



## **CSCI516.01W**

**Fundamental Concepts of Computing/Machine Organization**

COURSE SYLLABUS: SPRING 2021

WEB-BASED

### **INSTRUCTOR INFORMATION**

**Instructor:** (Name & Title) Dr. Abdullah N. Arslan

**Office Hours:** T 4:30-7:00 PM, F 4:30-7:00 PM

**Office Phone:** 903 468 3097

**Office Fax:** 903-886-5404

**University Email Address:** Abdullah.Arslan@tamuc.edu

**Preferred Form of Communication:** e-mail

**Communication Response Time:** 24 hrs

### **COURSE INFORMATION**

#### ***Materials – Textbooks, Readings, Supplementary Readings***

##### ***Textbook(s) Required***

Assembly Language for Intel-Based Computers, 6th (or more recent) Edition, by Kip R. Irvine, Prentice Hall, ISBN-13: 978-0-13-6022212-1 (it is also freely available in pdf)

The professor will make supplementary information for the course available in D2L Brightspace. These include class notes, assignments, PowerPoint slides, class announcements, the course syllabus, test dates, etc. The professor will announce in class when such information becomes available electronically. It is the student's responsibility to follow these announcements.

## **Software Required**

MASM Assembler and Linker (on-line sources and/or software installment information will be provided)

## **Optional Texts and/or Materials**

## **Course Description**

Hours: 3

Fundamental Concepts in Computing and Machine Organization. Three semester hours. Concepts of assembly language programming and machine organization of a modern digital computer are presented. Students will have the opportunity to study machine addressing, stack operations, subroutines, programmed and interrupt driven I/O, machine organization and computer architecture at the register level. Students will utilize the 80x86 instruction set and will perform programming exercises. Prerequisite: CSCI 515 or programming experience in a higher level language.

In this course, concepts of assembly language programming and machine organization of a modern digital computer are presented. Students will have the opportunity to study machine addressing, stack operations, subroutines, programmed and interrupt driven I/O, machine organization and computer architecture at the register level. Students will utilize the 80x86 instruction set and will perform programming exercises.

The main objective of this course is to teach students basics of machine organization and how to program in assembly language.

## **Student Learning Outcomes**

1. Students will demonstrate knowledge of the Binary, Decimal, Hexadecimal numbering systems be able to convert from one system to another and demonstrate knowledge of two's complement notation.
2. Students will demonstrate knowledge of basic Computer Organization: design logic; digital diagrams, and basic circuits and gates, and the link between Boolean functions, circuits, processor and machine code.
3. Students will demonstrate knowledge of the concepts of machine instructions; interrupts; assembly language programming, assembly, linking and running of a program; I/O devices; memory mapped I/O; assembly language addressing modes.
4. Students will demonstrate knowledge of the concepts of Jumps, flags, subroutines, procedures, and stacks.
5. Students will demonstrate knowledge of the concepts of Arrays, addressing modes and Floating Point memory management, indirect addressing.
6. Students will demonstrate knowledge of the concepts of advanced procedures, local variables, stack parameters, strings, and links to higher level languages.

*The syllabus/schedule are subject to change.*

# COURSE REQUIREMENTS

## ***Minimal Technical Skills Needed***

Students must know using the learning management system. Students must have basic programming knowledge in a high level programming language.

## ***Instructional Methods***

D2L will be the method of presentation for the entire course. Please go to myLeo, and find D2L in Apps. All course materials will be found in D2L.

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

Students must regularly log into the course website, and participate in discussions and in-class problems in lectures. They need to deliver the assignments on time.

## **GRADING**

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

A = 90%-100%

B = 80%-89%

C = 70%-79%

D = 60%-69%

F = 59% or Below

Final score will be out of 100, and the above percentages will be applied to student's total score to determine the letter grade.

## ***Assessments***

Midterm Exams	30%
Programming Assignments	20%
Quizzes	25%
Final Exam	25%

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Quizzes, programming assignments, and tests will include questions on each of the student learning outcome listed earlier.

## **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>

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## **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 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.

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## 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

The instructor will respond to your questions within 24 hrs unless there are exception situations such as sickness.

## COURSE AND UNIVERSITY PROCEDURES/POLICIES

**A&M-Commerce requires the use of face-coverings in all instructional and research classrooms/laboratories. Exceptions may be made by faculty where warranted. Faculty have management over their classrooms. Students not using face-coverings can be required to leave class. Repetitive refusal to comply can be reported to the Office of Students' Rights and Responsibilities as a violation of the student Code of Conduct.**

**Students should not attend class when ill or after exposure to anyone with a communicable illness. Communicate such instances directly with your instructor. Faculty will work to support the student getting access to missed content or completing missed assignments.**

If need arises, parts of the course can be conducted online.

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

**Quizzes:** are to be solved independently during the class period. The quizzes will be on-line. Makeup quizzes will not be given. However, the lowest quiz grade will be dropped. Any class material missed by the student is the student's responsibility to acquire.

**Tests:** The two on-line tests will be given roughly at regular intervals. Students will be informed of the test dates around a week in advance. The test will take no more than one class period and will be given at the scheduled times only. No opportunity will be given to take the test at earlier or later times except in extreme cases as judged by the instructor.

**Makeup:** Except extreme cases (as judged by the instructor), no individual makeup test will be permitted.

**Programming Assignments:** Two programming assignments will be given. The programs must be students' own work. The student is supposed to explain his/her work and to answer all questions about the work.

All quizzes and tests will be on-line.

### **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.

### **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**

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/>

## **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

### TOPICS AND ACTIVITIES BY WEEKS

WEEK	TOPIC	Special Activities / Programming Assignments	Quiz & Exams
1-2	Basic concepts including number systems, digital logic	Examples discussed together	
3	Assembly language fundamentals (e.g. basic elements of assembly language),	Examples discussed together	
4	Data Transfers, Addressing and Arithmetic (e.g. arrays)	Examples discussed together. Programming Assignment 1 is posted	Quiz 1
5	Review		Exam 1
6	Procedures	Programming Assignment 2 is posted	Quiz 2
7	Conditional Processing	Examples discussed together. Programming Assignment 1 is due	
8	Review	Programming Assignment 2 is due	Quiz 2
9	Review		Exam 2
10	Integer Arithmetic	Examples discussed together	
11	Advanced Procedures (e.g. recursion)	Programming Assignment 3 is posted	
12	Review and discussions		Quiz 3
13	Review and discussions	Programming Assignment 3 is due	Final Exam
14	Review and discussions		

If time permits some additional selected topics may also be covered.

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