SYLLABUS

CS2401: Elementary Data Structures Fall 2020
CRN: 13169 (Lecture) CRN 15012 (Lab)

COURSE DESCRIPTION:
This is the second course for students majoring in Computer Science. Students will learn about fundamental computing algorithms including searching and sorting; recursion; elementary abstract data types including linked lists, stacks, queues and trees; and elementary algorithm analysis.

Prerequisite: CS 1301 and CS 1101 with a grade of C or better in both.

Knowledge and Abilities Required Before Entering the Course:
Students are assumed to be comfortable programming in Java. Students should be able to code basic arithmetic expressions, define simple classes, use strings, code loops and conditional statements, write methods, create objects from classes, invoke methods on an object, perform basic text file input and output, and use arrays.

COURSE LOGISTICS:
This course is fully online and live. We will be using Microsoft Teams for the live sessions of our lectures and labs, as well as for our office hours; our team is called **CS2401 Fall 2020 Ceberio**. You will be using Blackboard to take your exams. We will meet at the stated hours of our lectures (MW at 10:30am) and labs (MW at 9am). All students are expected to attend and actively participate in this course.

INSTRUCTIONAL TEAM

Instructors: Dr. Martine Ceberio   *mceberio@utep.edu*
Office hours:
- CS2401 Team: TR from 10AM to 11AM
    + contact me at any time on the individual chat of MS Teams
- Any urgency? Feel free to <u>text me</u> at 915-308-1164 (do not call).

Daniel Shanker   *shankerd@google.com*

Teaching Assistant: *Jonatan Contreras*   *jmcontreras2@miners.utep.edu*

Instructional Assistants: *Edgar Escobedo*   *ejescobedo@miners.utep.edu*

Diana Valles Martinez   *dpvallesmar@miners.utep.edu*

Peer Leader: *Manuel (Manny) Gutierrez*   *mgutierrez44@miners.utep.edu*
Office hours: To Be Announced. Will be posted on MS Teams
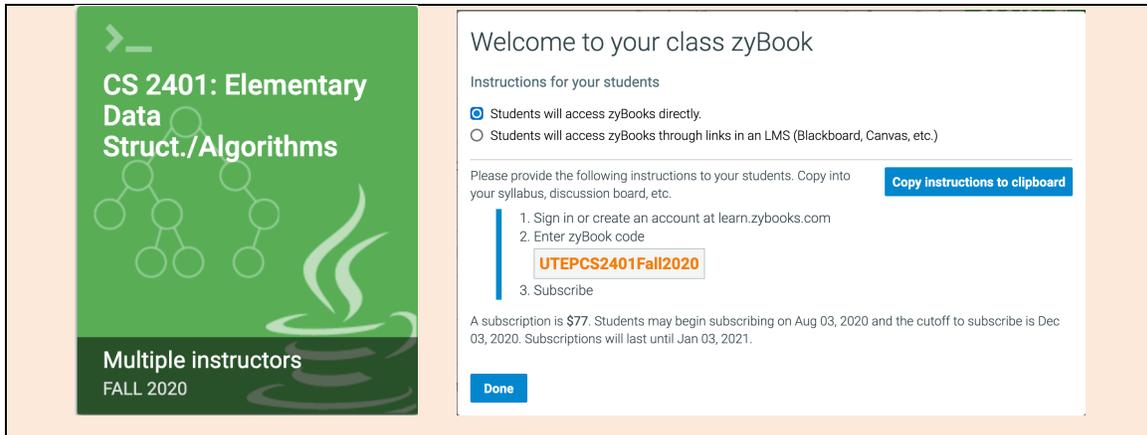
CS 2401: Elementary Data Struct./Algorithms

Multiple instructors
FALL 2020

Welcome to your class zyBook

Instructions for your students

☑ Students will access zyBooks directly.
○ Students will access zyBooks through links in an LMS (Blackboard, Canvas, etc.)

Please provide the following instructions to your students. Copy into your syllabus, discussion board, etc.

Copy instructions to clipboard

1. Sign in or create an account at learn.zybooks.com
2. Enter zyBook code

   UTEPCS2401Fall2020

3. Subscribe

A subscription is $77. Students may begin subscribing on Aug 03, 2020 and the cutoff to subscribe is Dec 03, 2020. Subscriptions will last until Jan 03, 2021.

