Notice of Copyright Restrictions and Course Disclaimer:

The materials on this Blackboard site are only for the use of students enrolled in this course and for purposes associated with this course and may not be retained or further disseminated.

Every attempt is made to provide a syllabus that is complete and that provides an accurate overview of the courses. However, circumstances and events may make it necessary for the instructor to modify the syllabus during the semester. This may depend, in part, on the progress, needs, and experiences of the students.
# TABLE OF CONTENTS

MEET THE PROFESSOR .................................................................................................................. 3
  BIO ............................................................................................................................................... 3
  Office Hours ............................................................................................................................... 3

COURSE INFORMATION .............................................................................................................. 3
  Meeting Times and Delivery Method ......................................................................................... 3
  Description ................................................................................................................................ 3
  Goals and Objectives: ................................................................................................................. 4
  Topics Covered ........................................................................................................................... 4

REQUIRED COURSE MATERIALS ............................................................................................. 4
  Textbook: ..................................................................................................................................... 4

COURSE DELIVERY ..................................................................................................................... 4
  Instructional Approach ............................................................................................................... 4
  Student Responsibilities: ............................................................................................................ 4
    Assume an active role: ............................................................................................................... 4
    Regularly access Blackboard: .................................................................................................. 4
    Observe Classroom Etiquette, Netiquette and Academic Honesty: ....................................... 5
  Accessibility ................................................................................................................................ 5
  Academic Honesty and Honor Code .......................................................................................... 5
  Communication .......................................................................................................................... 6
  E-mail .......................................................................................................................................... 6

COURSE POLICIES ........................................................................................................................ 6
  Attendance ................................................................................................................................ 6
    Late Registrants.......................................................................................................................... 6
  Assessment .................................................................................................................................. 7
    Grading: ..................................................................................................................................... 7
    Grading Scale ............................................................................................................................ 7
  Late Work .................................................................................................................................... 7
  Course Schedule: ......................................................................................................................... 8

COLLEGE POLICIES ...................................................................................................................... 8
BIO

My name is Lloyd Decker. I have been an adjunct instructor in the Computer Science department at Old Dominion since the Spring semester of 2016. I have degrees in Physics (BS) and Information Technology (MS) from Virginia Tech and degrees in Computer Science from Old Dominion (BS / MS). I have worked full time with the Department of Defense since 2003 building and testing Command, Control, Communications, Computers, and Intelligence (C4I) systems.

There are two things in this world that I truly love doing. One is building C4I systems and the other is teaching. I am truly fortunate in that I get paid to do both. That being said, I hope to make this an enjoyable semester where you will actually retain some basic information on computer architectures.

Office Hours

Office hours are by appointment. I will be available before and after class.

Email is the best method of communication outside of class:

ldecker@odu.edu

COURSE INFORMATION

Meeting Times and Delivery Method

You will have registered for one of two different lecture sections:

1) 17929: Constant Hall, Room 1038, Monday and Wednesday 5:45 – 7:00 PM

   This is a face-to-face section in a traditional classroom. Attendance is optional. Social distancing measures will be practiced.

   *** Students who are uncomfortable with participating in the classroom are encouraged to switch to the WEB2 section so as to enable other students who might prefer the face-to-face environment to have a seat.

2) 23730: WEB2

   If possible, these sessions will be streamed live via Zoom. Attendance is optional. Recordings will be available.

NOTE: The provision of face-to-face lectures and live Zoom streams are contingent on the setup of the classroom and supporting equipment, and the general level of Covid-19 activity in the Norfolk/Virginia Beach area. If I become uncomfortable with the safety precautions being taken, or feel that the classroom environment and equipment detract from the quality of the course, then I reserve the right to change to a pure web conferencing delivery mode.

Description

(3 credits) Fundamentals of the architecture and operation of modern computers. Basic computer logic: logic equations; gates; combinatorial logic. Basic computer arithmetic: binary numbers; floating point representation. System hierarchy, overview of a computer; integrated circuit technology. Performance: metrics; choosing benchmarks; Amdahl's law. Instruction Sets and Operations: assembly language; machine language; examples of other instruction sets. Prerequisites: MATH 102M or MATH 103M and a grade of C or better in CS 150 or ENGN 150.
**Goals and Objectives:**
This is the first course in a two semester sequence consisting of CS 170 and CS 270. CS 170 is a prerequisite for CS 270. In this course you will study the architectural and operational basics of modern computers. After successfully completing this course, you will have a good understanding of the following concepts:

- Fundamentals of architecture and operation of modern computers.
- Basic computer logic: logic equations; gates; combinatorial logic.
- Basic computer arithmetic; binary numbers; floating point representation.
- System hierarchy, overview of a computer; integrated circuit technology.
- Performance; metrics; choosing benchmarks; Amdahl's law.
- Instruction Sets and Operations: assembly language; machine language; examples of other instruction sets.

