

**University of North Texas at Dallas**  
**Fall 2016**  
**SYLLABUS**

<b>CSCE 3110.001: Data Structures and Algorithms</b>		<b>3Hrs</b>
<b>Department of</b>	Mathematics & Information Sciences	<b>School of</b>
		Liberal Arts & Sciences
<b>Instructor Name:</b>	<i>Dr. Gerard Rambally</i>	
<b>Office Location:</b>	DAL2-229	
<b>Office Phone:</b>	972-780-3093	
<b>Email Address:</b>	<a href="mailto:gerard.rambally@untdallas.edu">gerard.rambally@untdallas.edu</a>	
<b>Office Hours:</b>	Mondays: 2:30 PM – 5:30 PM; Wednesdays: 11:30 AM – 1:00 PM, or by appointment.	
<b>Virtual Office Hours:</b>	9:00 AM – 10:00 AM on Tuesdays and Thursdays or communicate with me by e-mail.	
<b>Classroom Location:</b>	DAL2 213	
<b>Class Meeting Days &amp; Times:</b>	Mondays 5:30 PM – 8:20 PM	
<b>Course Catalog Description:</b>	Computer storage structures; storage allocation and management; data sorting and searching techniques; data structures in programming languages.	
<b>Prerequisites:</b>	CSCE 1040 - Computer Science II and CSCE 2100 - Computing Foundations I.	
<b>Co-requisites:</b>		
<b>Required Text:</b>	Lafore, Robert. <i>Data Structures &amp; Algorithms in Java</i> . Second Edition. Sams Publishing. ISBN: 0-672-32453-9	
<b>Recommended Text and References:</b>		
<b>Access to Learning Resources:</b>	UNT Dallas Library: phone: (972) 338-1616 web: <a href="http://www.untdallas.edu/library">http://www.untdallas.edu/library</a> email: <a href="mailto:library@untdallas.edu">library@untdallas.edu</a> UNT Dallas Bookstore: phone: (972) 780-3652 web: <a href="http://www.untdallas.edu/bookstore">http://www.untdallas.edu/bookstore</a> e-mail: <a href="mailto:untdallas@bkstr.com">untdallas@bkstr.com</a>	
<b>Course Goals or Overview:</b>	This is a first course in data structures and algorithms as used in computer programming. The course will emphasize such data structures as arrays, stacks, queues, linked lists, trees, hash tables, and graphs. A variety of algorithms, including searching and sorting algorithms, to manipulate the data in these structures will be discussed.	
<b>Student Learning Outcomes:</b>	Upon successful completion of this course, the student will have	
1	The ability to design, implement, and evaluate computer-based systems or programs using a variety of data structures.	
2	The ability to use current techniques, skills, and algorithms with a variety of data structures to solve a range of application problems.	

## Course Outline

This schedule is subject to change by the instructor. Any changes to this schedule will be communicated in class.

TOPICS	TIMELINE
<b>1. Overview of Data Structures &amp; Algorithms:</b> Definitions; Object-oriented programming; A few notes on Java.	Week of 8/22/16
<b>2. Arrays:</b> The basics of arrays in Java; Dividing a program into classes; Ordered arrays; Storing objects in Java; The Big O notation; Multidimensional arrays.	Weeks of 8/29/16 and 9/12/16
<b>3. Simple Sorting:</b> Bubble sort; Selection sort; Insertion sort; Sorting objects.	Week of 9/19/16
Exam 1	9/26/16
<b>4. Stacks and Queues:</b> Stacks; Applications of stacks; Queues; Deques; Parsing arithmetic expressions.	Week of 10/3/16
<b>5. Linked Lists:</b> Links; Simple linked lists; Finding and deleting specified links; Double-ended lists; Linked stacks and queues; Abstract data types; Sorted lists; Doubly linked lists.	Weeks of 10/10/16 and 10/17/16
<b>6. Recursion:</b> Triangular numbers; Factorials; Recursive binary search; Mergesort; Quicksort.	Week of 10/24/16
Exam 2	10/31/16
<b>7. Trees:</b> Terminology; Binary Search Trees; Trees represented as arrays; An application of binary trees – Huffman codes.	Week of 11/7/16
<b>8. Hash Tables:</b> Terminology; Hash Tables and Hashing; Open Addressing; Separate Chaining; Hash Functions.	Week of 11/14/16
<b>9. Graphs:</b> Terminology; Representing graphs in a program; Operations on graphs – DFS and BFS; Topological sorting with directed graphs; Application of weighted graphs – Dijkstra's algorithm.	Weeks of 11/21/16 and 11/28/16
Exam 3	12/5/16

## Course Evaluation Methods

This course will utilize the following instruments to determine student grades and proficiency of the learning outcomes for the course.

