ISAT 121 – Installing and Upgrading Computer Systems

Instructor:	Andrew Aken			
Office:	College of Applied Sciences and Arts – ASA 117			
Office Hours:	Tuesday		12:30 pm – 2:30 pm	
	Wednesday		9:30 am – 11:30 am	
	Thursday		12:30 pm – 2:30 pm	
E-Mail:	ajaken@cba.siu.edu			
Website:	http://siu.globaleyes.com/2007-Fall/ISAT121/			
Class Time:	Section 1	M W F	8:00 – 9:20 a.m.	ASA 214
	Section 2	T Th	3:00 – 4:50 p.m.	ASA 212

Course Description:

This course introduces students to the process of installing and upgrading personal computer systems. Topics include identification, selection, and installation of hardware, operating systems, peripherals, and basic networking. Introduction to basic electrical measurements and numbering systems are also included.

Prerequisites:

IST or EST major or consent of school

Required Textbooks:

N/A

Recommended Textbooks:

A+ Guide to Managing and Maintaining Your PC, Sixth Edition, Comprehensive (978-0-619-21758-7)

Objectives:

Upon successful completion of this course, the student should be able to:

1. Identify the major components of a computer system
2. Perform relevant basic electrical measurements
3. Understand and convert between binary, hexadecimal, and decimal numbering systems
4. Select, install, and configure computer systems and components
5. Select, install, and configure an operating system
6. Troubleshoot a computer system

7. Upgrade an existing computer system
8. Establish Internet connectivity

Course Policies:

1. Class Attendance and Preparation Policy

Class preparation is strongly suggested. The instructor reserves the right to cancel any lecture when the majority of the class is unprepared or the attendance falls below 66% of the class enrollment. Course requirements will not be reduced to compensate for such cancellations. There will be many assignments and quizzes which must be completed during class time. Late submissions of these assignments will not be accepted without an excused absence.

2. Make-up Policy

Generally, students will be allowed to make-up missed exams if the absence is excused. All excused absences must be documented and approved IN ADVANCE (when applicable) and IN WRITING to the instructor.

3. Academic Dishonesty Policy

Any student who is found cheating during an examination or assists another student in cheating during an examination will automatically fail the course. The case will be forwarded to the appropriate individuals for university action. Any student caught cheating or helping a student cheat on any assignment will automatically receive a 0 on that assignment. Cheating includes, but is not limited to, crib sheets (unless approved by the instructor), copying answers from another student's exam, use of recording devices, submitting work that is not your own on individual assignments, and gaining unauthorized prior access to exams or answers.

4. Grade Appeals Policy

It is the student's responsibility to keep all graded materials that have been returned. The instructor's grades will be assumed to be accurate unless you can prove otherwise. Any student wishing to appeal a grade must submit a WRITTEN appeal indicating a complete explanation of why the student feels they deserve a different grade. Verbal grade appeals will not be accepted.

Course Grades

Lab assignments	There will be projects to be completed, usually during class time. These projects must be completed on time and no late submissions will be accepted. You must attend all classes to ensure that you can complete these assignments.	Variable	200
Written assignments	There will be several written assignments that must be completed prior to the beginning of class on the due date.	Variable	250
Quizzes	There will be several quizzes throughout the semester. Most quizzes will be announced; some may be pop quizzes.	Variable	150
Exams	There will be two exams (including the final) worth 200 points each. Specific dates will be announced at least one week in advance.	2	400
		Total	700

Grading Scale

92.0–100.0%	A
84.0–91.99%	B
76.0–83.99%	C
68.0–75.99%	D
< 67.99%	F

Class Website

Once the student information has been entered into the class website, you will be able to access your grades and student-specific information, if applicable. Your logon ID will normally be your first initial concatenated to your last name in all lower case (e.g. aaken). Your initial password will be the same as your logon ID (this can be modified once you have logged in). If you experience any problems with accessing the class website, please notify me at AJAken@AkenBros.com.

Homework Submissions:

Take home assignments are due at the start of class on the specified dates. Assignments that are turned in within 1 week of the due date will be docked 25% of the available points. Assignments turned in more than one week late, but prior to the last week of the semester will be docked 50% of the available points. All assignments must be presented in a professional manner (i.e. grammar/spelling, not hand-written, etc.). Do not procrastinate!!

For all electronic forms of Homework, you should upload them to the class' webserver. The assignment must be received **prior** to the beginning of class on the day which the assignment is due.

