

**IS102: TECHNOLOGIES FOR INFORMATION RETRIEVAL  
FALL 2009 – SECTION 002  
DELIVERY METHODOLOGY Asynchronous Distance Education  
(ADE)**

**Instructor**

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**Course Description**

(3) Principles, selection and use of computer-based information management applications; software identification and task appropriate uses; telecommunications, utilities, and memory management systems; multiple operating systems and technology for national network connections.

**Course Objectives**

Students who complete successfully IS102 will be able to understand:

- ◆ Computer system components and hardware devices;
- ◆ Application software and Operating systems;
- ◆ Data communications and networks, including the Internet;
- ◆ Information systems development and programming languages;
- ◆ Web 2.0 and Internet searching;
- ◆ Computer security; and
- ◆ Legal and ethical uses of computer and communications technology.

**Teaching Method**

This section of IS102 will be delivered by asynchronous distance education (ADE), which means that each student will access each week's class sessions at a time of his or her choosing, during the course of that week. UT is beginning to offer ADE courses for undergraduate classes, in order to help students cope with balancing their busy schedules of classes, homework, jobs, and extracurricular activities. In addition, ADE-delivered courses prepare students for future experiences in the 21<sup>st</sup> century workplace, where online ADE-type methods are often used for continuing education, advanced certification, and professional development courses. By taking this class, you will be gaining both greater flexibility in managing your time, and valuable experience with this alternative learning environment.

UT and the School of Information Sciences (SIS) have successfully used distance education to deliver graduate classes for many years. IS102 is one of two ADE courses offered this semester in the SIS undergraduate minor program. It is important to recognize that taking an ADE class is different from a traditional class, or even a synchronous DE class, where everyone attends online at the same time. There are a few simple guidelines to follow (listed below), which will ensure that you have a successful and satisfying ADE experience; some of these are directed at me, as your instructor, and some are all about you, as the student.

### **ADE Success Guidelines for Students:**

**Accept that you must be more self-reliant in an ADE class:** Although students are always **responsible** for knowing everything in the syllabus and complying with the requirements of a course, this is especially true for ADE. Students are expected to show self-initiative, to make good time management decisions, and to be especially proactive in contacting the instructor when they are having problems, or don't understand something.

**Keep up with the weekly schedule outlined below:** Enjoy attending class at 2am, wearing your pajamas, from a hotel room half way across the world, if you wish, but don't abuse the schedule flexibility by falling behind, just because the class doesn't meet at the same times each week. **THE SINGLE BIGGEST MISTAKE ADE STUDENTS CAN MAKE IS TO PUT OFF VIEWING THE CLASSES AND ALLOW THE WORK TO PILE UP.**

**Put extra effort into all opportunities for interaction with your classmates and instructor:** We will be using the online discussion board, blog tool, and other electronic means to interact as a class. Many students are very comfortable with interacting through electronic media like Facebook or G-chat, but whether you are or not, believe me that we can have meaningful discussions, and question and answer sessions, even though we will not be together at the same time, as long as you do your part to participate.

### **Contacting Me**

I'm here to help – so always feel free to ask questions or share ideas! For an ADE class, it is especially important that you contact me if you need help, or clarification about the course material or assignments. You may drop in during my office hours, or we can set up an appointment at another time that

is more convenient for you. E-mail is the sure-fire way to contact me. I believe e-mail is an excellent communication tool, and I check mine on a very regular basis. What I like about e-mail is that it is 24/7; that means you can ask a question when it's fresh on your mind – 24 hours a day, 7 days a week. I've set my mail to sort incoming messages; so to assure a quicker response from me always start your message subject line with IS102. I'll usually answer within 24-48 hours, but I'll often get back to you even faster!

### **course communications**

To take this course, you must have access to a computer with high speed Internet access, and you need to have a UTK email account. You may use your own personal computer, or you may use the computers available in the various campus libraries or computer labs.

