CS 381 Introduction to Discrete Structures - Fall 2020 - Ayman El Mesalami

<table>
<thead>
<tr>
<th>Syllabus Outline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Readings</td>
</tr>
<tr>
<td>Course Description</td>
</tr>
<tr>
<td>Goals and Objectives</td>
</tr>
<tr>
<td>How the Course Works</td>
</tr>
<tr>
<td>Grading Criteria</td>
</tr>
<tr>
<td>Student Responsibilities</td>
</tr>
<tr>
<td>Course Policies</td>
</tr>
<tr>
<td>University Policies</td>
</tr>
</tbody>
</table>

## Course Readings

### Required Textbook

You can buy either the 7th edition or the 8th edition of:


You do not need to buy the two editions. You will only need one copy of the textbook (either the 7th or 8th edition). You might buy the cheaper copy. I will refer to the 7th edition during the semester.

- visit the book's [companion website](#) for electronic resources
- not all the chapters of the book are covered
- not all sections from selected chapters are covered
- we will not follow the order of the book

Supporting material will be posted on Blackboard—this includes lecture notes in PowerPoint presentations

## Course Description

### ODU Catalog Description

Topics include propositional and predicate logic, rules of inference, methods of proof, set operations, functions, complexity of algorithms, growth of functions, induction, counting, relations, equivalence relations and graphs.

### Instructor Course Description

This course is an introduction to the discrete structure and mathematics, which are essential components to learn algorithms and procedures for problem solving. The discrete mathematics solely focuses on the discrete objects of distinct and separate values. This branch of mathematics does not study the continuous objects which vary smoothly like real numbers (3.45701), rather it deals with objects of unconnected elements like integers – where gaps exist. To understand the distinction between the discrete and continuous objects, think of the digital and analog clocks. In analog clocks, the handle moves smoothly and the fractions of a second are counted. On the contrary, digital clocks only counts the whole numbers, like 1, 2, 3, etc.

Students in this class will learn the discrete structures and techniques required to solve problems, such as finding good sorting algorithms, performing efficient web/databases searches, mappings, analyzing algorithms, finding shortest paths between objects, figuring out how many ways are there to choose a computer password, solving problems of connectivity, designing security protocols, etc.

### Prerequisites:

- Classes:
  - MATH 163
  - a grade of C or better in CS 150

- Skills:
  - Basic Math, like common functions and equations, derivatives and integrals.
  - Basic Computer Science, like variables, data types and expressions, assignment, control-flow statements, functions, arrays, pointers, structs, and classes.
**Goals and Objectives**
Upon successful completion of this class, students will be able to:

1. apply methods of discrete mathematics in computer science
2. verify and prove the correctness of an argument
3. apply different techniques for solving problems
4. express ideas precisely using proper computer science vocabulary
5. construct models to translate problems into mathematical contexts
6. demonstrate familiarity and understanding of the discrete structures, including sets, relations, functions, matrices, and graphs
7. analyze and evaluate the performance of algorithms
8. reason mathematically and correctly
9. visualize and simplify problems using graphs and trees

**How the Course Works**

**Methods of Delivery/Learning Activities**
This online course employs several methods of delivery and learning activities including online lectures and presentations, threaded discussions, Web sites, video clips, reading and written assignments, self-assessment checks, examinations, e-mail, and electronic access of information.

**Rules for emails:**
- Identify yourself
- Address the instructor properly *(Either Dr. Elmesalami, Sir, or Professor is fine)*
  - At least say hello!
  - Typically replied within 48 hours
- email to aelmesal@cs.odu.edu
  - Please make sure to include the class name “CS-381” in the subject of your email, otherwise I will not be able to know which class you are talking about
  - Use your university or CS Dept. e-mail account to send emails
  - Sign with your full name, course number, and meeting time
- We will use email to discuss issue that cannot be discussed on the discussion board.

**Grading Criteria**
The grade distribution is 40% for the weekly quizzes and 60% for the exams. There will be two exams mid term is 25% and final exam is 35%. The schedule of the exams *(mid term and final)* is posted in the course schedule section. In addition to the two exams, there will be weekly quizzes.