**Topics Covered**

<table>
<thead>
<tr>
<th>Chapter 1</th>
<th>Computer Abstractions and Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendix B</td>
<td>Basic Logic Design</td>
</tr>
<tr>
<td>Chapter 2</td>
<td>Instruction Set Architectures</td>
</tr>
<tr>
<td>Chapter 3</td>
<td>Arithmetic</td>
</tr>
</tbody>
</table>

**REQUIRED COURSE MATERIALS**

**Textbook:**

**COURSE DELIVERY**

**Instructional Approach**
Every course, whether online or face-to-face requires interaction between students and the professor. It is the responsibility of the instructor to help students grow and learn by providing clear instructions for all activities and assignments, answering questions, identifying additional resources if necessary, providing rubrics and other criteria for evaluation of assignments along with feedback, and meeting for assistance whether in office or online. This is never a “static” course - referenced readings, software versions and hardware specifications can change quickly. In this environment, the instructor is always evaluating, revising and clarifying questions and problems. **In every case, if you are having trouble, contact me immediately. Don’t wait. I am here to help you and I want you to succeed!**

**Student Responsibilities:**

**Assume an active role:** To successfully complete the course, you will need to assume an active role in the learning process; ask questions, complete assignments, visit your professor during office hours, participate in discussion boards, etc. If you are taking an online course, active participation by reading and following directions are especially critical skills necessary for success in this course.

**Regularly access Blackboard:** All pertinent course information is posted to the class Blackboard site as the primary means of communication between students and the professor, thus, you must actively participate by regularly accessing Blackboard to check for announcements, Discussion Board updates and complete assignments.
Expect to spend as many hours as necessary each week in order to successfully complete your assignments before the due dates. DO NOT wait until the last minute to start assignments, because you WILL run out of time if you don’t plan properly. This time is different for each student, but a good rule of thumb is to spend an equal amount of time outside of class as you would inside class. For a 3 hours class you would spend about 6 hours per week on this course: 3 hours preparing/studying the material (as though you were in class listening to a professor) and 3 hours on homework and assignments.

Observe Classroom Etiquette, Netiquette and Academic Honesty: The following class policies are to ensure an environment conducive to learning for all students whether in the classroom or online.

- Professional appropriate behavior and constructive communication is expected in all classroom and virtual communications whether it is from student to student or student to professor. You may want to search the Internet for the word “Netiquette” to get more information about appropriate online communication. Let me know if you have any questions concerning this.

- Collaboration is not allowed during tests, quizzes, or on any graded assignment. Always complete your own work, do not share files! Failure to abide by this rule will result in a zero for the assignment and/or a failing grade for the class. See the College Policies section of this syllabus for more information about Academic Honesty.

Accessibility
Old Dominion University is committed to ensuring equal access to all qualified students with disabilities in accordance with the Americans with Disabilities Act. The Office of Educational Accessibility (OEA) is the campus office that works with students who have disabilities to provide and/or arrange reasonable accommodations.

If you experience a disability which will impact your ability to access any aspect of my class, please present me with an accommodation letter from OEA so that we can work together to ensure that appropriate accommodations are available to you.

If you feel that you will experience barriers to your ability to learn and/or testing in my class but do not have an accommodation letter, please consider scheduling an appointment with OEA to determine if academic accommodations are necessary. The Office of Educational Accessibility is located at 1021 Student Success Center and their phone number is (757)683-4655. Additional information is available at the OEA website:

http://www.odu.edu/educationalaccessibility/

Academic Honesty and Honor Code
By attending Old Dominion University you have accepted the responsibility to abide by the ODU Honor Code. If you are uncertain about how the ODU Honor Code applies to any course activity, you should request clarification from the instructor. The ODU Honor Code is as follows:

“I pledge to support the honor system of Old Dominion University. I will refrain from any form of academic dishonesty or deception, such as cheating or plagiarism. I am aware that as a member if the academic community, it is my responsibility to turn in all suspected violators of the honor system. I will report to Honor Council hearings if summoned.”

