ESE 122: Discrete Mathematics for Engineers
Fall 2018

Catalog Description:

Introduction to topics in computational mathematics, such as number systems, Boolean algebra, mathematical induction, combinatorics and probability, recursion and graph theory. Algorithm aspects of the topics discussed will be emphasized.

Course Designation: Required Course for Computer Engineering

Text Books: "Discrete Mathematics with Applications," Susanna S. Epp. Fourth Edition, 2011.
Brooks/Cole Cengage Learning. ISBN: 978-0-19-495-39132-6

Prerequisites: Corequisite: ESE 123

Coordinator: **Sangjin Hong**

Goals: Introduce basic concepts in discrete mathematics and associated computational tools

Course Learning Outcomes:
- ability to apply knowledge of mathematics, science and engineering
- an ability to identify, formulate, and solve engineering problems
- an ability to use techniques, skills, and modern engineering tools necessary for engineering practice

Topics Covered:

Week 1	Set Theory Boolean Algebra
Week 2	Counting Number Systems
Week 3	Mathematical Induction
Week 4	Boolean Algebra Logic
Week 5	Recursion Divide and Conquer

Week 6	Counting Principles Permutations
Week 7	Combinatorics
Week 8	Basic Probability Conditional Probability
Week 9	Cardinality and Computability
Week 10	Modular Arithmetic
Week 11	Finite State Automata
Week 12	Graph Theory and Applications
Week 13	Tree Theory and Applications
Week 14	Representing Graphs and Trees in Memory

Class/laboratory Schedule: 3 lecture hours per week

Blackboard

You can access class information on-line at: http://blackboard.stonybrook.edu
For help see: http://it.stonybrook.edu/services/blackboard
For problems logging in, go to the helpdesk in the Main Library SINC Site or the Union SINC Site; you can also call: 631-632-9602 or e-mail: helpme@stonybrook.edu

ADA Statement (Americans with Disabilities Act)

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, 128 ECC Building (631) 632-6748. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information go to the following website: www.ehs.sunysb.edu and search Fire Safety and Evacuation and Disabilities.

Academic Honesty and Integrity

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Any suspected instance of academic dishonesty will be reported to the Academic Judiciary. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at www.stonybrook.edu/uaa/academicjudiciary.

Student Outcomes	% contribution*
❑ (a) an ability to apply knowledge of mathematics, science and engineering	40
❑ (b1) an ability to design and conduct experiments	
❑ (b2) an ability to analyze and interpret data	
❑ (c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	
❑ (d) an ability to function on multi-disciplinary teams	10
❑ (e) an ability to identify, formulate, and solve engineering problems	30
❑ (f) an understanding of professional and ethical responsibility	
❑ (g) an ability to communicate effectively	
❑ (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	10
❑ (i) a recognition of the need for, and an ability to engage in life-long learning	
❑ (j) a knowledge of contemporary issues	
❑ (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice	10
❑ Any other outcomes and assessments?	

Document Prepared by: Sangjin Hong
Date: April 4, 2018