

CARDINAL STRITCH UNIVERSITY

MASTERS IN INSTRUCTIONAL TECHNOLOGY

CED 581: COMPUTER ARCHITECTURE

(Proposed Title: Computer Systems/Hardware) Instructor: John Sklar
3 Credits - Accelerated Format - West Bend Cohort (AMEC-AA-0016)

Instructor Information

Instructor: John M. Sklar, MS
Dept. Mail Box: Department of Instructional Technology – Dept. Mail Box: 202
Home Phone: 262-512-0373
Cell Phone: 262-227-3805
CSU Phone: 414-410-4116
Email: jmsklar@stritch.edu (Use this email for best response)
Web: <http://faculty.stritch.edu/jmsklar>
Course Meets: April 23, May 7, 14, 21, June 4, 11 (break from May 22 – June 3)

Course Description

We will take conceptual and real life tour of the inside the modern computer. We will be studying the technical components, their structure and function. Class members will learn about the central processing unit, storage and communications. How computers do their work and why they work the way they do. We will examine current products and trends in computer technology. Students also investigate the language of the machine itself. Prerequisite: A programming language course or departmental approval.

Prerequisite: Department approval or a working knowledge of programming.

Conceptual Framework of the College of Education

The College of Education is devoted to bridging knowledge, practice and service.

Instructional Technology Program Outcomes

- The ability to use computers and other modern technologies effectively as tools to enhance learning, teaching and training. (Supports Wisconsin Teacher Standards 1,4,6,7,9)
- The knowledge of how to effectively integrate the use of computers and other technologies into curriculum. (Supports Wisconsin Teacher Standards 1,2,3,4,5,6,8)
- An awareness of emerging technologies, including multimedia, communications and information access technologies, and the ability to plan for their implementation and management. (Supports Wisconsin Teacher Standards 1,4,5,6,8,)
- The ability to assume a leadership role in planning, implementing and supporting instructional technology. (Supports Wisconsin Teacher Standards 1,7,8,9,10)

Wisconsin State Standard

- Courses in the Instructional Technology program/certification cross all the Wisconsin Teacher Standards; this course focuses particularly on Standard 1.
The teacher understands the central concepts, tools of inquiry, and structures of the disciplines she or he teaches and can create learning experiences that make these aspects of subject matter meaningful for pupils.
- The program also incorporates the Wisconsin Model Academic Standards for Information & Technology Literacy. The key topics are Media and Technology, Information and Inquiry, Independent Learning, and The Learning Community.

Course Objectives (Tied to the Conceptual Framework)

Objective 1

Students will demonstrate an understanding of the general purpose computer. (Knowledge & Practice)

- Assessment: Students will investigate a desktop computer.
Criteria: Student will identify the PC unit's hardware specifications, the BIOS configurations, the operating system and any special peripherals.
- Assessment: Student will create a visual of the PC hierarchy and identify the specific parts of a desktop computer.
Criteria: Instructor will use a check sheet to observe completion.
- Assessment: Student will compare the standard boot process and computer operation to their unit or one they are familiar

with.

Criteria: Instructor will use a check sheet to observe completion.

- Assessment: Student will research computer components as they relate to the structure of a PC. The student will then be prepared to present their computer to the class.

Criteria: Instructor will use a check sheet to observe completion.

Objective 2

Students will investigate the relationship of a generic assembly language to the architecture of a simple general purpose computer. (Knowledge & Practice)

- Assessment: Students will discuss the concept of machine/assembly language and how it relates to modern computers.

Criteria: Students will create presentations or discussion guides.

Objective 3

Student will participate in an in class activity involving the setup of a “clean” operating system or systems. This will help familiarize the student to the concerns involved in creating a “disaster proof” computer. (Knowledge & Practice)

- Assessment: Student will install an operating system based on the in class discussion.

Criteria: Only a fully functioning operating system can be accepted as complete. A “fully functioning” check sheet will be provided.

- Assessment: Student will write a reflection on the conceptual framework developed in the class.

Criteria: A rubric will be provided.

Objective 4

Student will demonstrate both practical and theoretical understanding of the different computer components and peripherals. (Knowledge & Practice)

- Assessment: Student will research various components.

Criteria: Students will create reports for the rest of the class showing their research.

Objective 5

Student will demonstrate understanding of computer data security including backup and malicious software known as viruses. (Knowledge)

- Assessment: Student will develop a plan for virus protection and checking for a small school office, school district or other organization.

Criteria: Plan will include specific details as to the decision making process, the roll out procedure, and the follow through of the virus protection plan.

- Assessment: Students will examine current methods of backup and file security.

Criteria: Individuals will research and report on various backup methods. Reports will be given in class.