Done

COURSE ASSIGNMENTS AND GRADING:

There will be 4 types of assignments / assessments for those of you who are taking CS2401:

1. Homework assignments
2. Quizzes
3. In-class assignments
4. Lab assignments
5. Exams
6. Active participation in class / lab

Please see below the Course Calendar section for a list of all assignments: details for these assignments will be given on our course team (CS2401 Fall 2020 Ceberio) on MS Teams. All assignments described in this section are mandatory assignments and will count towards your course grade.

1. Homework assignments

Most of your homework will be work assigned on your online zybook (see above for textbook details and online registration). Reading and homework assignments are already posted (see below, as well as in the notebook of our course MS Teams and on zybook) so that you can organize your time throughout the semester. Completing the assigned activities on time will be crucial to your success in the class (since these activities prepare you for classwork, labs, and exams). Reading and homework assignments to be completed on your online textbook are usually meant to familiarize you with concepts that will be covered in depth in class. If you struggle in any way while working on these, it is crucial that you seek help as soon as possible.

Online homework grade: at each deadline, your instructor will collect your progress towards the due assignment. The % of completion you have achieved will be used to compute your grade on this particular homework.

Extra-credit opportunities: You will be given several opportunities to collect extra credit, to be applied towards your homework grade (not to exceed an overall homework grade of 105% on the online homework portion of your semester grade). These opportunities will be clearly indicated in the list of deadlines in your online textbook. There are three types of extra credit opportunities: catch-up homework, review homework, and professionalism.

- Catch-up homework assignments are regularly scheduled during the semester and are meant to help you make up some of the points you may not have made by the deadline of each individual homework assignment (up to 75% of the points you missed at earlier deadlines).
- Review homework is a one-time opportunity. If you complete at least 75% of the Review homework assignment, you will receive 5 extra points to count towards your online homework grade (not to exceed 105 points total).
- Professionalism: if all online homework was consistently completed on time, an extra 100 points will be assigned to the average making up the HW/Q/IC grade.

2. Quizzes

The purpose of each quiz is to ensure that students are staying current with the weekly reading assignments and the class activities, and to verify that they have acquired the skills presented and practiced in class/lab. Quizzes are unannounced. They will be on-line quizzes, most often on socrative.com. There will be no make-up on missed quizzes.

3. In-class assignments

There will be unannounced in-class assignments, to be turned in either by the end of the class or within a short period of time after the class (instructions and submission details will be provided for each assignment). There will be no make-up for missed in-class assignments. Grades of such assignments will weigh equally with grades from online quizzes and zybook homework assignments.

If you miss a lecture session, it is your responsibility to find out what you missed, including assignments that might have been given in class.

4. Lab assignments

Lab assignments are designed for you to further your practice of the concepts presented in class and to demonstrate your level of mastery of these. In lab, you will typically work on either small lab activities related to currently covered concepts or concepts in which your instructional team thinks you should acquire more fluency (we call these **minilabs**), or more substantial lab assignments (**longer labs**). Specifically, there will be about 1 or 2 minilabs on most weeks and 4 longer labs during the semester.

Online homework that is specific to the lab activities is also assigned: you will notice two assignments listed on your online zybook are labeled "Lab HW". Your completion of these will count towards your lab grade.

Attendance and active participation: You are expected to attend and actively participate in labs and to submit your work on time. Attendance will be taken and will count towards your overall standing in the class.

Extra credit opportunity: those who attended all labs (except for a maximum of 2 absences excused ahead of time) and submitted all of their labs on time = 100 extra points towards the lab assignments average.

Reminder: You need to score 70% or higher in the labs portion of the course to pass CS2401, regardless of your course average otherwise.

5. Exams

There will be **4 small midterm exams** (each 30 minutes long), **1 final exam prep** (2 hours long), and **one final exam**. Because the exams contribute heavily to your total grade, it is vital that you put your best effort on each of them.

If you have test-taking difficulties in general, or if you have difficulties with our tests in particular, please request appropriate accommodation from UTEP's Center for Accommodation and Students' Services (see below for more details).

The purpose of the midterm exams is to allow you to demonstrate mastery of course concepts covered thus far during the semester (hence each exam is comprehensive). Mid-term exams will be assigned to be completed outside of class (by a specified deadline) on Blackboard. Their tentative schedule is available below. Make-up exams will be given only in extremely unusual circumstances. If you must miss an exam, please meet with an instructor, BEFORE the exam. The final exam will be comprehensive. You must score 70% or better on the final exam to pass this course.

