University of North Texas at Dallas
Fall 2015
SYLLABUS

CSCE 2100.001: Computing Foundations I	3Hrs

Department of	Mathematics & Information Sciences	School of	Liberal Arts & Sciences

Instructor Name:	*Dr. Gerard Rambally*
Office Location:	*DAL2-229*
Office Phone:	*972-780-3093*
Email Address:	*gerard.rambally@unt.edu*

Office Hours:	3:30 PM – 5:30 PM on Mondays, Tuesdays, and Wednesdays or by appointment.
Virtual Office Hours:	

Classroom Location:	DAL2 240
Class Meeting Days & Times:	Mondays and Wednesdays 5:30 PM – 6:50 PM

Course Catalog Description:	Introduces students to both data structures and formalisms used in computer science, such as asymptotic behavior of algorithms. Learn about data structures and the formalisms used to both describe and evaluate those data structures simultaneously. By the end of the two-semester sequence of which this course is the first part, each student will have a solid foundation in conceptual and formal models, efficiency, and levels of abstraction as used in the field of computer science.

Prerequisites:	CSCE 1040: Computer Science II
Co-requisites:	

Required Text:	Kolman, B, Busby, R, and Ross, S. Discrete Mathematical Structures. 6th Edition. Prentice Hall/Pearson Education, 2009. ISBN: 0-13-229751-5.

Recommended Text and References:	

Access to Learning Resources:	UNT Dallas Library:
	    phone: (972) 338-1616;
	    web: http://www.untdallas.edu/our-campus/library
	UNT Dallas Bookstore:
	    phone: (972) 780-3652;
	    e-mail: 1012mgr@fheg.follett.com

Course Goals or Overview:

	This course introduces students to data structures such as trees and graphs and formal methods to include functions and relations, basic combinatorics (set operations, counting, combinations and permutations), prepositional and predicate logic, discrete probability theory, recursive definitions, computational complexity, and proof techniques including mathematical induction. The concepts are illustrated by applications involving various data structures such as graphs and trees and related algorithms.

Student Learning Outcomes: Upon successful completion of this course, the student will

1	Demonstrate knowledge of conceptual models used in computer science.
2	Demonstrate knowledge of formal models used in computer science.
3	Demonstrate the ability to analyze and solve computing problems using various levels of abstraction.
4	Demonstrate knowledge of designing algorithms and selecting appropriate data structures for implementing software systems more efficiently.

Course Outline

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

TOPICS	TIMELINE
1. Sets, Sequences, and Matrices: Sets and Subsets; Operations on Sets; Sequences; Properties of Integers; Matrices; Mathematical Structures.	Weeks of 8/23/15, 8/30/15, and 9/6/15
2. Logic: Propositions and Logical Operations; Conditional Statements; Methods of Proof; Mathematical Induction.	Weeks of 9/13/15 and 9/20/15
Exam 1	9/30/15
3. Counting: Permutations; Combinations; Pigeonhole Principle; Elements of Probability.	Weeks of 10/4/15 and 10/11/15
4. Relations and Digraphs: Product Sets and Partitions; Relations and Digraphs; Properties of Relations; Equivalence Relations; Data Structures for Relations and Digraphs; Operations on Relations; Transitive Closure and Warshall's Algorithm.	Weeks of 10/18/15 and 10/25/15
Exam 2	11/2/15
5. Functions, Ordered Relations and Structures: Functions and their Properties; Functions for Computer Science; Growth of Functions – Big Oh Notation; Permutation Functions; Functions on Boolean Algebras; Circuit Design.	Weeks of 11/1/15 and 11/8/15
6. Trees: Terminology; Tree Traversal; Stacks and Queues; Trees Represented as Arrays; An Application of Binary Trees – Huffman Codes.	Weeks of 11/15/15 and 11/22/15
7. Graphs: Terminology; Representing graphs in a program; Euler Paths and Circuits; Hamiltonian Paths and Circuits; Topological Sorting with directed graphs.	Week of 11/29/15
Exam 3	12/2/15

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 16 assignments. These assignments will involve solving problems to apply the concepts discussed in each topic.	25%
Exam 1	25%	25%
Exam 2	25%	25%
Exam 3	25%	25%
Total:		**100%**

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):

The University of North Texas Dallas faculty is committed to complying with the Americans with Disabilities Act (ADA). Any student requesting academic accommodations based on a disability is required to register with Disability Services each semester. A letter of verification for approved accommodations can be obtained from this office. Please be sure the letter is delivered to me as early in the semester as possible. Grades assigned before an accommodation is requested will not be changed as accommodations are not retroactive. Disability Services is located in the Student Life Office in DAL2, Suite 200 and is open 8:30a.m. – 5:00 p.m., Monday through Friday. The phone number is (972) 338-1775.

Student Evaluation of Teaching Effectiveness Policy:

The Student Evaluation of Teaching Effectiveness (SETE) is a requirement for all organized classes at UNT. 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 the SETE 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.unt.edu/unt-dallas/policies/Chapter%2007%20Student%20Affairs,%20Education,%20and%20Funding/7.002%20Code%20of%20Academic_Integrity.pdf for complete provisions of this code.

Bad 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. 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 <u>mandatory</u> 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.