Methods of Assessment

Assignment/Assessments	Type	
Participation/completion of all assigned activities	Individual/Group	10%
Investigation of a desktop computer	Individual	20%
Computer Component Research	Individual	20%
Computer Security (Virus)	Individual	20%
Computer Security (Backup)	Individual/Group	20%

Grading Guidelines

Objective Tasks

93-100%	A	91-92%	A-	88-90%	B+
85-87%	B	82-84%	B-	78-81%	C+
75-77%	C	70-74%	C-	Below 70%	D/F

Projects and Assignments

- A: Checklist/Rubric was followed completely and accurately; the assignment was handed in on time, neatly presented, and well organized.
- B: Checklist/Rubric was followed completely and was generally accurate; the assignment was handed in on time, neatly presented and well organized.
- C: Checklist/Rubric was generally complete and generally accurate, the assignment was not handed in on time. There was some attention to neatness and organization.
- D/F: The project/or assignment had major deficiencies. There was little attention to neatness and organization.

Resources

- Students should have access to personal computers, their own or organizational. Access includes the ability to open and

examine interior components.

- Electronic media to store your assignments and to keep back-up copies of the work you submit. You will need to hand in your work on media and on paper.

General Course Expectations

- Attendance, promptness, and participation are expected. If not followed, a penalty will be assessed. I expect regular attendance and plan to present material in class that is not necessarily from the same perspective as our text. If you miss a class, it is your responsibility to find out what you missed. I suggest getting the phone number of at least one of your classmates. Students are expected to have read the text before coming to class. There will be no makeup for class activities. If you must miss a class or assignment, please see your instructor so that you can mutually arrive at a make-up schedule.
- Assignment due dates should be taken seriously. Late assignments will be assessed a penalty. No programs will be accepted more than one week late without prior approval of the instructor. Late assignments and/or missing a class will be cause to lower your grade. Students are responsible to make arrangements with their instructor to make up missing work promptly.
- All work is to be in the student's own words representing the student's ideas unless specifically noted. All written work is expected to be word-processed and of graduate quality, including details of spelling, punctuation, and format.
- Demonstrated understanding of course content
- APA, 5th edition style should be used for documentation of references. Information about the APA style is available at: <http://library.stitch.edu/>
- As of Fall 2003: No grade lower than a B- will be counted towards the Masters program.

College of Education Policy on Attendance

Attendance

Attendance at all class meetings (including study team meetings) is mandatory.

Students participating in an accelerated graduate degree program in the College of Education are expected to attend all scheduled classes and study team meetings. The following apply to all enrolled students:

Promptness:

Prompt arrival at each class is critical because of the limited time available to conduct in-class activities during the course. Instructors may take actions they deem appropriate if consistent tardiness is observed. Please emphasize this will all instructors. (Coaching responsibilities are not acceptable excuses.)

One Absence: Class or Study Team

Any absence from either a scheduled class or study team requires that the student notify the instructor. You must contact the instructor before class so that arrangements may be made to make up the missed work. The student is required to make up all "missed" work as determined by the instructor, by the next class meeting. Assignments due on a missed class must be emailed to the instructor by the class time to receive full credit. Missed labs and class activities must be made up within 1 week of the absence for credit, missed class materials and assignments will be emailed to you when you contact the instructor.

Two Absences: Class

If a second absence occurs, the student has to option of officially withdrawing from the course. Subsequent failure to withdraw will result in a grade of "F" for the course, and the student must later enroll and pay for the course. Students may not request an "incomplete" grade at this time.

Two Absences: Study Team or One Study Team/One Class

The student is required to notify the instructor in order to make up all missed work by the next class meeting. Additionally, the student may be required to complete an academic assignment designed to facilitate learning of the missed course content.

For purposes of this policy, "class" is defined as the scheduled instructional time with the instructor.

The Program Chair will recommend a student repeat the class if a student misses more than one class or study team meeting. An appeal of this decision will be directed to the Program Chair. The decision will be documented and filed in the Instructional Technology Office.

Expectations and Accountability of Study Teams

- Working with colleagues to improve teaching and learning can be an extremely rewarding experience. This is a major expectation of this accelerated program. Students must meet each week with their study team for approximately the same amount of time as the class session. As an integral part of required class contact, the time spent in the study team meetings and attendance at the meetings must be carefully recorded in each of the online postings, as well as a summary of the business conducted at those meetings. The study team meeting is a time to review class content, complete study team assignments, reflect upon new learning, and raise questions for discussion.

- Students will form their own study teams of a minimum of three members and a maximum of six. Given the nature of this program, you may find more homogeneous study groups to be more effective than heterogeneous ones. They will decide when and where to meet each week and will document this for the instructor. The success of the study team will depend upon how well members accomplish the following:
- Set a focus for team activities and stay on task. It may be helpful for one team member to take on this role.
- Respect the opinions of each member and signal that respect by appropriate tone and choice of words.
- Encourage and expect all members to participate actively and equally in study team activities.
- Support team members who may be unsure about class content or an assigned activity while fostering their independence as learners. This is especially the case with technology; team members should endeavor to mentor their colleagues when possible rather than simply doing tasks for them.
- Share resources with others.
- Cooperate and negotiate in completion of team tasks.
- Share in specific duties such as typing, proofreading, posting to the Internet, etc.