6. Active participation

Class and Lab Participation: Attendance and participation in all lecture and lab sessions are critical factors of your success in this course.

Students should be on time for all scheduled sessions and attend the entire session. Attendance will be taken at every session (you will be requested to post a message so we know you attended) and, along with evidence of your active participation, will count towards your class participation grade.

If you cannot attend a lecture / lab, you have to inform your instructor. If the absence is due to a technical issue, at the time you are experiencing it, a text message to the above listed phone number will do. If it is a medical absence, you are expected to inform your instructor as soon as practical. In any case, you will have to complete a separate assignment to make up for your absence (or will be counted absent).

If you are absent more than 6 times (lectures and labs together) and do not communicate with us promptly and/or do not reply to our emails as we are trying to touch base with you, you will be dropped from the class within a week. In any case, points from attendance will be taken off for each absence (5 points per unexcused absence, with up to 3 excused absences allowed per lecture / lab).

During lectures and labs, students should be on task. When in lecture or lab session, students are expected to direct their attention to the task / activity as directed by the lecture / lab instructor. For instance, lecture and lab sessions are certainly not places for social-networking, working on homework, checking other courses / goldmine / etc.

Professionalism: Students should notify the instructor prior to missing a session if at all possible, and certainly right after if earlier was not possible. The instructor will allow two unexcused absences per semester before having the option to deduct points from the final grade (5 points per subsequent unexcused absence). Students should submit their work on time and meet all deadlines. Failing to do so will affect the participation grade.

Communication: Students are expected to consult their emails and MS Teams messages every business day, ideally twice on these days at least, and to promptly answer these.

Due Date of Assignments
We will use deadlines following only the below pattern:
- Monday morning at 9AM (before your Monday lab)
- Wednesday morning at 9AM (before your Wednesday lab)
- Saturday night at 11:59PM.

If you foresee that any of these deadlines will be an issue, you are already given most of the deadlines for the semester and therefore can arrange to work ahead of time to still meet the required deadline.

GRADES:

Grades will be available to students in a timely manner. Students can easily keep track of their grades using the grades link on Blackboard and our frequent communication. In case of any doubt, students are encouraged and welcome to contact one of the instructors or TA for clarification. Your semester grade will be based on a combination of the performance your demonstrated on each of the above types of assignments, as shown below:

The approximate percentages are as follows:

	CS2401
Class participation	3%
Homework / Quizzes / In-class assignments average grade	12%
Lab average grade	37%
Midterm exams average grade	15%
Final exam grade	33%

The nominal percentage-score-to-letter-grade conversion for CS 2401 is as follows:

- 90% or higher is an A
- 80-89% is a B
- 70-79% is a C
- 60-69% is a D
- Below 60% is an F

Important Note: Regardless of your standing in the class at that time, you need to earn a C or better at the final exam to pass the course as well as a C or better as your average grade on the lab assignments.

EXPECTATIONS
You should expect to spend at least four hours per week outside of lecture on reading and homework. You should plan to devote four extra hours on your lab assignments.

ATTENDANCE POLICY:
This course is 100% online and live. Virtual attendance is mandatory. Please refer to the Active Participation section above for more details.

LATE WORK POLICY:
Late work will be penalized by 10 points each day up to 3 days. After that, the work will be graded 0.

INCOMPLETE POLICY:

Incomplete grades may be requested only in exceptional circumstances after you have completed at least half of the course requirements. Talk to me immediately if you believe an incomplete is warranted. If granted, we will establish a contract of work to be completed with deadlines.

DROP POLICY:

Every semester, some students drop courses. We, instructors, completely understand and respect that. We only hereby ask students to inform us, ideally before, but in the worst-case right after, of their intention to drop the course. This is really important for us as it possibly informs us of ways in which to better serve our students.

Fall Semester Drop/Withdrawal Deadline: October 30.

To drop this course, please contact your academic advisor and then the Registrar's Office to initiate the drop process. If you do not, you are at risk of receiving an "F " for the course.