Each module is designed as a weekly “chunk” of work to be accomplished. The basic weekly structure is as follows. On Monday, you should start reading the chosen sections from the textbook. By Thursday morning, you should have completed all the reading and you should be ready to take the quiz. The weekly quizzes will be available from Friday at 7:00am to Saturday at 7:00pm each week. Please make sure to take the quiz during the available time because the link of the quiz will disappear on Saturday at 7:00pm. Late quizzes are not accepted for marking.

Always check the announcement section for further instructions about the weekly quizzes.

<table>
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<tr>
<th>Assignments</th>
<th>Points Possible</th>
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<tr>
<td>Weekly Quizzes</td>
<td>40%</td>
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<tr>
<td>Midterm Exam</td>
<td>25%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>35%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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The following is the grading scale used in tabulating assignment and final grades for this course:

<table>
<thead>
<tr>
<th>Final Percentage Grade</th>
<th>Letter Grade</th>
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<tbody>
<tr>
<td>93-100</td>
<td>A</td>
</tr>
<tr>
<td>90-92.9</td>
<td>A-</td>
</tr>
<tr>
<td>88-89.9</td>
<td>B+</td>
</tr>
<tr>
<td>82-87.9</td>
<td>B</td>
</tr>
<tr>
<td>80-81.9</td>
<td>B-</td>
</tr>
<tr>
<td>78-79.9</td>
<td>C+</td>
</tr>
<tr>
<td>70-77.9</td>
<td>C</td>
</tr>
<tr>
<td>68-69.9</td>
<td>C-</td>
</tr>
<tr>
<td>60-67.9</td>
<td>D</td>
</tr>
<tr>
<td>Below 60</td>
<td>F</td>
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Student Responsibilities

Expectations: Students are expected to:
- check BlackBoard regularly
- read the selected chapters from textbox
- read supporting material and watch supporting videos
- complete and submit the assignment and quizzes before the due date
- attend all exams
- use time wisely and be organized
- participate actively in the class discussion, post questions, comments and responses - please post your questions on the discussion forum instead of sending emails so other students can benefit from the posted discussion
- have the motivation to work independently, e.g. solve review problems at the end of each section from the textbook
- follow the rules of sending email
- discuss private issues by email
- follow the course policies and guidelines

Time Management

Students are expected to spend 10 hours per week on the course materials and assignments. Out of 10 hours, students are expected to spend approximately 3 hours per week to read the material and another 3 hours/week for the homework and discussions.

Utilizing Online Components

Refer to the START HERE section within the Blackboard menu and the course tour

Study Guide Strategies

Link to study guide strategies

Papers Citation Styles: MLA, APA, Chicago & CBE

Link to papers citation styles

Attendance

Since this is an on-line course, there is no mandatory attendance policy. However, students are expected to actively participate in the discussions, homework submissions, and journal writing.

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  - Use your university or CS Dept. e-mail account to send emails
  - Sign with your full name, course number, and meeting time

Course Policies

Online Classroom Conduct (Netiquette)

Students are expected to follow good Netiquette rules. Netiquette is the accepted behavior for online participation. The following is a list of general guidelines for this course:
- Check your grammar and spelling
- Keep your comments focused on the topic
- Strive to write succinctly and clearly
- Share your knowledge and include supportive evidence for your comments
- Do not use all capital letters as that is viewed as shouting
- Avoid flaming—disrespectful language is unacceptable

Select the link to find more information on Netiquette.

Attendance

Since this is an on-line course, there is no mandatory attendance policy. However, students are expected to actively participate in the discussions, homework submissions, and journal writing.

Tests and Make-ups

The same information for homework will apply for tests and make-up work: If a situation has occurred that requires your time and attention which will
prevent submitting your work on time, please notify your instructor 24 hours before the scheduled due date.

Course Disclaimer

Every attempt is made to provide a syllabus that is complete and that provides an accurate overview of the course. 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.