LiveOnline (also known as Centra) is the software used to deliver DE courses at UT. It is available at <http://liveonline.utk.edu> . Prior to the start of class, I will send you an email with more detailed instructions about how to use LiveOnline to access the class sessions.

The Online @ UT program, also known as Blackboard, will be used for many course management tasks. We will use interaction tools such as the Discussion Board and blog tool, and the Course Materials link for the posting of information about assignments. You will also use the Digital Dropbox feature to turn your assignments in. Blackboard is available at <http://online.utk.edu> .

**(I will like to thank: Karen J. "Kitty" McClanahan for writing the previous sections)**

#### **To summarize:**

1. Remember to check blackboard several times a week (<http://online.utk.edu> )
2. Remember to check your email daily
3. Readings, exercises and tests will be posted in blackboard.
4. I will post the links of my CENTRA (LiveOnline) lectures on Blackboard every week. Make sure you watch them. You will be invited to participate live; this is up to you. **What is required and mandatory is that you watch each week's lecture on playback.**
5. We will be using blackboard's discussion board, participation is mandatory and will be graded.

6. Assignments and tests must be turn in on time!

### **Disabilities**

Please contact the Office of Disability Services at 191 Hoskins Library at 865.974.6087 if you need course adaptations or accommodations. They will work with you to arrive at the appropriate program and register you for services. Also contact me so we can talk about solutions.

### **Academic Honesty at the University of Tennessee**

- Please refer to current academic year's edition of the *Hilltopics Student Handbook* concerning issues of academic integrity—a topic of utmost importance and central to the research values espoused in this class. If you would like a print copy of *Hilltopics*, the instructor will provide you with one.
- Cheating and plagiarism (using another's work without proper attribution) violate the spirit of the university and are contrary to the conduct of legitimate research. Acts of academic dishonesty will not be tolerated in this class and will be held subject to penalties prescribed by the University of Tennessee—including possible expulsion from the University (please refer to *Hilltopics* p. 12 for details). What constitutes plagiarism will be discussed in class, but feel free to ask the instructor any questions concerning the subject.

### **Required Readings**

Textbook:

Shelly, G. B. & Vermaat, M. E. (2010). *Discovering computers 2010: Living in a digital World*. Boston: Course Technology, Cengage Learning.

ISBN-13:978-0-324-78646-0

ISBN-10:324-78646-8

**Note:**

**There will be required readings, exercises and tests posted weekly in blackboard**

### Assignments/Evaluative Criteria

<b>Activity</b>	<b>%</b>	<b>Points</b>
<b>TEST 1</b>	<b>5%</b>	<b>50</b>
<b>TEST 2</b>	<b>10%</b>	<b>100</b>
<b>TEST 3</b>	<b>10%</b>	<b>100</b>
<b>TEST 4</b>	<b>10%</b>	<b>100</b>
<b>MIDTERM</b>	<b>20%</b>	<b>200</b>
<b>FINAL EXAM</b>	<b>20%</b>	<b>200</b>
<b>PARTICIPATION</b>	<b>10%</b>	<b>100</b>
<b>EXERCISE 1</b>	<b>5%</b>	<b>50</b>
<b>EXERCISE 2</b>	<b>5%</b>	<b>50</b>
<b>EXERCISE 3</b>	<b>5%</b>	<b>50</b>
<b>TOTAL</b>	<b>100%</b>	<b>1000</b>

<b>Letter Grade</b>	<b>%</b>
A	94-100
A-	88-93
B+	85-87
B	82-84
B-	78-81
C+	75-77
C	72-74
C-	68-71
D+	65-67
D	62-64
D-	58-61
F	BELOW 58

<b>Remember:</b>
1. Tests, exercises, midterm and final exam will be posted in blackboard in the week posted below.
2. Question types will be: true/false, multiple choice, matching, essay and case.
3. The Midterm will cover first half material from chapter 1 to chapter 7.
4. Final exam will cover from chapter 8 to week 14.
5. Tests, exercises, midterm and final exam have to be turn in time in the dates indicated below in electronic format using the blackboard's digital drop box or by email.
6. Late assignments will be automatically downgraded by a letter grade per day, no exceptions.