CLASS RECORDINGS

The use of recordings will enable you to have access to class lectures, group discussions, and so on in the event you miss a synchronous meeting due to illness or other extenuating circumstance. Recordings will be available on the relevant channels of our MS Team (lecture in the General channel, Labs in the Labs channel, workshops in the Workshop channel, etc.).

Our use of such technology is governed by the Federal Educational Rights and Privacy Act (FERPA) and UTEP's acceptable-use policy. A recording of class sessions will be kept and stored by UTEP, in accordance with FERPA and UTEP policies. Your instructor will not share the recordings of your class activities outside of course participants, which include your fellow students, teaching assistants, or graduate assistants, and any guest faculty or community-based learning partners with whom we may engage during a class session. You may not share recordings outside of this course. Doing so may result in disciplinary action. More information about student privacy can be found here: https://www.utep.edu/provost/_Files/docs/curriculum/UT-system-online-learning-student-privacy-faqs.pdf.

COURSE OUTCOMES:

Level 3: Synthesis and Evaluation:

Level 3 outcomes are those in which the student can apply the material in new situations. This is the highest level of mastery. On successful completion of this course, students will be able to identify, implement and use the following data structures as appropriate for a given problem:

1. Design and implement solutions to computational problems using the following data structures:
   a. multi-dimensional arrays;
   b. lists implemented as arrays or linked lists;
   c. stacks;
   d. queues;
   e. binary trees and binary search trees.

Level 2: Application and Analysis:

Level 2 outcomes are those in which the student can apply the material in familiar situations, e.g., can work a problem of familiar structure with minor changes in the details. Upon successful completion of this course, students will be able to:

1. Describe, implement, and use the following concepts:
    a. classes, subclasses, and inheritance
    b. encapsulation and information hiding
2. Describe, implement, and use the following algorithms:
    a. sequential and binary search
    b. quadratic and O(n log n) sorting
    c. string manipulation and parsing
3. Describe and trace computer representation and memory allocation of:
    a. integers, real numbers, arrays and objects
    b. methods, including recursive methods and the use of activation records
4. Use basic notions of algorithm complexity:
    a. use Big-O notation to express the best-, average- and worst-case behaviors of an algorithm
    b. determine the best, average and worst-case behaviors of a simple algorithm
5. Use recursion and iteration as problem solving techniques

Level 1: Knowledge and Comprehension

Level 1 outcomes are those in which the student has been exposed to the terms and concepts at a basic level and can supply basic definitions. On successful completion of this course, students will be able to:

1. Explain the concept of polymorphism

TECHNOLOGY REQUIREMENTS:

Course content is delivered via the Internet through MS Teams for most of our operations and exams will be delivered through Blackboard. Labs will be held on MS Teams and require that you use Mimir (you have received an invitation to Mimir). Ensure that you have MS Teams installed, that your UTEP e-mail account is working, and that you have access to the Web and a stable web browser. When using Blackboard, know that Google Chrome and Mozilla Firefox are the best browsers; other browsers may cause complications. When having technical difficulties, update your browser, clear your cache, or try switching to another browser.

You will need to have access to a computer/laptop and a microphone. If you need to, know that you can download Microsoft Office programs (including Excel, PowerPoint, Outlook and more) for free via UTEP's Microsoft Office Portal. Click the following link for more information about Microsoft Office 365 and follow the instructions.

IMPORTANT: If you encounter technical difficulties beyond your scope of troubleshooting, please contact the UTEP Help Desk as they are trained specifically in assisting with technological needs of students. Please do not contact me for this type of assistance. The Help Desk is much better equipped than I am to assist you!

ACCOMMODATION POLICY:

The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other beneficiaries of University programs, services and activities with documented disabilities in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Reasonable accommodations will be made unless it is determined that doing so would cause undue hardship on the University. Students

requesting an accommodation based on a disability must register with the UTEP Center for Accommodations and Support Services. If you have a disability and need classroom accommodations, please contact the Center for Accommodations and Support Services (CASS) at 747-5148 or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at www.sa.utep.edu/cass. CASS' staff are the only individuals who can validate and if need be, authorize accommodations for students with disabilities.

COVID-19 Accommodations

This course is entirely online synchronous (that is: online and live). However, in case this is relevant to your situation as it relates to other courses you may be taking, know that students are not permitted on campus when they have a positive COVID-19 test, exposure or symptoms.