College of Education Policy on Late or Missing Assignments

All original course assignments and additional assignments described above should be completed within the course time limits. Work that is submitted after the course has been completed is subject to the provision of the policies and procedures relating to incompletes.

University Policies

Statement of Academic Integrity

Inherent in the mission of Cardinal Stritch University is the strong belief in the principle of academic integrity. Student's actions reflect their moral character and, by extension, to University's reputation. Therefore, all students are expected to recognize and to abide by the policy on academic integrity found in the student handbook.

Statement of Compliance with the Rehabilitation Act of 1973

Cardinal Stritch University and this instructor wish to positively affirm the intent of the American Disability Act. Any person enrolling in this course who may require alternative instructional and/or evaluative procedures due to a disability should feel free to discuss these needs with the instructors so that appropriate arrangements can be made.

Cheating and plagiarism will be treated on an individual basis. Any use of another person's work or ideas must be documented. See academic integrity policy in student handbook.

Cardinal Stritch University wishes to positively affirm the intent of the Americans with Disability Act. Any person enrolling in this course who may require alternative instructional and/or evaluative procedures due to a disability should feel free to discuss these needs with the instructors so that appropriate arrangements can be made.

Bibliography (not comprehensive)

- Herzog, J. (1996) Design and organization of computing structures. Wilsonville OR; Franklin, Beedle & Associates.
 Stallings, W. (2000) Computer organization and architecture. 5th Edition. Upper Saddle NJ, Prentice Hall, Inc.
 Shiva, S. G. (2000) Computer design and architecture. 3rd Edition. New York Marcel Dekker, Inc.

Sequence of Classes and Activities:

Class Session One – April 23, 2007

Activities:

- Introduction -- where that darn box gets its personality or... why is a Mac so much different than a PC?
- High points in history
- Relationship between hardware and software: PC hierarchy and boot process
- Difference between general and special purpose computers
- CMOS/BIOS exploration
- Video: History of desktop computers, part 1
- Create a presentation rubric as a class.

Individual and Study Team Assignments

- Investigation of a desktop computer, PC hierarchy, and boot process
- Complete Boot Process Worksheets – Due Class 2

- Completion and review in-class activities and exercises
- Bring questions to next class
- Work on Comprehensive Exam questions.

Class Session Two – May 7

Activities:

- Questions from previous week
- Discussion of findings from previous weeks assignments – **Boot process Worksheets Due**
- **Install and use an alternative OS, And Windows too.**
- The simple general purpose computer
- Hardware component:
Under the Hood assignment, due Class 3.
- Basic design assumptions with hardware – Why is a Mac a Mac (What's so special about Apple, Now you can know!)
- Video: History of desktop computers, Part 2

Individual and Study Team Assignments

- Work on Comprehensive Exam questions.
- Work on other class projects

Class Session Three – May 14

Activities:

- Questions from previous week
- Discussion of finding from previous weeks assignments - **What's under the hood?**
- Assignment for computer component Research – Pick a component, tell us all about it due class 4
Work on this project in class.
- Investigation of a personal computer, Is one better than the other.
- Introduction to computer viruses and antivirus software Virus assignment due class 5
 - Definition of a virus
 - Types of viruses
 - Symptoms of viruses
 - How to prevent viruses
 - Design considerations/installations of viruses for school and home
 - Review antivirus software developers
 - Why don't Macs have viruses
- Video: History of desktop computers, Part 3

Individual and Study Team Assignments

- Work on Comprehensive Exam questions.
- Work on assigned projects.

Class Session Four – May 21

Activities:

- Work on Comprehensive Exam questions.
- Work on assigned projects.

Class Session Four – June 4

Activities:

- Discussion of finding from previous weeks assignments
- **Computer component research presentations.**
- Questions from previous week
- Disaster Recovery and Your Systems – Assignment due Class 5
- Course evaluations

Individual and Study Team Assignments

- Exercises and group activity on relationships between computer organization and design
- Completion and review in-class activities and exercises

- Virus assignment
- Bring questions to next class
- Work on Comprehensive Exam questions.

Class Session Five – June 11

Activities:

- Virus Presentations
- Disaster Recovery and Your Systems – Presentations
- Questions from previous week
- Discussion of finding from previous weeks assignments
- Is the network part of the computer?
 - Types of ISPs
 - Main components of a network
 - Topologies
 - Standards
 - Protocol: TCP/IP
 - Private versus public
 - Addressing
- Video: History of desktop computers,

Individual and Study Team Assignments

- Completion and review in-class activities and exercises
- Bring questions to next class
- Work on Comprehensive Exam questions.

<http://www.zoomerang.com/survey.zgi?p=WEB225TBDXSPB3>