In particular, submitting anything that is not your own work without proper attribution (giving credit to the original author) is plagiarism and is considered to be an ODU Honor Code violation. It is not acceptable to copy written work from any other source (including other students), unless explicitly allowed in the assignment statement. In cases where using resources such as the Internet is allowed, proper attribution must be given.
Any evidence of an ODU Honor Code violation (cheating) will result in a 0 grade for the assignment/exam, and the incident will be submitted to the Department of Computer Science for further review. Evidence of cheating may include a student being unable to satisfactorily answer questions asked by the instructor about a submitted solution. Cheating includes not only receiving unauthorized assistance, but also giving unauthorized assistance.

Students may still provide legitimate assistance to one another. You are encouraged to form study groups to discuss course topics. Students should avoid discussions of solutions to ongoing assignments and should not, under any circumstances, show or share code solutions for an ongoing assignment.

Please see the ODU Honor Council’s webpage for other concrete examples of what constitutes cheating, plagiarism, and unauthorized collaboration. All students are responsible for knowing the rules. If you are unclear about whether a certain activity is allowed or not, please contact the instructor.

Communication

E-mail
Each student is assigned an Old Dominion e-mail account that is used for communication with your instructor and which also serves as your login for Blackboard. Personal matters and grade questions should be sent to your Professor via email. General questions about the class should be asked in class.

Students who e-mail the instructor Monday – Thursday will ordinarily receive a response within 24 hours. Students who e-mail the instructor Friday – Sunday may expect a response by 5 pm on Monday. To receive a timely reply, e-mail must be formatted as follows.

✓ In the subject field place your course and section number.
✓ At the end of your e-mail, include your full name. Create a signature in your e-mail program so this happens automatically!
✓ Write in the form of a letter, with complete sentences and language I can understand. Please do not use Instant Messaging language in e-mail communication.
✓ To send me e-mail, you must use your ODU-provided e-mail address.

Personal e-mail addresses will not be responded to for security reasons and often end up in the junk e-mail box.

COURSE POLICIES

Attendance
Regular classroom attendance is expected of all students. Course grades reflect not only performance on written assignments and exams, but also participation during class periods. As discussions cannot be reproduced, many times absences cannot truly be made up. Excessive absences therefore have a negative effect on the student’s learning and performance. Students are responsible for all class work, and a student who misses a class is expected to have the initiative necessary to cover properly the material missed. Students must meet all course deadlines and be present for all quizzes, tests, and examinations.

Late Registrants
Students who enroll and/or enter a course after the first class meeting should note that attendance records are being kept from the first day the class meets. All class days missed before and after the student’s entry into the class will be considered absences. In addition, late registering students are responsible for the completion of all assignments by the due date. Due dates are planned such that late registrants will still have time to complete missed assignments.
Assessment

Grading: Your final grade will be determined by the following categories and percentages, no extra credit.

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Assignment Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>20%</td>
<td>Homework Assignments</td>
<td>There will be four (4) homework assignments over the course of the semester.</td>
</tr>
<tr>
<td>80%</td>
<td>Tests (there are 4)</td>
<td>There will be four (4) tests over the course of the semester.</td>
</tr>
</tbody>
</table>

All assignments that are completed and received by the due date will be graded within 7 days. Students are expected to retain an electronic copy of all work submitted. If transmission of the work fails, students are expected to “resend” the work, under direction of the instructor. All Homeworks and Tests are administered via Blackboard.

Grading Scale: Assignments and tests will be graded using the same scale as the one used for the final course grade, grades are not rounded:

<table>
<thead>
<tr>
<th>Letter</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>93-100</td>
</tr>
<tr>
<td>A-</td>
<td>90-92</td>
</tr>
<tr>
<td>B+</td>
<td>87-89</td>
</tr>
<tr>
<td>B</td>
<td>83-86</td>
</tr>
<tr>
<td>B-</td>
<td>80-82</td>
</tr>
<tr>
<td>C+</td>
<td>77-79</td>
</tr>
<tr>
<td>C</td>
<td>73-76</td>
</tr>
<tr>
<td>C-</td>
<td>70-72</td>
</tr>
<tr>
<td>D+</td>
<td>67-69</td>
</tr>
<tr>
<td>D</td>
<td>63-66</td>
</tr>
<tr>
<td>D-</td>
<td>60-62</td>
</tr>
<tr>
<td>F</td>
<td>0-59</td>
</tr>
</tbody>
</table>

Late Work
You are required to keep up with the Course Schedule posted in Blackboard. Any assignment is considered late after 11:59 pm of the due date. Begin work early, do not wait until the last minute to begin any assignment, and always have a Plan B when technology is involved.