<b>Important dates:</b>	
Classes Begin.....	August 19, 2009
TEST 1 due date.....	SEPTEMBER 04 2009
EXERCISE 1 due date.....	SEPTEMBER 11 2009
TEST 2 due date.....	SEPTEMBER 18 2009
EXERCISE 2 due date.....	OCTOBER 02 2009
MIDTERM due date.....	OCTOBER 09 2009
TEST 3 due date.....	OCTOBER 23 2009
EXERCISE 3 due date.....	NOVEMBER 06 2009
TEST 4 due date.....	NOVEMBER 13 2009
FINAL EXAM due date.....	DECEMBER 04 2009
Classes End.....	December 1, 2009

## Schedule

### WEEK 1 – August 19 to 28

#### Chapter 1: Introduction to computers

- Explain why computer literacy is vital to success in today's world
- Define the term, computer, and describe the relationship between data and information
- Describe the five components of a computer: input devices, output devices, system unit, storage devices, and communications devices
- Discuss the advantages and disadvantages users have when working with computers
- Define the term, network, and identify benefits of sharing resources on a network
- Discuss the uses of the Internet and World Wide Web
- Distinguish between system software and application software
- Differentiate among types, sizes, and functions of computers in each of these categories: personal computers (desktop), mobile computers and mobile devices, game consoles, servers, mainframes, supercomputers, and embedded computers
- Describe the role of each element in an information system
- Explain how home users, small office/home office users, mobile users, power users, and enterprise users each interact with computers
- Discuss how society uses computers in education, finance, government, health care, science, publishing, travel, and manufacturing

### WEEK 2 – September 01 to 04

#### Chapter 2: The Internet and the World Wide Web

- Discuss the evolution of the Internet
- Identify and briefly describe various broadband Internet connections and state differences between broadband Internet connections and dial-up connections
- Describe the types of Internet access providers: Internet service providers, online service providers, wireless Internet service providers
- Describe the purpose of an IP address and its relationship to a domain name
- Explain the purpose of a Web browser and identify the components of a Web address
- Describe how to use a search engine to search for information on the Web and differentiate between a search engine and a subject directory
- Describe the types of Web sites: portal, news, informational, business/marketing, blog, wiki, online social network, educational, entertainment, advocacy, Web application, content aggregator, and personal
- Explain how Web pages use graphics, animation, audio, video, virtual reality, and plug-ins
- Identify and briefly describe the steps required for Web publishing
- Describe the types of e-commerce: business-to-consumer, consumer-to-consumer, and business-to-business

- Explain how e-mail, mailing lists, instant messaging, chat rooms, VoIP, newsgroups and message boards, and FTP work
- Identify the rules of netiquette

## **TEST 1 due date: SEPTEMBER 04 2009**

### WEEK 3 – September 07 to 11

#### Chapter 3: Application software

- Identify the four categories of application software
- Differentiate among the seven forms through which software is available: packaged software, custom software, Web application, open source software, shareware, freeware, and public-domain software
- Explain how the operating system and utility programs work with application software
- Describe characteristics of a user interface
- Identify the key features of widely used business programs: word processing, spreadsheet, database, presentation, note taking, personal information manager, business software for phones, business software suite, project management, accounting, document management, and enterprise computing
- Identify the key features of widely used graphics and multimedia programs: computer-aided design, professional desktop publishing, professional paint/image editing, professional photo editing, professional video and audio editing, multimedia authoring, and Web page authoring
- Identify the key features of widely used home, personal, and educational programs: personal finance, legal, tax preparation, personal desktop publishing, personal paint/image editing, personal photo editing and photo management, clip art/image gallery, personal video and audio editing, travel and mapping, reference and educational, and entertainment
- Discuss the advantages of and ways to access Web applications
- Identify the types of application software used in communications
- Describe the learning aids available for application software

