CS 3345 Data Structures and Introduction to Algorithmic Analysis

Fall 2014 Syllabus UTD

INSTRUCTOR INFORMATION

Name	Dr. Mohamed Amine Belkoura
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Office	TBD
Office Phone	TBD
Office Hours	M/W 5:15 – 7:00 PM

COURSE INFORMATION

Course Number	CS 3345 003
Credit Hours	3
Meeting Time	M/W 4:00 - 5:15 PM
Room	ECSS 2.112

E-mail: The easiest way to reach me is via e-mail. I make every effort to respond within a few hours. When e-mailing me, please e-mail from your UTD e-mail address. Please include your name, course and section either in the subject or the body of your e-mail (preferably on the first line if not in the subject). This will help me to address your e-mail as quickly as possible.

Required Textbook and Other Course Material

- **Required Textbook**: Data Structures and Algorithm Analysis in Java (3th edition); Weiss, M. Allen; Addison-Wesley Publishing 0-13-257627-9
- Review Questions and Exercises are at the end of each chapter in the text.
- **JAVA Compiler**
  - All programming assignments need to compile and run on JAVA SDK 1.7 (any minor version)
  - All programming assignments will be compiled and executed using Apache Ant 1.9 (any minor version)
  - If you intend to use your own computers to write the class assignments, it is important that you get all your programs compiled and executed at UTD CS labs before submitting them. If a program compiles and runs on your personal computer, but does not run on UTD CS Labs or TA machine, the code is considered incomplete.
  - You are responsible for getting the programming assignments written and turned in on time. Since there are many computers available on campus, problems with your local machines will not be accepted as an excuse for not doing the assignments.

Course Prerequisite: Prerequisites: (CE 2305 or CS 2305 or TE 2305) and (CE 2336 or CS 2336 or TE 2336). Prerequisite or corequisite: CS 3341 or SE 3341 or ENGR 3341. (Same as CE 3345 and SE 3345 and TE 3345) (3-0) S.

Description of Course Content: Introduction Analysis of algorithms including time complexity and Big-O notation. Analysis of stacks, queues, and trees, including B-trees. Heaps, hashing, and advanced sorting techniques. Disjoint sets and graphs. Course emphasizes design and implementation.

Student Learning Outcomes: After successful completion of this course, the student should have an:

- Ability to use/analyze Asymptotic notations, recurrences, algorithm analysis
- Ability to use/analyze Lists, stacks, queues, hashing, priority queues
- Ability to use/analyze Binary search trees, Balanced binary search trees
- Ability to use/analyze Graphs, Depth-first search, Topological ordering
- Ability to use/analyze Breadth-first search, Dijkstra's algorithm
- Ability to use/analyze Algorithms of Prim and Kruskal, Disjoint-set Union-Find problem

My Expectations of You:

- If you feel you are struggling, please talk to me during office hours.
- Attend every class
- Ask questions during lecture, before/after class, during office hours or e-mail me if you do not understand something.
- Read the chapter before the corresponding lecture.
- Bring your textbook to class.
- **Arrive to class on time and remain in class until dismissed.** Arriving late and leaving early cause disruptions to the other students in the class and to me. Should you need to leave early for a valid reason, please notify me in advance
- **Students leaving class early may receive a zero on the previous quiz.**
- **Students causing disruptions such as talking without permission during a lecture will be forced to leave. Disruptions include, and are not limited to, talking in class, playing on your phone, sleeping in class.**
- No eating, gum or chewing tobacco in class. No drinks in open containers.
- Silence all cell phones.

What You Should Expect

- An open environment dedicated to learning.
- A minimum of 10 hours outside of class each week in course-related activities (e.g. reading the textbook, studying for quizzes/exams, practicing related problems)
- Frequent quizzes to measure how well you understand the information from each chapter. Assume there will be a quiz every class. It is your responsibility to be prepared.
- Quizzes will be based on chapter readings, examples from lecture and/or exercises from the book
- **Exams – apply the knowledge you have learned to the situations on the test. Questions on the test may not be worded exactly as you see them in the book and are designed to make sure that you understand what you are doing rather than regurgitating an example from your notes.**
- Extra credit is generally not given. If I decide to give extra credit, it is typically in the form of an unannounced quiz. Please do not ask for individual extra credit opportunities.

