**Texas Tech University**

**Department of Computer Science**

**Course Name:** Computer Organization and Assembly Language Programming

**Course Number:** CS2350

**Lecturer:** Victor Sheng, Associate Professor, Department of Computer Science

**Office hours:** TR 1:50-2:50 pm at 211H computer science office

**Email:** victor.sheng@ttu.edu

**TA: TBD**

**Office hours: TBD**

**Email: TBD**

**Class:** TR 12:30-1:50 pm PETR 110

# Textbook: Assembly Language for x86 Processors, 8th edition, by Kip Irvine, Prentice Hall. ISBN 978-0135381656

**References:** *Computer organization and Architecture – Designing for performance, 8th edition,* William Stalling, Prentice Hall, 2010.

**Catalogue Listing:** Introduction to computer architecture and organization via assembly language. Key topics addressed include fundamental concepts of computer architecture and organization, data representation, addressing, conditional, and arithmetic instructions, assembly programming, sub-procedures and macros, assembly/HLL interface schemes, and FLP architecture and instructions.

**Course objectives:**

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| Introduce basic concepts underlying the organization of single-processor machines  Address computer architecture issues via assembly language programming  Apply modular design principles using high-level and assembly programs  Introduce floating point assembly instructions |

**Key Topics:**

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| Basic concepts of single-processor computer organization; assembly language fundamentals, data representation, transfer, addressing, conditional, and arithmetic instructions; procedures. |

**Course Prerequisites:** CS 2413 Data Structure andECE 2372 Modern Digital System Design

**Expected Prior Knowledge and Skills In:** Data Structures, C Programming,Digital Systems

**Learning Outcomes:** Students who have completed this course should have:

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| 1. An understanding of basic concepts of computer organization (1, 2) 2. Familiarity with binary data representation as applied to data transfer, arithmetic and flow control instructions (1, 2) 3. A knowledge base to design and develop applications using assembly language (6) 4. The ability to combine assembly and high-level language modules (6) 5. A basic understanding of floating point assembly instructions (1, 2)   **Assessment methods of all of the above**: quizzes, exams, assignments, and/or projects |

**Ethical Conduct:** Exam, assignments, quizzes, and projects are subject to the university academic integrity (See attached and Student Handbook: http://www.studentaffairs.ttu.edu/publications/student\_handbook0405.pdf) and the statement of academic conduct for engineering students (included in the last page of the syllabus). Plagiarism and academic irregularities will not be tolerated. Cheating on homework or quizzes will result in a zero on the corresponding assignment/quiz and an F in the course for repeated cheating. Cheating on an exam or project will result in an F for the course.  All incidents of academic dishonesty will be reported to the Office of Student Conduct which may add additional consequences. Consequences of dishonesty can be severe, and may include expulsion from the university.

**Grading Policy:** Your course grade shall be based on the weights specified in the following table.

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| --- | --- |
| **Component** | **FINAL Grade** |
| Attendance | 5% |
| Quizzes | 20% |
| Midterm Exam1 | 10% |
| Midterm Exam2 | 10% |
| Final Exam | 40% |
| Course Projects | 15% |

Your numeric score will be translated to a letter grade at the end of the semester according to the table below at the discretion of the instructor.

|  |  |
| --- | --- |
| **Numeric Score** | **Letter Grade** |
| 90 – 100 | **A** |
| 80 – 89 | **B** |
| 70 – 79 | **C** |
| 60 – 69 | **D** |
| 0 - 59 | **F** |

***Assignments, quizzes, exams and course project grade:***

**Attendance (5%)**: One point deduction will be given to your final score for each missing after the first **three** absences. Absence with doctor notes is acceptable.

**Quizzes (20%)**: Students shall take quizzes on a regular basis in class. It is the responsibility of students if missing the quizzes.

**Course projects (15%)**: There shall be programming projects designed to apply the knowledge attained through classroom instruction. These are group projects. Each individual in a group needs to make contributions, and reports them in the project report.

**Two semester exams (10% each)**: Scheduled approximately around the middle and the end of the semester respectively. They will test your knowledge and skills on problem solving, solution design and implementation up to that point in the course.

**Final (40%)**: The final exam will test your ability of applying the knowledge learned in this course this semester for problem analysis, solution design, and appropriate computer implementation.