- Assignments can be accepted late up to the beginning of the next scheduled class with a 20% reduction in grade, no questions asked. After 2 days the grade will be 0.
- If you have official/verifiable documentation of mitigating circumstances (such as an accident report, court records, doctor’s note covering the due date) you may submit late without penalty if you contact the instructor within 5 days of the due date to provide the documentation of mitigating circumstances. If approved the assignment must be submitted within 5 days of the approval.
- During the last week of the class, NO assignments will be accepted late, and the Final Exam cannot be taken late.
- Technical difficulty that results in a late submission is not considered extenuating circumstances. If you encounter technical difficulty, it must be cleared up before the due date. You have the option of completing work on campus or on a friend’s computer if needed.
<table>
<thead>
<tr>
<th>Week</th>
<th>Lesson</th>
<th>Assignment Due</th>
</tr>
</thead>
</table>
| 1 (Aug 15 – Aug 23) | 1: Intro / Components of a Computer  
2: Performance of a Computer  
3: Performance of a Computer | Homework 1 (due Aug 23 by 11:59 PM)                  |
| 2 (Aug 24 – Aug 30) | Homework 1 Review  
Test 1 Review | Test 1: Chapter 1 (due Aug 30 by 11:59 PM)           |
| 3 (Aug 31 – Sep 6) | 4: Binary and Basic Logic Design  
5: Logic Elements | Homework 2 (due Sep 28 by 11:59 PM)                  |
| 4 (Sep 7 – Sep 13) | 5: Logic Elements  
6: Binary Representations / ALU | Test 2: Appendix B (due Oct 4 by 11:59PM)            |
| 5 (Sep 14 – Sep 20) | 7: ALU  
8: Carry Lookahead | Homework 3 (due Oct 25 by 11:59 PM)                  |
| 6 (Sep 21 – Sep 27) | 9: Computer Clock and Register File  
10: Instruction Set Architectures | Test 3: Chapter 2 (due Nov 1 by 11:59PM)             |
| 7 (Sep 28 – Oct 4) | Homework 2 Review  
Test 2 Review | Test 4: Chapter 3 (due Nov 15 by 11:59PM)            |
| 8 (Oct 5 – Oct 11) | 11: MIPS Instructions  
12: MIPS Practice | Exam Week (No Exam)                                  |
| 9 (Oct 12 – Oct 18) | 13: Conditional Instructions  
14: Branching and Jumping |                                      |
| 10 (Oct 19 – Oct 25) | 15: Procedures TBD: Catch up |                                      |
| 11 (Oct 26 – Nov 1) | Homework 3 Review  
Test 3 Review |                                      |
| 12 (Nov 2 – Nov 8) | 16: Multiplication and Division  
17: Floating Point Conversion | Homework 4 (due Mar 8 by 11:59 PM)                  |
| 13 (Nov 9 – Nov 15) | Homework 4 Review  
Test 4 Review | Test 4: Chapter 3 (due Nov 15 by 11:59PM)            |
| 14 (Nov 16 – Nov 18) | Prepare for exams |                                      |
| Nov 19 – Nov 25 |                                      |                                      |

**Note:** Due to the nature of this class, including delivery mode, weather events and potential technical glitches, problems may occur that will affect the actual schedule. Additionally, course adjustments may be based upon ongoing class progress assessments. Revisions will occur at the instructor’s discretion. Students are required to complete assignments based on the due dates in Blackboard. When any due date changes are made, the instructor will notify students by email and posting an announcement in Blackboard.

**COLLEGE POLICIES:**

Please see the Old Dominion Undergraduate Catalog for University policies and procedures:

[http://catalog.odu.edu/undergraduate/](http://catalog.odu.edu/undergraduate/)