Grading Scale:

98-100 A+	88-89 B+	78-79 C+	68-69 D+	Below 60 F
92-97 A	82-87 B	72-77 C	62-67 D	
90-91 A-	80-81 B-	70-71 C-	60-61 D	

Grade Components:

Projects (6)	30% (average of all 6 projects)
Exam 1	30%
Exam 2	30%
Quizzes/homework	5%
Participation/attendance	5%

General Grade Information: All grades will be available in eLearning. The Weighted Total column will give you the most accurate information concerning your grade. The weighted total is an approximation of your grade in the class based on the grades currently in eLearning.

Grade Disputes: All quizzes and exams will be closed book, closed notes. Quizzes, homework and projects will be graded by a TA. Please address any grading concerns you have regarding quizzes, homework and projects with the TA. If you have a legitimate issue and are unable to resolve this issue with the TA, please talk to me during my office hours

I am responsible for grading your exams. If you have questions regarding exam grades, please talk to me during my office hours. I do not discuss grades via e-mail.

All grade disputes must be discussed/resolved within 1 week of the grade in question being posted in eLearning.

Late Assignments: Homework will not be accepted late. Projects will be accepted late at the penalty of 1% per 2 hours late for up to 48 hours past the due date/time.

Projects: Projects will be small programming assignments that should be completed in a week or two. The projects will supplement all of the topics covered in class up to announcement date of the project. All projects will be submitted in eLearning and will be validated as original. Any projects that are approximate or identical copies will result in a grade of zero for the person submitting such a project. The person lending the code is just as guilty of cheating as the person copying the code.

Programming assignments will be graded on a 100 point basis. Correct execution, program design, coding style, documentation, and comments all contribute toward your grade. Keep in mind that you always want to write code that is easy to understand and is also easy to maintain. Fewer lines does not necessarily mean a better program. Please use comments liberally.

Homework: Homework consist of a small assignment that can be done in the course of a few hours. This may include writing code, writing pseudo code, describing output, finding errors or answering conceptual questions. These assignments will generally be due the next class meeting.

Quizzes: Quizzes may be given in class or on-line. In-class quizzes are unannounced. On-line quizzes will only be announced during class (therefore attendance is very important). **No make-up quizzes will be given.** Quizzes missed for an excusable reason (with valid documentation) will be exempted. The exemption of a quiz is at the sole discretion of the instructor.

Exams: Exams will primarily cover chapters as listed below in the tentative course schedule. Students are expected to be able to apply knowledge from earlier chapters in conjunction with the tested chapters. Exams will include a variety of question types including multiple choice, short answer and programming exercises.

A make-up exam may be given to students with a valid reason (and documentation) for missing the exam. Otherwise, the missed exam grade will be zero. An exam should not be missed except form the most extreme circumstances (hospitalization, death of an immediate family member). The allowance of a make-up exam is at the sole discretion of the instructor. Make-up exams must be completed before grades are posted for the missed exam.

Tentative Class Schedule (all dates are subject to change at the discretion of the instructor)

Week	Date	Topic	Assignment
1	8/25	Introduction and Math review	Read Chapter 1
	8/27	Java Review	
2	9/1	LABOR DAY	NO CLASS
	9/3	Algorithm Analysis	Read Chapter 2
3	9/8	Algorithm Analysis	
	9/10	Lists	Read Chapter 3
4	9/15	List/Stacks	
	9/17	Stacks	
5	9/22	Queues	
	9/24	Trees	Read Chapter 4
6	9/29	Trees	Project1 due
	10/1	Trees	
7	10/6	Trees	
	10/8	Hashing	Project 2 due
8	10/13	Exam 1	
	10/15	Hashing	Read Chapter 5
9	10/20	Hashing	
	10/22	Heaps	Read Chapter 6
10	10/27	Heaps	Project 3 due
	10/29	Sorting	
11	11/3	Sorting	Read Chapter 7
	11/5	Sorting	
12	11/10	Disjoint Set	Read Chapter 8
	11/12	Disjoint Set / Graphs	Read Chapter 9
13	11/17	Graphs	Project 4 due
	11/19	Graphs	
14	11/24	Fall Break	NO CLASS
	11/26	Fall Break	NO CLASS
15	12/1	Graphs	Project 5 due
	12/3	Algorithm Design Techniques	Read Chapter 10
16	12/8	Algorithm Design Techniques	
	12/10	Exam 2	
	12/14		Project 6 due