### Grading Matrix:

Instrument	Value (points or percentages)	Total
Assignments	Assignments on each topic with variable weights. There will be a total of 14 assignments. These assignments will involve writing Java programs to apply the concepts discussed in each topic.	25%
Exam 1	25%	25%
Exam 2	25%	25%
Exam 3	25%	25%
<b>Total:</b>		<b>100%</b>

### Grade Determination:

- A = 90% or better
- B = 80 – 89 %
- C = 70 – 79 %
- D = 60 – 69 %
- F = less than 60%

## University Policies and Procedures

### **Students with Disabilities (ADA Compliance):**

*Chapter 7(7.004) Disability Accommodations for Students*

*The University of North Texas at Dallas makes reasonable academic accommodation for students with disabilities. Students seeking accommodations must first register with the Disability Services Office (DSO) to verify their eligibility. If a disability is verified, the DSO will provide you with an accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request accommodations at any time, however, DSO notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet/communicate with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information see the Disability Services Office website at <http://www.untdallas.edu/disability>. You may also contact them by phone at 972-338-1777; by email at [UNTDDisability@untdallas.edu](mailto:UNTDDisability@untdallas.edu) or at Building 2, room 204.*

### **Course Evaluation Policy:**

*The student evaluation of teaching effectiveness is a requirement for all organized classes at UNT Dallas. This short survey will be made available to you at the end of the semester, providing you a chance to comment on how this class is taught. I am very interested in the feedback I get from students, as I work to continually improve my teaching. I consider a student's evaluation to be an important part of your participation in this class.*

### **Assignment Policy:**

*All assignments are due in class on the due dates stated on the assignments. No late assignments will be accepted, except for documented emergencies. All assignments are to be done individually unless stated otherwise on the assignment.*

### **Exam Policy:**

*Exams should be taken as scheduled. No makeup examinations will be allowed, except for documented emergencies (See Student Handbook).*

### **Academic Integrity:**

*Academic integrity is a hallmark of higher education. You are expected to abide by the University's code of Academic Integrity policy. Any person suspected of academic dishonesty (i.e., cheating or plagiarism) will be handled in accordance with the University's policies and procedures. Refer to the Student Code of Academic Integrity at [http://www.untdallas.edu/sites/default/files/page\\_level2/pdf/policy/7.002%20Code%20of%20Academic\\_Integrity.pdf](http://www.untdallas.edu/sites/default/files/page_level2/pdf/policy/7.002%20Code%20of%20Academic_Integrity.pdf) for complete provisions of this code.*

*Academic dishonesty includes, but is not limited to, cheating, plagiarizing, fabrication of information or citations, facilitating acts of dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students.*

## Classroom Policies

### **Inclement Weather Policy:**

*On those days that present severe weather and driving conditions, a decision may be made to close the campus. In case of inclement weather, call UNT Dallas Campuses main voicemail number (972) 780-3600 or search postings on the campus website [www.unt.edu/dallas](http://www.unt.edu/dallas). Students are encouraged to update their Eagle Alert contact information, so they will receive this information automatically.*

### **Attendance and Participation Policy:**

*The University attendance policy is in effect for this course. Class attendance and participation is mandatory because the class is designed as a shared learning experience and because essential information not in the textbook will be discussed in class. The dynamic and intensive nature of this course makes it impossible for students to make-up or to receive credit for missed classes. Attendance and participation in all class meetings is essential to the integration of course material and your ability to demonstrate proficiency. Students are responsible to notify the instructor if they are missing class and for what reason. Students are also responsible to make up any work covered in class. It is recommended that each student coordinate with a student colleague to obtain a copy of the class notes, if they are absent.*

*Successfully completing this class is a function of many factors. Two such factors are class attendance and assignment completion.*

**Diversity/Tolerance Policy:**

*Students are encouraged to contribute their perspectives and insights to class discussions. However, offensive & inappropriate language (swearing) and remarks offensive to others of particular nationalities, ethnic groups, sexual preferences, religious groups, genders, or other ascribed statuses will not be tolerated. Disruptions which violate the Code of Student Conduct will be referred to the Office of Student Life as the instructor deems appropriate.*

**Cell Phones:**

*Cell Phone use (or ringing) in class is strictly prohibited.*