SCHOLASTIC INTEGRITY:

Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Scholastic dishonesty includes, but not limited to cheating, plagiarism, collusion, and submission for credit of any work or materials that are attributable to another person.

Cheating may involve: Copying from the test paper of another student
Communicating with another student during a test to be taken individually
Giving or seeking aid from another student during a test to be taken individually
Possession and/or use of unauthorized materials during tests (i.e. crib notes, class notes, books, etc.)
Substituting for another person to take a test
Falsifying research data, reports, academic work offered for credit

Plagiarism is: Using someone's work in your assignments without the proper citations
Submitting the same paper or assignment from a different course, without direct permission of instructors
To avoid plagiarism, see this website about avoiding plagiarism.

Collusion is: Unauthorized collaboration with another person in preparing academic assignments

Important! When in doubt on any of the above, please contact your instructor to check if you are following authorized procedure. Also, please check the UTEP's Handbook of Operating Procedures at: hoop.utep.edu.

Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. Any student who commits an act of scholastic dishonesty is subject to discipline. All suspected violations of academic integrity at The University of Texas at El Paso must be reported to the Office of Student Conduct and Conflict Resolution (OSCCR) for possible disciplinary action. To learn more HOOP: Student Conduct and Discipline.

STUDENT RESOURCES:

UTEP provides a variety of student services and support:

- UTEP Library: Access a wide range of resources including online, full-text access to thousands of journals and eBooks plus reference service and librarian assistance for enrolled students.
- Help Desk: Students experiencing technological challenges (email, Blackboard, software, etc.) can submit a ticket to the UTEP Helpdesk for assistance. Contact the Helpdesk via phone (915-747-4357), email (helpdesk@utep.edu), chat, or website.
- University Writing Center (UWC): Submit papers to UWC for assistance with writing style and formatting, ask a tutor for help and explore other writing resources.

- [Math Tutoring Center (MaRCS):](#) Ask a tutor for help and explore other available math resources.
- [Military Student Success Center (MSSC):](#) UTEP welcomes military-affiliated students to its degree programs. The Military Student Success Center and its dedicated staff (many of whom are veterans and students themselves) are there to help personnel in any branch of service to reach their educational goals.
- [RefWorks:](#) A bibliographic citation tool; check out the RefWorks tutorial and Fact Sheet and Quick-Start Guide.

[More complete and updated information can be accessed at this address.](#)

COURSE CALENDAR:

CS2401 MAJOR DEADLINES: excluding extra work assigned in class and mini labs

		IN CLASS (Tentative)	ZYBOOK HOMEWORK	AT-HOME EXAMS on BLACKBOARD	LABS (Tentative)
W1	24-Aug	Intro to instructors, mode of instruction (including syllabus), review activities			Welcome!
	26-Aug	2D arrays, intro to time complexity			Lab Scavenger Hunt
	29-Aug	/////////	HW1.1 on Arrays		
W2	31-Aug	2D arrays, intro to time complexity, search?	HW1.2 on Arrays+		Minilab 1 on 2D arrays
	2-Sep	OOP, inheritance, interfaces? Generics?	HW2.1 on OOP, Lab HW Review		
	5-Sep	/////////	HW2.2 on OOP, Lab HW on Debugging and Troubleshooting		
W3	7-Sep	LABOR DAY: NO CLASS	Lab HW on JUnit Testing		
	9-Sep	OOP, inheritance, interfaces? Generics?	HW2.3 on Abstract Classes and Interfaces, HW2.4 on Generics		
	12-Sep	/////////	HW3.1 on Methods, HW3.2 on Methods+	small exam 1 (2 x 30 minutes)	
W4	14-Sep	recursion + revisit search (binary search recursive)	HW4.1 on Algos & Recursion, HW4.2 on Algo Analysis		
	16-Sep	recursion (more practice) and intro to sorting	HW4.3 on Recursion		
W5	21-Sep	sorting (n^2)	HW5 on Sorting		work on longer lab 1
	23-Sep	sorting (n.log(n))			LONGER LAB 1 DUE (last day of lab to work on it: due before lab on 09/28): 2D arrays, OOP, recursion
W6	28-Sep	more sorting	Catch-up HW1		
	30-Sep	more sorting	HW6.1 on Linked Lists	small exam 2 (2 x 30 minutes)	
W7	5-Oct	linked lists	HW6.2 on Linked Lists		
	7-Oct	linked lists	HW6.3 on Doubly Linked Lists		
	10-Oct	/////////	HW6.4 on ArrayLists (OPTIONAL)		
W8	12-Oct	linked lists			
	14-Oct	linked lists			
	17-Oct	/////////	Extra Credit CS1 Review Material		
W9	19-Oct	general trees and intro to binary trees	Catch-up HW2 on OOP, HW7.1 on Binary Trees		
W9	21-Oct	binary trees		small exam 3 (2 x 30 minutes)	LONGER LAB 2 DUE (4 weeks): search, sort, linked lists, time complexity
W10	26-Oct	binary trees	HW7.2 on Binary Search Trees		
	28-Oct	binary trees			
W11	2-Nov	binary search trees	Catch-up HW3, HW7.3 on Binary Search Trees		
	4-Nov	binary search trees			
W12	9-Nov	stacks and queues	HW8 on Stacks and Queues		
	11-Nov	stacks and queues		small exam 4 (2 x 30 minutes)	
W13	16-Nov	stacks and queues			LONGER LAB 3 DUE (4 weeks)
	18-Nov	stacks and queues			