**Student with Disabilities:** Reasonable accommodations are available for students who have a documented disability. Please notify the Professor during the first week of class regarding accommodations needed for the course. Late notification may cause the requested accommodations to be unavailable. Students needing accommodations must first have them approved through the AccessTech of the Student Affairs program (www.studentaffairs.ttu.edu/accesstech).

**Course Schedule:**

**Week 1:** Computer languages and the top structure of computers

**Week 2:** Basic concepts of single-*processor* computer organization

**Week 3 & 4:** Assembly Language Fundamentals

**Week 5, 6 & 7:** Data Transfers, Addressing, and Arithmetic

**Week 8, 9 & 10:** Assembly language programming

**Week 11& 12:** Conditional processing

**Week 13:** Floating point processing

**Week 14:** High-level language interface

**Notes:**

1. Be sure to regularly check materials from class blackboard managed by TA (TBD)
2. For distance students, if you have questions regarding the class delivery and administration (e.g., exam proctoring, not receiving the tapes of lectures in a timely matter), contact Brent Guinn, email: Brent.Guinn@ttu.edu.

**Important Dates:**

* First lecture: Tuesday Aug 27
* Midterm: Tuesday Oct 15 (tentative)
* Last lecture Tuesday Dec 3
* No exam except makeup Nov26-Dec 5
* Final: (1:30 p.m. to 4:00 p.m. on December 7) (grades due Dec 12)

**Statement of Academic Conduct for** **Engineering Students**

**College of Engineering**, **Texas Tech University**

**Preamble**

The College's primary goal is to educate students to fill leadership roles as professionals aware of technology and its economic and political role in the world. Therefore, we strive to produce technically competent graduates who solve problems, are able to communicate and work well with others; are sensitive to the needs of society, are well-educated in the humanities as well as in the engineering disciplines, and maintain a high-level of ethical and professional conduct.

**Policy**

The College of Engineering fully subscribes to the Code of Student Conduct as published in the Texas Tech University's "Student Affairs Handbook." The Handbook states the following:

"The University is strongly committed to upholding standards of academic integrity. These standards require that students never present the work of others as their own.

Any student found to have committed the following academic misconduct is subject to the disciplinary sanctions outlined in Part IX, Section D "Disciplinary Sanctions":

**1. Cheating**

This violation includes, but is not limited to: (1) use of any unauthorized assistance or assisting others in taking quizzes, tests, or examinations; (2) dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignment(s); (3) the acquisition, without permission, of tests or other academic material belonging to a member of the University faculty or staff; (4) alteration of grade records; (5) bribing or attempting to bribe a faculty member to alter a grade.

**2. Plagiarism**

This violation includes, but is not limited to, the use, by paraphrase or direct quotation, of the published or unpublished work of another person without full and clear acknowledgment. It also included the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials.

**3. Instructor Responsibilities**

The instructor in a course is responsible for initiating action in cases where there is an admitted act or convincing evidence of academic misconduct. Before taking such action, the instructor should attempt to discuss the matter with the student(s). If the suspected misconduct involved a final exam, the instructor should submit a grade of X until a reasonable attempt can be made to contact the student(s), after the end of the semester.

**4. Instructor Sanctions**

If academic misconduct is determined by the instructor, a failing grade shall be assigned to either the assignment in question or to the course grade. When a student is given a failing grade in a course as a result of academic misconduct, the instructor shall report in writing to the instructor's department chairperson the facts of the case and the action to be taken against the student. The chairperson shall provide a copy to the student, to his or her Academic Dean and to the Dean of Students Office.

**5. Grade Appeal Procedure**

The Grade Appeal Procedure (Part V, Section A) may be used to appeal a failing course grade, but not a failing grade given for a class assignment. The disciplinary penalty or grade of F shall not be implemented until the disciplinary procedures or grade appeal process has been exhausted. A student may continue the academic class and course work until a final decision is made."

**6. Repeated Academic Dishonesty**

In cases of repeated violations, either the instructor (through his or her department chairperson and/or Academic Dean's Office) or the Academic Dean may refer the case to the Dean of Students Office for further disciplinary action.

**University Information for Course Syllabi**

# Details in OP 32.06

## INSTITUTIONALLY REQUIRED INFORMATION:

**ADA STATEMENT:**

Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor’s office hours. Please note: instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, please contact Student Disability Services in West Hall or call 806-742-2405.