Important Dates:

August 25	Classes start
September 1	Labor Day
September 10	Census Date
September 29	Project 1 due
October 7	Project 2 due
October 13	Exam 1
October 27	Project 3 due
October 30	Last Day to Withdraw
November 17	Project 4 due
December 1	Project 5 due
December 10	Exam 2
December 14	Project 6 due

Field Trip Policies

Off-campus Instruction and Course Activities

Off-campus, out-of-state, and foreign instruction and activities are subject to state law and University policies and procedures regarding travel and risk-related activities. Information regarding

these rules and regulations may be found at the website address http://www.utdallas.edu/BusinessAffairs/Travel_Risk_Activities.htm. Additional information is available from the office of the school dean. Below is a description of any travel and/or risk-related activity associated with this course.

Student Conduct & Discipline

The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD publication, A to Z Guide, which is provided to all registered students each academic year.

The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the Rules and Regulations, Board of Regents, The University of Texas System, Part 1, Chapter VI, Section 3, and in Title V, Rules on Student Services and Activities of the university's Handbook of Operating Procedures. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391).

A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.

Academic Integrity
The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work.

Scholastic dishonesty includes, but is not limited to, statements, acts or omissions related to applications for enrollment or the award of a degree, and/or the submission as one's own work or material that is not one's own. As a general rule, scholastic dishonesty involves one of the following acts: cheating, plagiarism, collusion and/or falsifying academic records. Students suspected of academic dishonesty are subject to disciplinary proceedings.

Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective.

Email Use
The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's U.T. Dallas email address and that faculty and staff consider email from students official only if it originates from a UTD student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and the security of the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at U.T. Dallas provides a method for students to have their U.T. Dallas mail forwarded to other accounts.
Withdrawal from Class

The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled.

Student Grievance Procedures
Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's Handbook of Operating Procedures.

In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called "the respondent"). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent's School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean's decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the deal will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties.

Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.

Incomplete Grade Policy
As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester's end and only if 70% of the course work has been completed. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to a grade of F.

Disability Services
The goal of Disability Services is to provide students with disabilities educational opportunities equal to those of their non-disabled peers. Disability Services is located in room 1.610 in the Student Union. Office hours are Monday and Thursday, 8:30 a.m. to 6:30 p.m.; Tuesday and Wednesday, 8:30 a.m. to 7:30 p.m.; and Friday, 8:30 a.m. to 5:30 p.m.

The contact information for the Office of Disability Services is:
The University of Texas at Dallas, SU 22
PO Box 830688
Richardson, Texas 75083-0688
(972) 883-2098 (voice or TTY)

Essentially, the law requires that colleges and universities make those reasonable adjustments necessary to eliminate discrimination on the basis of disability. For example, it may be necessary to remove classroom prohibitions against tape recorders or animals (in the case of dog guides) for students who are blind. Occasionally an assignment requirement may be substituted (for example, a research paper versus an oral presentation for a student who is hearing impaired). Classes enrolled students with mobility impairments may have to be rescheduled in accessible facilities. The college or university may need to provide special services such as registration, note-taking, or mobility assistance.

It is the student's responsibility to notify his or her professors of the need for such an accommodation. Disability Services provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations. Individuals requiring special accommodation should contact the professor after class or during office hours.

Religious Holy Days
The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated.

The student is encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment.

If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the chief executive officer of the institution, or his or her designee. The chief executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.

These descriptions and timelines are subject to change at the discretion of the Professor.