## **EXERCISE 1 due date: SEPTEMBER 11 2009**

### WEEK 4 – September 14 to 18

#### Chapter 4: The components of the system unit

- Differentiate among various styles of system units on desktop computers, notebook computers, and mobile devices
- Identify chips, adapter cards, and other components of a motherboard
- Describe the control unit and arithmetic logic unit components of a processor, and explain the four steps in a machine cycle
- Identify characteristics of various personal computer processors on the market today, and describe the ways processors are cooled
- Define a bit and describe how a series of bits represents data

- Explain how program instructions transfer in and out of memory
- Differentiate among the various types of memory: RAM, cache, ROM, flash memory, and CMOS
- Describe the purpose and types of expansion slots and adapter cards, and differentiate among slots for various removable flash memory devices
- Differentiate between a port and a connector, and explain the differences among a USB port, FireWire port, Bluetooth port, SCSI port, eSATA port, IrDA port, serial port, and MIDI port
- Describe the types of buses in a computer: front-side bus, backside bus, and expansion buses (PCI bus, PCIe bus, AGP, USB, FireWire bus, and PC Card bus)
- Explain the purpose of a power supply and describe how it keeps cool
- Understand how to clean a system unit on a computer or mobile device

## **TEST 2 due date: SEPTEMBER 18 2009**

### WEEK 5 – September 21 to 25

#### Chapter 5: Input

- Define input and differentiate among a program, command, and user response
- Identify the keys and buttons commonly found on desktop computer keyboards, and describe how keyboards for mobile computers and devices differ from desktop computer keyboards
- Describe different mouse types and explain how to use a mouse
- Describe various types of touch screens and explain how a touch-sensitive pad works
- Describe various types of pen input, and identify other types of input for smart phones
- Summarize the purpose of various game controllers: gamepads, joysticks and wheels, light guns, dance pads, and motion-sensing game controllers
- Explain how resolution affects the quality of a picture captured on a digital camera
- Describe the uses of voice recognition, Web cams, and video conferencing
- Discuss how various scanners and reading devices work: optical scanners, optical readers, bar code readers, RFID readers, magnetic stripe card readers, MICR readers, and data collection devices
- Summarize the various biometric devices: fingerprint reader, face recognition system, hand geometry system, voice verification system, signature verification system, and iris recognition system
- Discuss how POS terminals, automated teller machines, and DVD kiosks work
- Identify alternative input devices for physically challenged users

### WEEK 6 – September 28 to October 02

#### Chapter 6: Output

- Describe the types of output: text, graphics, audio, and video
- Explain the characteristics of various display devices: LCD monitors, LCD screens, plasma monitors, and CRT monitors

- Describe the factors that affect the quality of an LCD monitor or LCD screen: resolution, response time, brightness, dot pitch, and contrast ratio
- Describe various ways to print
- Differentiate between a nonimpact printer and an impact printer
- Summarize the characteristics of ink-jet printers, photo printers, laser printers, multifunction peripherals, thermal printers, mobile printers, label and postage printers, and plotters and large-format printers
- Describe the uses and characteristics of speakers, headphones, and earbuds
- Identify the purpose and features of data projectors, interactive whiteboards, force-feedback game controllers and tactile output
- Identify output options for physically challenged users

## **EXERCISE 2 due date: OCTOBER 02 2009**

### WEEK 7 – October 05 to 09

#### Chapter 7: Storage

- Differentiate between storage devices and storage media
- Describe the characteristics of an internal hard disk including capacity, platters, read/write heads, cylinders, sectors and tracks, revolutions per minute, transfer rate, and access time
- Discuss the purpose of network attached storage devices, external and removable hard disks, and hard disk controllers
- Describe the various types of flash memory storage: solid state drives, memory cards, USB flash drives, and ExpressCard modules
- Describe cloud storage and explain its advantages
- Describe the characteristics of optical discs
- Differentiate among various types of optical discs: CDs, archive discs and Picture CDs, DVDs, and Blu-ray Discs
- Identify the uses of tape, magnetic stripe cards, smart cards, and microfilm and microfiche, and enterprise storage