## ACADEMIC INTEGRITY STATEMENT:

Academic integrity is taking responsibility for one’s own class and/or course work, being individually accountable, and demonstrating intellectual honesty and ethical behavior. Academic integrity is a personal choice to abide by the standards of intellectual honesty and responsibility. Because education is a shared effort to achieve learning through the exchange of ideas, students, faculty, and staff have the collective responsibility to build mutual trust and respect. Ethical behavior and independent thought are essential for the highest level of academic achievement, which then must be measured. Academic achievement includes scholarship, teaching, and learning, all of which are shared endeavors. Grades are a device used to quantify the successful accumulation of knowledge through learning. Adhering to the standards of academic integrity ensures grades are earned honestly. Academic integrity is the foundation upon which students, faculty, and staff build their educational and professional careers. [Texas Tech University (“University”) Quality Enhancement Plan, Academic Integrity Task Force, 2010]

## RELIGIOUS HOLY DAY STATEMENT:

"Religious holy day" means a holy day observed by a religion whose places of worship are exempt from property taxation under Texas Tax Code §11.20. A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence. A student who is excused under section 2 may not be penalized for the absence; however, the instructor may respond appropriately if the student fails to complete the assignment satisfactorily.

## ADDIONAL INFORMATION:

**DISCRIMINATION, HARASSMENT, AND SEXUAL VIOLENCE STATEMENT:**

Texas Tech University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from gender and/or sex discrimination of any kind. Sexual assault, discrimination, harassment, and other Title IX violations are not tolerated by the University. Report any incidents to the Office for Student Rights & Resolution, (806)-742-SAFE (7233) or file a report online at titleix.ttu.edu/students. Faculty and staff members at TTU are committed to connecting you to resources on campus. Some of these available resources are: TTU Student Counseling Center, 806- 742-3674, [https://www.depts.ttu.edu/scc/(Provides](http://www.depts.ttu.edu/scc/(Provides) confidential support on campus.) TTU 24-hour Crisis Helpline, 806-742-5555, (Assists students who are experiencing a mental health or interpersonal violence crisis. If you call the helpline, you will speak with a mental health counselor.) Voice of Hope Lubbock Rape Crisis Center, 806-763-7273, voiceofhopelubbock.org (24-hour hotline that provides support for survivors of sexual violence.) The Risk, Intervention, Safety and Education (RISE) Office, 806-742-2110,  [https://www.depts.ttu.edu/rise/](http://www.depts.ttu.edu/rise/) (Provides a range of resources and support options focused on prevention education and student wellness.) Texas Tech Police Department, 806-742- 3931,<http://www.depts.ttu.edu/ttpd/> (To report criminal activity that occurs on or near Texas Tech campus.)

## CIVILITY IN THE CLASSROOM STATEMENT:

Texas Tech University is a community of faculty, students, and staff that enjoys an expectation of cooperation, professionalism, and civility during the conduct of all forms of university business, including the conduct of student–student and student–faculty interactions in and out of the classroom. Further, the classroom is a setting in which an exchange of ideas and creative thinking should be encouraged and where intellectual growth and development are fostered. Students who disrupt this classroom mission by rude, sarcastic, threatening, abusive or obscene language and/or behavior will be subject to appropriate sanctions according to university policy. Likewise, faculty members are expected to maintain the highest standards of professionalism in all interactions with all constituents of the university

([www.depts.ttu.edu/ethics/matadorchallenge/ethicalprinciples.php).](http://www.depts.ttu.edu/ethics/matadorchallenge/ethicalprinciples.php))

## LGBTQIA SUPPORT STATEMENT\*:

I identify as an ally to the lesbian, gay, bisexual, transgender, queer, intersex, and asexual (LGBTQIA) community, and I am available to listen and support you in an affirming manner. I can assist in connecting you with resources on campus to address problems you may face pertaining to sexual orientation and/or gender identity that could interfere with your success at Texas Tech. Please note that additional resources are available through the Office of LGBTQIA within the Center for Campus Life, Student Union Building Room 201, [www.lgbtqia.ttu.edu,](http://www.lgbtqia.ttu.edu/) 806.742.5433.”

\* Office of LGBTQIA, Student Union Building Room 201, [www.lgbtqia.ttu.edu,](http://www.lgbtqia.ttu.edu/) 806.742.5433

Within the Center for Campus Life, the Office serves the Texas Tech community through facilitation and leadership of programming and advocacy efforts. This work is aimed at strengthening the lesbian, gay, bisexual, transgender, queer, intersex, and asexual (LGBTQIA) community and sustaining an inclusive campus that welcomes people of all sexual orientations, gender identities, and gender expressions.