![LU LIBERTY UNIVERSITY | ONLINE PROGRAMS]

Note:

Course content may be changed, term to term, without notice. The information below is provided as a guide for course selection and is not binding in any form, and should <u>not</u> be used to purchase course materials.

COURSE SYLLABUS

MATH 250
INTRODUCTION TO DISCRETE MATHEMATICS

COURSE DESCRIPTION

Logic and proofs, set theory, Boolean algebra, functions, sequences, matrices, algorithms, modular arithmetic, mathematical induction and combinatorics.

RATIONALE

Discrete mathematics, the study of finite mathematical systems, provides students with mathematical ideas, notations and skills which are critical to, for example, formulating what an algorithm is supposed to achieve, proving if it meets the specification, and analyzing its time and space complexity. Discrete mathematics is essential to the study of computer science.

I.   **PREREQUISITE**

For information regarding prerequisites for this course, please refer to the Academic Course Catalog.

II.   **REQUIRED RESOURCE PURCHASE**

Click on the following link to view the required resource(s) for the term in which you are registered: http://bookstore.mbsdirect.net/liberty.htm

III.   **ADDITIONAL MATERIALS FOR LEARNING**

A.   Computer with basic audio/video output equipment

B.   Internet access (broadband recommended)

C.   Blackboard recommended browsers

D.   Scientific calculator

E.   Scanner or camera

IV.   **MEASURABLE LEARNING OUTCOMES**

Upon successful completion of this course, the student will be able to:

A.   Construct valid mathematical arguments using logical connectives and quantifiers.

B.   Verify the correctness of a mathematical argument using symbolic logic and truth tables.

C.   Construct a proof using direct proof, proof by contradiction, and proof by cases.

D.   Perform operations on discrete structures such as sets, discrete functions, relations, sequences, and matrices.

E.   Analyze algorithms, determine algorithmic complexity, and apply algorithms to solve problems.

F.   Express a Boolean function as a Boolean sum of Boolean products of the variables and their complements.

G.   Use Boolean algebra to model the circuitry of electronic devices.

H.   Use relations to solve problems involving communications networks, project scheduling.

V.   **COURSE REQUIREMENTS AND ASSIGNMENTS**

A.   Textbook readings and video presentations

B.   Course Requirements Checklist

After reading the Course Syllabus and Student Expectations, the student will complete the related checklist found in Module/Week 1.

C.   Learn Smart Reading Assignments (8)

The student will complete reading assignments within the ConnectMath software associated with the textbook.

D.   Homework (8)

The student will complete handwritten homework assignments and submit them in Blackboard each week.

E.   Quizzes (8)

Each quiz will cover the Reading & Study material for the assigned modules/weeks. Each quiz will be open-book/open-notes, have a 1 hour time limit, and be completed in ConnectMath software.

F.   Tests (4)

The student will complete exams during Modules/Weeks 2, 4, 6, and 8. Each exam will be open-book/open-notes, cover 2 modules/weeks of material, and have a 2 hour time limit. All tests are handwritten.

VI.   **COURSE GRADING AND POLICIES**

A.   Points

Course Requirements Checklist	10
Learn Smart Reading Assignments (8 at 5pts ea)	40
Homework Assignments (8 at 20pts ea)	160
Quizzes (8 at 20pts ea)	160
Tests (4 at 160pts ea)	640
Total	1010

B.   Scale

A = 900–1010   B = 800–899   C = 700–799   D = 600–699   F = 0–599

C.   Disability Assistance

Students with a documented disability may contact Liberty University Online's
Office of Disability Academic Support (ODAS) at LUOODAS@liberty.edu to
make arrangements for academic accommodations. Further information can be
found at www.liberty.edu/disabilitysupport.

COURSE SCHEDULE

MATH 250

Textbook: Rosen, *Discrete Mathematics and Its Applications* (2012).

MODULE/ WEEK	READING & STUDY	ASSIGNMENTS	POINTS
1	Rosen: sections 1.1-1.3 Presentations	Course Requirements Checklist Class Introductions Connect Registration Quiz Learn Smart Reading Assignment Homework 1 Quiz 1	10 0 0 5 20 20
2	Rosen: sections 1.4-1.6 Presentations	Learn Smart Reading Assignment Homework 2 Quiz 2 Test 1	5 20 20 160
3	Rosen: sections 1.7-1.8, 12.1 Presentations	Learn Smart Reading Assignment Homework 3 Quiz 3	5 20 20
4	Rosen: sections 12.2-12.4, 2.1-2.2 Presentations	Learn Smart Reading Assignment Homework 4 Quiz 4 Test 2	5 20 20 160
5	Rosen: sections 2.3-2.4, 2.6 Presentations	Learn Smart Reading Assignment Homework 5 Quiz 5	5 20 20
6	Rosen: sections 3.1-3.3 Presentations	Learn Smart Reading Assignment Homework 6 Quiz 6 Test 3	5 20 20 160
7	Rosen: sections 9.1-9.3 Presentations	Learn Smart Reading Assignment Homework 7 Quiz 7	5 20 20
8	Rosen: sections 9.4-9.6 Presentations	Learn Smart Reading Assignment Homework 8 Quiz 8 Test 4	5 20 20 160
		TOTAL	1010

NOTE: Each course module/week (except Module/Week 1) begins on Tuesday morning at 12:00 a.m. (ET) and ends on Monday night at 11:59 p.m. (ET). The final module/week ends at 11:59 p.m. (ET) on **Friday**.