



**CSCI 540, #01E**  
**Computer Architecture**  
COURSE SYLLABUS: WS 2019

**INSTRUCTOR INFORMATION**

**Instructor:** Christopher Osterwise, PhD  
**Office Location:** Jour 110  
**Office Hours:** 10-11 Wednesdays, (after class)  
**Office Phone:** use email  
**Office Fax:** n/a – use email  
**University Email Address:** Chris.Osterwise@tamuc.edu  
**Preferred Form of Communication:** EMAIL

**NOTE:** Have “CSCI 540” or “CSCI-540” in the subject line for faster response!  
(D2L’s email function will include this by default.)

**Communication Response Time: 24 hrs**

**COURSE INFORMATION**

Materials – Textbooks, Readings, Supplementary Readings

**Textbook(s) Required: None**

**Textbook, Optional:** *Computer Systems Design and Architecture*, 2nd edition  
By Vincent P. Heuring and Harry F. Jordan,  
Pearson Prentice Hall, ISBN: 0-13-048440-7

**Software Required** D2L access, Word or PDF creation software

**Course Description**

The class in general will cover how a program controls the very hardware that makes up a computer. By the end of the class, students should know the inner construction of a computer, and how at power-up, a computer loads code into the processor, and begins performing work.

**Prerequisite:** CSCI 516 (Assembly Language)

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## Student Learning Outcomes

1. Students shall be able to identify general purpose machines from different views, and classify computers and their instructions.
2. Students shall be able to identify cost and performance of a computer, evaluation metrics, Amdahl's law, principle of locality, and benchmarks.
3. Students shall be able to identify cache and memory organization, cache mapping and replacement strategies, and virtual memory.
4. Students shall be able to identify Pipelining techniques, and pipelining performance issues, hazards and solutions.
5. Students shall be able to use I/O system technology: hard drive, RAID technology, I/O performance and benchmarks.
6. Students shall be able to articulate a comprehensive view of architecture and performance for real-world computers.

## COURSE REQUIREMENTS

### Minimal Technical Skills Needed

Familiarity with word processing, familiarity with eCollege  
HLL Programming (C++, Matlab), Assembly programming (not a specific assembly language, but how to code in it!)

### Instructional Methods

Each week of class will cover (usually) one-half or (occasionally) a whole chapter. I will have one 15-point quiz on D2L lasting no longer than 45 minutes each week. I may assign homework as well, consisting between two to five questions, and should take no more than a couple hours.

### Student Responsibilities or Tips for Success in the Course

Monitor the assignments of each week, as they are not guaranteed to be posted on the same day each time. The quizzes are due Tuesday night, the homework is due Thursday night. **Look at the homework before Tuesday, so that if you have questions, you may ask them in class!** Homework and quizzes are a large portion of your grade, and will practice what you need to know for the midterm and final! Homework may also show up when you take your comprehensive. Take these seriously.

If you don't understand something I say in class, please ask questions! This can be either in person, or via email. The book may also be a good resource, but I don't send people there if I can provide an explanation in person.

Finally, remember that this class covers *hardware*. There is no magic involved. If you want to move data from point A to point B, there must be a way to do it. If you want to add numbers together, there must be a piece of hardware that can add numbers.

## GRADING

Final grades in this course will be based on the following scale:

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A = 90%-100%  
B = 80%-89%  
C = 70%-79%  
D = 60%-69%  
F = 59% or Below

### **Assessments**

Quizzes are worth 15 points each; homework, 10 points. There will be one midterm, worth around 60 points, and another final of approximately equal value. The quizzes and homework will form the bulk of one's grade. Homework may consist of a longer eCollege "exam," or a word document to be copied and answered. The general concept is that the quiz will review that week's topics, and the homework will connect concepts between weeks.

## **TECHNOLOGY REQUIREMENTS**

### **LMS**

All course sections offered by Texas A&M University-Commerce have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements

LMS Requirements:

<https://community.brightspace.com/s/article/Brightspace-Platform-Requirements>

LMS Browser Support:

[https://documentation.brightspace.com/EN/brightspace/requirements/all/browser\\_support.htm](https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm)

YouSeeU Virtual Classroom Requirements:

<https://support.youseeu.com/hc/en-us/articles/115007031107-Basic-System-Requirements>

## **ACCESS AND NAVIGATION**

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or [helpdesk@tamuc.edu](mailto:helpdesk@tamuc.edu).

**Note:** Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each

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student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

## **COMMUNICATION AND SUPPORT**

If you have any questions or are having difficulties with the course material, please contact your Instructor.

### **Technical Support**

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found here:

<https://community.brightspace.com/support/s/contactsupport>

### **Interaction with Instructor Statement**

There are only two reliable methods to interact with me: talking to me after class, and email. Homework is scheduled such that you can ask me in class about it before it's due. Otherwise, ensure "CSCI 540" or "CSCI-540" is in the subject line of any email to make sure I see it quickly.

## **COURSE AND UNIVERSITY PROCEDURES/POLICIES**

### **Course Specific Procedures/Policies**

You've already paid for the class; if you skip out, you're just cheating yourself. Also, I do not simply read from slides in class; I tend to say a lot that is not written down. However, attendance is not mandatory, and if you must miss class, I would prefer you contact me about what's important to study, so you don't fall behind. Quizzes must be turned in on time. Fail to do so, and the system will simply not allow you to submit your work. Homework is more flexible; late work will be graded at a penalty, excessively late submissions will earn no points.

### **Syllabus Change Policy**

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

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## **University Specific Procedures**

### **Student Conduct**

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the [Student Guidebook](#).

<http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx>

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum:

<https://www.britannica.com/topic/netiquette>

### **TAMUC Attendance**

For more information about the attendance policy please visit the [Attendance](#) webpage and [Procedure 13.99.99.R0.01](#).

<http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx>

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf>

### **Academic Integrity**

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

[Undergraduate Academic Dishonesty 13.99.99.R0.03](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

[Graduate Student Academic Dishonesty 13.99.99.R0.10](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf>

### **Students with Disabilities-- ADA Statement**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

#### **Office of Student Disability Resources and Services**

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Texas A&M University-Commerce  
Gee Library- Room 162  
Phone (903) 886-5150 or (903) 886-5835  
Fax (903) 468-8148  
Email: [studentdisabilityservices@tamuc.edu](mailto:studentdisabilityservices@tamuc.edu)

Website: [Office of Student Disability Resources and Services](http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/)  
<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

### **Nondiscrimination Notice**

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

### **Campus Concealed Carry Statement**

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the [Carrying Concealed Handguns On Campus](#) document and/or consult your event organizer.

Web url:  
<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

### **COURSE OUTLINE / CALENDAR**

Week		
1	01/16	Chapter 1. introduction
2-3	01/23, 01/30	Chapter 2. Instruction sets, RTN, and the SRC
4	2/06	Chapter 3. Example real machines.
5-6	2/13, 2/20	Chapter 4. The design process, and design of the SRC

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6+1j	2/27	Midterm
7-8	3/06, 3/13	Chapter 5. Advanced processor techniques
-	3/20	Off for spring break
9-10	3/27, 4/03	Chapter 7. Memory system design
11-12	4/10, 4/17	Chapter 8. I/O systems, and data storage

The syllabus/schedule is subject to change, but I will announce on D2L when this occurs, if it is significant.

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