W14	23-Nov	reviews	Catch-up HW4 on Linked Lists		
	25-Nov	reviews		final prep exam (4 x 30 minutes)	
W15	30-Nov	reviews			
	2-Dec	reviews	Catch-up HW5 on Binary Trees		LONGER LAB 4 DUE (2 1/2 weeks)
W16	7-Dec	/////////	Catch-up HW6 on Stacks and Queues		
FINALS	Before 12/11	FINAL EXAM		COMPREHENSIVE EXAM (6 x 30 minutes)	

Please follow UTEP's rules for online courses. They are available for you to read below. Here is also a link where you can access the core rules of netiquette.

NETIQUETTE GUIDE FOR ONLINE COURSES

It is important to recognize that the online classroom is in fact a classroom, and certain behaviors are expected when you communicate with both your peers and your instructors. These guidelines for online behavior and interaction are known as netiquette.

SECURITY

Remember that your password is the only thing protecting you from pranks or more serious harm.
- Don't share your password with anyone
- Change your password if you think someone else might know it
- Always logout when you are finished using the system

GENERAL GUIDELINES

When communicating online, you should always:

- Treat instructor with respect, even in email or in any other online communication
- Always use your professors' proper title: Dr. or Prof., or if you in doubt use Mr. or Ms.
- Unless specifically invited, don't refer to them by first name.
- Use clear and concise language
- Remember that all college level communication should have correct spelling and grammar
- Avoid slang terms such as "wassup?" and texting abbreviations such as "u" instead of "you"
- Use standard fonts such as Times New Roman and use a size 12 or 14 pt. font
- Avoid using the caps lock feature AS IT CAN BE INTERPRETTED AS YELLING
- Limit and possibly avoid the use of emoticons like :) or ☺
- Be cautious when using humor or sarcasm as tone is sometimes lost in an email or discussion post and your message might be taken seriously or offensive
- Be careful with personal information (both yours and other's)
- Do not send confidential patient information via e-mail

EMAIL NETIQUETTE

When you send an email to your instructor, teaching assistant, or classmates, you should:
- Use a descriptive subject line
- Be brief
- Avoid attachments unless you are sure your recipients can open them
- Avoid HTML in favor of plain text
- Sign your message with your name and return e-mail address
- Think before you send the e-mail to more than one person. Does everyone really need to see your message?
- Be sure you REALLY want everyone to receive your response when you click, "reply all"
- Be sure that the message author intended for the information to be passed along before you click the "forward" button

MESSAGE BOARD NETIQUETTE AND GUIDELINES

When posting on the Discussion Board in your online class, you should:
- Make posts that are on topic and within the scope of the course material
- Take your posts seriously and review and edit your posts before sending
- Be as brief as possible while still making a thorough comment
- Always give proper credit when referencing or quoting another source
- Be sure to read all messages in a thread before replying
- Don't repeat someone else's post without adding something of your own to it
- Avoid short, generic replies such as, "I agree." You should include why you agree or add to the previous point
- Always be respectful of others' opinions even when they differ from your own
- When you disagree with someone, you should express your differing opinion in a respectful, non-critical way
- Do not make personal or insulting remarks
- Be open-minded