## **MIDTERM due date: OCTOBER 09 2009**

### WEEK 8 – October 12 to 16

#### Chapter 8: Operating systems and utility programs

- Define system software and identify the two types of system software
- Describe each of these functions of an operating system: starting and shutting down a computer, providing a user interface, managing programs, managing memory, coordinating tasks, configuring devices, establishing an Internet connection, monitoring performance, providing file management and other utilities, updating automatically, controlling a network, and administering security
- Summarize the startup process on a personal computer

- Summarize the features of several stand-alone operating systems: Windows, Mac OS, UNIX, and Linux
- Briefly describe various server operating systems: Windows Server, UNIX, Linux, Solaris, and NetWare
- Summarize the features of several embedded operating systems: Windows Embedded CE, Windows Mobile, Palm OS, iPhone OS, Blackberry, Embedded Linux, and Symbian OS
- Explain the purpose of several utility programs: file manager, search utility, image viewer, uninstaller, disk cleanup, disk defragmenter, backup and restore utilities, screen saver, personal firewall, antivirus programs, spyware and adware removers, Internet filters, file compression, media player, disc burning, and personal computer maintenance

## WEEK 9 – October 19 to 23

### Chapter 9: Communications and networks

- Discuss the purpose of the components required for successful communications (sending device, communications device, communications channel, and receiving device) and identify various sending and receiving devices
- Describe these uses of computer communications: wireless messaging services, wireless Internet access points, cybercafés, global positioning systems, collaboration, groupware, voice mail, and Web services
- List advantages of using a network, and differentiate among LANs, MANs, and WANs
- Differentiate between client/server and peer-to-peer networks, and describe how a P2P networks works
- Differentiate among a star network, bus network, and ring network
- Describe the various network communications standards: Ethernet, token ring, TCP/IP, Wi-Fi, Bluetooth, UWB, IrDA, RFID, WiMAX, and WAP
- Explain the purpose of communications software
- Describe various types of lines for communications over the telephone network: dial-up, ISDN, DSL, FTTP, T-carrier, and ATM
- Describe commonly used communications devices: dial-up modems, digital modems, wireless modems, network cards, wireless access points, routers, and hubs and switches
- Discuss different ways to set up a home network
- Describe various physical and wireless transmission media: twisted-pair cable, coaxial cable, fiber-optic cable, infrared, broadcast radio, cellular radio, microwaves, and communications satellite

## **TEST 3 due date: OCTOBER 23 2009**

## WEEK 10 – October 26 to 30

### Chapter 10: Database management

- Define the term, database, and explain how a database interacts with data and information
- Identify the term, data integrity, and describe the qualities of valuable information
- Discuss the terms character, field, record, and file

- Describe file maintenance techniques (adding records, modifying records, deleting records) and validation techniques
- Differentiate between a file processing approach and the database approach
- Discuss the functions common to most database management systems: data dictionary, file retrieval and maintenance, data security, and backup and recovery
- Describe characteristics of relational, object-oriented, and multidimensional databases
- Explain how to access Web databases
- Identify database design guidelines and discuss the responsibilities of database analysts and administrators

## WEEK 11 – November 02 to 06

### Chapter 11: Computer security and safety, ethics, and privacy

- Describe the term, computer security risks, and briefly describe the types of cybercrime perpetrators: hacker, cracker, script kiddie, corporate spy, unethical employee, cyberextortionist, and cyberterrorist
- Describe various types of Internet and network attacks (computer viruses, worms, Trojan horses, rootkits, botnets, denial of service attacks, back doors, and spoofing), and identify ways to safeguard against these attacks, including firewalls, intrusion detection software, and honeypots
- Discuss techniques to prevent unauthorized computer access and use
- Identify safeguards against hardware theft and vandalism
- Explain the ways software manufacturers protect against software piracy
- Discuss how encryption works, and explain why it is necessary
- Discuss the types of devices available that protect computers from system failure
- Explain the options available for backing up computer resources
- Identify risks and safeguards associated with wireless communications
- Discuss ways to prevent health-related disorders and injuries due to computer use
- Recognize issues related to information accuracy, intellectual property rights, codes of conduct, and green computing
- Discuss issues surrounding information privacy, including electronic profiles, cookies, spyware and adware, spam, phishing, privacy laws, social engineering, employee monitoring, and content filtering

