web Applications
   g. Application software for communications
   h. Learning Tools for Application Software
7. Microsoft Word
   a. Word Document Window
   b. Typing with Word; Font and Font Size; Saving/Opening a Word Document; Font Styles and Colors

     c.   Changing the Margins of a Document; Typing Paragraphs: formatted Marks, indentations and numbered/bulleted list
     d.   The Undo and Redo Commands; Page Numbers, Footers, and Headers; Page Breaks; Viewing a Word Document.
     e.   Changing the Tab Settings; Creating Newsletter-Style Columns.
     f.   Inserting Clip Art into a Document; Inserting and Creating tables.

8. The Components of the System Unit
   a. The system unit
   b. The Processor
   c. Data Representation
   d. Memory
   e. Expansion slots and adapter cards
   f. Ports and connectors
   g. Buses; Bays; Power Supply
   h. Mobile computers and devices
   i. Learn How To 1: Purchase Memory for a Computer.

9. Input and Output
   a. Introduction
   b. Keyboard and pointing devices; Touch screens and sensitive pads; Pen input; Other types of input
   c. Display devices; Printers; Other output devices; I/O devices for physically challenged users
   d. Digital Video Technology
   e. Extra Credit: Learn How To 1: Make a Video and Upload it To YouTube.

10. Storage
    a. Hard disks; Flash memory storage; Cloud storage; Optical discs
    b. Other types of storage
    c. Hands-on Exercises: Maintaining a hard disk

11. Operating Systems and Utility Programs
    a. System software and Operating systems
    b. Operating system functions; Types of operating systems; Utility programs
    c. Hands-on Exercises:
    - Learn How To 1: Burn Files to an Optical Disc
    - Learn How To 2: Keep Windows Up-to-Date
    - How to purchase computers and mobile devices

12. Communications and Networks
    a. Uses of computer communications
    b. Networks; Communication software
    c. Communication over the telephone network
    d. Communication devices
    e. Home Networks; Communication channel
    f. Physical transmission media; Wireless transmission media
    g. Hands-on Exercises: Set up and install a WI-FI home network

13. Database Management
    a. Database, data, and information
    b. The hierarchy of data; Maintaining data; File processing versus databases
    c. Database management systems; Web databases

14.   Computer Security and Safety, Ethics, and Privacy
    a. Computer security risks; Internet and network attacks; Unauthorized access and use
    b. Hardware theft and vandalism; Software theft; Information theft; System failure
    c. Backing-up – the ultimate safeguard; Wireless security

    d. Health concerns of computer use

    e. Ethics and society

    f. Information privacy

    g. Hands-on Exercises: Learn How To 1: Backing up files on an offsite internet server

15. Electronic Spreadsheet Using Excel

    a. Introduction to Microsoft Office Excel 2007

    b. Worksheet Window

    c. Workbooks and Worksheets

    d. Types of Data

    e. Manually Changing a Column Width or a Row Height

    f. Range of Cells: Copying Cells and Relative/Absolute Cell Address

    g. Saving and Printing in Excel; Deleting/Inserting a Row or a Column

    h. Formatting a Worksheet: Numeric Data, Alignment of Cell Contents; Text Wrapping; Merging and Centering Text; Font; Adding Borders to Cells; Displaying the Formula Version of a Worksheet; Changing the Column Width or the Row Height.

    i. Functions: Function Library; Listing Functions; Entering a Function into a Cell.

    j. Sorting the Data in a Worksheet; Freezing the Column and the Row Titles

    k. Creating a Chart in Excel

16. Introduction to Power Point

    a. PowerPoint 2007 Window

    b. PowerPoint Presentation: Document (presentation) Window

    c. Editing Text; Inserting Items into a Slide

    d. PowerPoint Views

    e. The Slider Show View: Design Themes; Slide Transition

    f. Printing Tips

7. <u>GUIDELINES/SUGGESTIONS FOR TEACHING METHODS AND STUDENT LEARNING ACTIVITIES</u>:

- Brief presentations of theory, lectures, and demonstrations followed by intensive hands-on PC sessions characterize this course. Students get to discuss strategies and work in-groups in the development process.
- Projects supplement and reinforce these learning activities.
- Projects are assigned for students to develop the skills and capabilities of using computers and information technology. These are started in class but the majority of the effort will be in the labs after class hours.
- Readings are assigned and Internet inquiries are formulated to give students current knowledge of the field.

8. <u>GUIDELINES/SUGGESTIONS FOR METHODS OF STUDENT ASSESSMENT (OUTCOMES)</u>:

- Ten chapters of the book constitute the concept part of the course. At the end of each of these chapters, students are given a multiple- choice homework of forty questions. About twenty five of these questions are then selected for the quiz on the chapter. Ten questions from each of the ten quizzes are later randomly selected to make up the concept part of the final exam. A grade of at least 60% on the concept part of the final exam is required to pass the class.

- The hands-on activities discussed in class are followed in the book by hands-on exercises and

assignments that students have to complete at home. Students' understanding of the semester's most important topics (in Word, Excel, PowerPoint, and Tasks integration) is assessed by an end-of-semester capstone project. The hands-on part of the final exam consists of an exercise on files/folders, Word, Excel, PowerPoint, Web search, and blog. A grade of at least 60% on the hands-on part of the final exam is required to pass the class.

9. <u>SUGGESTED READINGS, TEXTS, OBJECTS OF STUDY</u>:

G.B. Shelly, T.J. Cashman, M.E. Vermaat, G. Ndjatou, *Discovering Computers Fundamentals 2011 Edition*, Cengage Learning, 2011.

G.B. Shelly, T.J. Cashman, M.E. Vermaat, *Discovering Computers 2011: A Gateway to Information, Complete*, Course Technology, 2011.

Shelly, Cashman, Gunter, Gunter, *Teachers Discovering Computers: Integrating Technology in the Classroom, 2011 Edition*, Course Technology, 2011.

B. Daley, M. Wood, <u>Computers Are Your Future 2006 (complete), 8/E</u>, Prentice Hall, 2006.

A. Evans, K. Martin, M Ann Poatsy, <u>Technology in Action-Complete, 2/E,</u> Prentice Hall, 2006.

10. <u>BIBLIOGRAPHY OF SUPPORTIVE TEXTS AND OTHER MATERIALS</u>:

11. <u>PREPARER'S NAME AND DATE</u>: Gilbert Ndjatou, February 11, 2005

12. <u>ORIGINAL DEPARTMENTAL APPROVAL DATE</u>: Fall 2004

13. <u>REVISERS' NAME AND DATE</u>: Gilbert Ndjatou, November 12, 2010

14. <u>DEPARTMENTAL REVISION APPROVAL DATE</u>: November 15, 2010