Topic Outline (tentative):

I. Numbering systems
   A. Decimal
   B. Binary
   C. Hexadecimal
   D. Conversions
   E. ASCII

II. Electricity and Multimeters
   A. Voltage
   B. Current
   C. The relationship between voltage & current
   D. Resistance
   E. Relationships of resistance to voltage & current
   F. Circuit fundamentals
   G. AC & DC
   H. Power
   I. Hot, neutral, & ground
   J. Safety
   K. Using a multimeter

III. Overview of Personal Computer System Hardware
   A. Input/Output (I/O) hardware
   B. Case
   C. Motherboard
   D. CPU and chip set
   E. Memory
   F. Expansion/Interface cards
   G. Storage devices
   H. Wiring (off/on, speaker, indicators)

IV. Troubleshooting Fundamentals
   A. Fundamental rules
   B. Gathering information
   C. Troubleshooting tools
   D. Field replaceable units (FRU)
   E. Safety
   F. Electro-static discharge (ESD) protection
   G. Recordkeeping

V. Power Supplies
   A. Function
   B. Ratings
   C. Form factors
   D. Selection criteria
   E. Installing
   F. Upgrading
   G. Surge protection
   H. Uninterruptible Power Supplies (UPS)
   I. Power supply measurements
   J. Troubleshooting the power system

VI. System Case
   A. Function
   B. Form factors
   C. Thermal characteristics
   D. Types
   E. Selection criteria and specification interpretation

VII. Motherboards
   A. Function
   B. Types and form factors
   C. Microprocessors
   D. Cache memory
   E. Chip sets
   F. ROM BIOS
   G. System buses
   H. Expansion slots
   I. I/O ports
   J. Clock speeds
   K. Hardware configuration and connections
   L. CMOS RAM
   M. Selection criteria and specification interpretation
   N. Upgrading
   O. Installation
   P. Expansion card installation
   Q. Troubleshooting

VIII. Motherboard RAM
- A. Function
- B. Static RAM technologies
- C. Dynamic RAM technologies
- D. Error checking and parity
- E. CAS and RAS latency
- F. Memory packaging
- G. Speeds
- H. Selection criteria and specification interpretation
- I. Upgrading
- J. Installation
- K. Troubleshooting

IX. Floppy Drives
- A. Function
- B. How data is stored
- C. Formatting
- D. Interfacing
- E. Selection criteria and specification interpretation
- F. Installation
- G. Troubleshooting

X. Operating System Fundamentals
- A. Function
- B. Types and versions
- C. The boot process
- D. Power-On Self Test (POST) and initialization
- E. Selection criteria and specification interpretation

XI. Hard Drives
- A. Function
- B. How data is stored
- C. Interfaces
- D. Selection criteria and specification interpretation
- E. Setting jumpers
- F. Physical installation
- G. CMOS settings
- H. Partitioning
- I. Formatting
- J. Installing an operating system
- K. Upgrading
- L. Optimizing performance
- M. Protecting hard drives
- N. Troubleshooting

XII. Other Storage Devices
- A. Function
- B. Interfaces
- C. CD
- D. DVD
- E. Tape drives
- F. RAID
- G. Performing backups
- H. Selection criteria and specification interpretation
- I. Installation
- J. Upgrading
- K. Troubleshooting

XIII. I/O System and Devices
- A. Function
- B. SCSI
- C. Serial ports
- D. Parallel ports
- E. USB ports
- F. IEEE 1394 (FireWire) ports
- G. Expansion slots
- H. Keyboards
- I. Pointing devices
- J. Video cards
- K. Monitors
- L. Sound cards
- M. Speakers
- N. Selection criteria and specification interpretation
- O. Installation
- P. Upgrading
- Q. Troubleshooting

XIV. Microsoft Windows
- A. Features
- B. Architecture
- C. Control panel
- D. Customizing the desktop
- E. Managing audio and video
- F. Multiple logins and remote access
- G. Installing hardware
- H. System resources
- I. Solving resource conflicts
- J. Installing applications
- K. User accounts and profiles
- L. Encrypted file system
- M. Internet connection firewall
- N. Registry definitions and organization
- O. Editing the registry
- P. System files
- Q. Initialization files
- R. MSCONFIG
- S. Updating
- T. Boot disks
- U. Automated system recovery
- V. Error messages
- W. Troubleshooting

XV. Data Communications
   A. Network control strategies
   B. Installing and configuring network interface cards (NICs)
   C. Addressing on a network

XVI. The Internet
   A. Web browsers
   B. E-mail
   C. File Transfer Protocol (FTP)

XVII. Preventative Maintenance
   A. Procedures
   B. Developing a preventative maintenance plan
   C. Moving equipment
   D. Disposing of equipment

XVIII. Professionalism
   A. Beyond technical knowledge
   B. Telephone support
   C. Planning for a good service call
   D. Making an on-site service call
   E. Recordkeeping
   F. Professional organizations and certifications

Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. Because some health and safety circumstances are beyond our control, we ask that you become familiar with the SIU-C Emergency Response Plan and Building Emergency Response Team (BERT) programs. Emergency response information is available on posters in buildings on campus, available on the BERT website at www.bert.siu.edu, Department of Public Safety's website at www.dps.siu.edu (disaster drop down) and in Emergency Response Guidelines pamphlets. Know how to respond to each type of emergency.

Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting your location. **It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency**. The Building Emergency Response Team will provide assistance to your instructor in evacuating the building or sheltering within the facility.