## **EXERCISE 3 due date: NOVEMBER 06 2009**

## WEEK 12 – November 09 to 13

### Topic: Information system development

- Discuss the importance of project management, feasibility assessment, documentation, and data and information gathering techniques
- Explain the activities performed in the planning phase
- Discuss the purpose of the activities performed in the analysis phase
- Describe the various tools used in process modeling
- Describe the various tools used in object modeling

- Explain the activities performed in the design phase
- Recognize the develop programs activity is part of the system development cycle
- Discuss the activities performed in the implementation phase
- Discuss the purpose of the activities performed in the operation, support, and security phase

## **TEST 4 due date: NOVEMBER 13 2009**

### WEEK 13 – November 16 to 20

#### Topic: Programming language and program development

- Differentiate between machine and assembly languages
- Identify and discuss the purpose of procedural programming languages, and describe the features of C and COBOL
- Identify and discuss the characteristics of these object-oriented programming languages and program development tools: Java, .NET, C++, C#, Visual Studio, visual programming languages, Delphi, and PowerBuilder
- Identify the uses of other programming languages and other program development tools: 4GLs, classic programming languages, application generators, and macros
- Describe various ways to develop Web pages, including HTML and XHTML, XML and WML, scripting languages, DHTML, Ruby on Rails, Web 2.0 development, and Web page authoring software
- Identify the uses of popular multimedia authoring programs
- List the six steps in the program development life cycle
- Differentiate between structured design and object-oriented design
- Explain the basic control structures and design tools used in designing solutions to programming problems

### WEEK 14 – November 23 to December 01

#### Topic: Enterprise computing and Computer careers and certification

- Discuss the special information requirements of an enterprise-sized corporation
- Identify information systems and software used in the functional units of an enterprise: accounting and financial systems, human resources information systems, employee relationship management systems, computer-aided design, computer-aided engineering, computer-aided manufacturing, computer-integrated manufacturing, material requirements planning, quality control systems, marketing information systems, sales force automation, distribution systems, customer interaction management software, Web site management programs, and security software
- Describe and list general purpose and integrated information systems used throughout an enterprise: office information systems, transaction processing systems, management information systems, decision support systems, expert systems, customer relationship management systems, enterprise resource planning systems, and content management systems

- Describe and list types of technologies used throughout an enterprise: portals, data warehouses, communications, extranets, Web services, service-oriented architecture, document management systems, workflow, and virtual private networks
- Describe virtualization, cloud computing, and grid computing
- Discuss the computer hardware needs and solutions for an enterprise: RAID, network attached storage, storage area networks, enterprise storage systems, blade servers, and thin clients
- Discuss high availability, scalability, and interoperability
- Determine why computer backup is important and how it is accomplished
- Discuss the steps in a disaster recovery plan
- Describe career opportunities available in these segments of the computer industry: general business and government organizations and their IT departments, computer equipment field, computer software field, computer service and repair field, computer sales, computer education and training field, and IT consulting
- Discuss functions of jobs available in an IT department
- Distinguish between trade schools and colleges
- Differentiate among various computer-related majors for college students
- Identify ways to stay current with changing technology after graduation
- List the benefits of certification for employers, employees, and vendors
- Identify ways to prepare for certification
- List the general areas of IT certification
- Name some specific IT certifications in each of these certification areas: application software, operating system, programmer/developer, hardware, networking, digital forensics, security, Internet, and database system

**FINAL EXAM due date: DECEMBER 04 2009**

The instructor reserves the right to make changes to this syllabus/schedule as and when is necessary. Such changes will be communicated to the students as soon as possible.