University Policies

Honor Pledge

"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 of 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." By attending Old Dominion University you have accepted the responsibility to abide by this code. This is an institutional policy approved by the Board of Visitors. For more information please visit Honor Council.

Special Needs

Old Dominion University is committed to achieving equal educational opportunity and full participation for persons with disabilities. It is the university's policy that no qualified person be excluded from participation in any university program or activity, be denied the benefits of any university program or activity, or otherwise be subjected to discrimination with regard to any university program or activity. This policy derives from the university's commitment to Non-discrimination for all persons in employment, access to facilities, student programs, activities and services. You may view the policy online: Old Dominion University Policies and Procedures 4500 - Accommodation of Students with Disabilities (pdf). For additional information visit the Office of Educational Accessibility online or at 1525 Webb Center.

Disability Services

In compliance with PL94-142 and more recent federal legislation affirming the rights of disabled individuals, provisions will be made for students with special needs on an individual basis. The student must have been identified as special needs by the university and an appropriate letter must be provided to the course instructor. Provision will be made based upon written guidelines from the University's Office of Educational Accessibility.

All students are expected to fulfill all course requirements.

University Email Policy

The Old Dominion University e-mail system is the official electronic mail system for distributing course-related communications, policies, announcements, and other information. In addition, the University e-mail user ID and password are necessary for authentication and access to numerous electronic resources (online courses, faculty Web pages, etc.). For more information about the policy, please visit: Electronic Messaging Policy for Official University Community Policy 3506 http://occs.odu.edu/accounts/studemail/

Withdrawal

A syllabus constitutes an agreement between the student and the course instructor about course requirements. Participation in this course indicates your acceptance of its teaching focus, requirements, and policies. Please review the syllabus and the course requirements as soon as possible. If you believe that the nature of this course does not meet your interests, needs or expectations, if you are not prepared for the amount of work involved - or if you anticipate that the class meetings, assignment deadlines or abiding by the course policies will constitute an unacceptable hardship for you - you should drop the class by the drop/add deadline, which is located in the ODU Schedule of Classes. For more information, please visit the Office of the University Registrar.

COVID-19 Instructions

Face Coverings

Students are required to wear face coverings in accordance with the provisions set forth in ODU Policy 1006: COVID-19 (Interim Policy), especially in those instances when at least six (6) feet of physical separation cannot be maintained. Some on-campus labs, clinical/practicum courses, and field courses may require somewhat closer interaction, but personal protective equipment (PPE) will be required and tailored to the nature of the activity and the proximity anticipated. The face covering must cover the mouth and nose and must be worn at all times in the building before, during, and after class. Students who have medical reasons that prevent wearing a face covering must meet with the University's Office of Educational Accessibility for alternative course delivery solutions. Students who are disruptive in class about face coverings or physical social distancing may not remain in class and will be referred to the Office of Student Conduct & Academic Integrity.

COVID-19 Response

If you are experiencing any symptoms of a possible COVID-19 infection or have come into contact with someone with COVID-19, please do not come to class. In addition, you must report your symptoms using the COVID-19 daily check-in text app. If you show symptoms, immediately self-isolate and follow appropriate guidance on when and where to seek medical care. Take every precaution to mitigate potential spread to fellow students, ODU faculty, staff, and others in the community.

If you need to quarantine or isolate, please inform your instructor so that he or she can adjust assignments and provide the level of support necessary to help you succeed in class. Your professor will make accommodations to help you learn the course material and succeed in the class if you are unable to attend due to COVID-19. If necessary, your instructor will suspend in-person classes for a 14-day period to reduce the possibility of community spread. If the instructor shows signs of COVID-19 infection and needs to quarantine or isolate, class will be immediately moved online for a minimum of 14 days. Instruction will continue online until the quarantine/isolation period has ended and/or conditions warrant a return to in-person instruction.

For additional information visit the Office of Educational Accessibility online or at 1525 Webb Center.
**Student Acknowledgement**

“I, ____________, have completely read this syllabus and understand and agree to the course requirements.”

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We are committed to ensuring that PLE content is accessible according to WCAG 2.0 level AA.

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