

MATH210

STUDENT WARNING: This course syllabus is from a previous semester archive and serves only as a preparatory reference. Please use this syllabus as a reference only until the professor opens the classroom and you have access to the updated course syllabus. Please do NOT purchase any books or start any work based on this syllabus; this syllabus may NOT be the one that your individual instructor uses for a course that has not yet started. If you need to verify course textbooks, please refer to the online course description through your student portal. This syllabus is proprietary material of APUS.

Course Summary

Course : MATH210 **Title :** Discrete Mathematics

Length of Course : 8

Prerequisites : MATH110, MATH111, MATH225 **Credit Hours :** 3

Description

Course Description: This course introduces students to the fundamental concepts of discrete mathematics. The course provides a foundation for the development of many computer related concepts and more advanced mathematical concepts found in electrical engineering or computer science courses. Important applications in the computer science and engineering disciplines will be presented. Topics include: fundamentals (basic tools for discrete math); logic; methods of proof; graphs and sets; functions; relations and equivalences; recursive relations; polynomial sequences; induction; combinatorics; counting; and probability. (Prerequisite: MATH110 or MATH111 or MATH225)

Course Scope:

This course introduces students to the fundamental concepts of discrete mathematics. The course provides a foundation for the development of many computer related concepts and more advanced mathematical concepts found in electrical engineering or computer sciences courses. Important applications in the computer science and engineering fields will be presented. Topics include: fundamentals (basic tools for discrete math); experiments; probabilities; conditionals; simulation; logic; truth tables; implication; equivalence; valid arguments; logic circuits; permutations; combination; Pigeonhole principle; recurrence; relations; product sets; partitions; relations; and digraphs.

Objectives

After successfully completing this course, you will be able to

- CO-1 Apply set theory to produce a Venn diagram to solve problems.
- CO-2 Examine recursive and explicit formulas to prepare functions.
- CO-3 Apply logic rules using truth tables to demonstrate equivalences and problem solving.
- CO-4 Analyze statements using mathematical induction.
- CO-5 Compute probabilities of events and conditional probabilities.
- CO-6 Define for terms such as Hashing functions, fuzzy sets, and fuzzy logic.
- CO-7 Demonstrate relations and digraphs when presented with a problem.

Outline

Week 1: Sets, Subsets and Sequences

Learning Objectives

CO-1: Apply set theory to produce a Venn diagram to solve problems.

Readings

Text Readings: Kolman, Sections 1.1-1.3

See helpful links and websites in the Lessons

Assignment

Introductory Forum

Week 1 Homework

Week 1 Test in MyMathLab

Week 2: Properties of Integers Matrices Propositions and Logical Operators Conditional Statements

Learning Objectives

CO-5: Compute probabilities of events and conditional probabilities.

Readings

Text Readings: Kolman, Sections 1.4-1.5 Sections 2.1-2.2

See helpful links and websites in the Lessons

Assignment

Forum

Week 2 Homework

Week 2 Test in MyMathLab

Week 3: Methods of Proofs Mathematical Induction

Learning Objectives

CO-4: Analyze statements using mathematical induction.

Readings

Text Readings: Kolman, Sections 2.3-2.4

See helpful links and websites in the Lessons

Assignment

Forum

Week 3 Homework

Week 3 Test in MyMathLab

Week 4: Mathematical Statements Logic and Problem Solving Permutations Combinations

Learning Objectives

CO-3: Apply logic rules using truth tables to demonstrate equivalences and problem solving.

Readings

Text Readings: Kolman, Sections 2.5-2.6 Sections 3.1-3.2

See helpful links and websites in the Lessons

Assignment

Forum

Week 4 Homework

Week 4 Test in MyMathLab

Week 5: Pigeonhole Principle Elements of Probability Recurrence Relations

Learning Objectives

CO-2: Examine recursive and explicit formulas to prepare functions.

Readings

Text Readings: Kolman, Sections 3.3-3.5

See helpful links and websites in the Lessons

Assignment

Forum

Quiz Week 5

Week 6: Product Sets and Partitions Relations and Diagraphs Paths in Relations and Diagraphs Properties of Relations

Learning Objectives

CO-7: Demonstrate relations and diagraphs when presented with a problem.

Readings

Text Readings: Kolman, Sections 4.1-4.4

See helpful links and websites in the Lessons

Assignment

Forum

Quiz Week 6

Week 7: Operations on Relations Functions

Learning Objectives

CO-6: Define for terms such as Hashing functions, fuzzy sets, and fuzzy logic.

Readings

Text Readings: Kolman, Section 4.7 Section 6.1 Sections 5.1-5.2

See helpful links and websites in the Lessons

Assignment

Forum

Quiz Week 7

Week 8: Partially Ordered Sets

Learning Objectives

CO-2: Examine recursive and explicit formulas to prepare functions.

Readings

Text Readings: Kolman, Sections 5.3-5.4

See helpful links and websites in the Lessons

Assignment

Forum

Practice Final in MyMathLab

Final Exam in MyMathLab

Evaluation

Forum Assignments: There will be an Introductory Forum worth 1% and 7 other Forums in Weeks 2, 3, 4, 5, 6, 7, and 8 worth 2% each for a total of 15% of the final grade.

Homework Assignments: There will be 4 [MyMathLab](#) homework assignments in Weeks 1-4 worth 5% each for a total of 20% of the final grade.

Tests: There will be 4 [MyMathLab](#) Tests in Weeks 1-4 worth 5% each for a total of 20% of the final grade.

Quizzes: There will be 3 Quizzes in the Tests and Quizzes section of the Course for weeks 5-7 worth 10% each for a total of 30% of the final grade.

Final Exam: There will be a Final Exam in [MyMathLab](#) worth 15% of the final grade. It is recommended that you take the Practice Final in [MyMathLab](#) first.

Please see the [Student Handbook](#) to reference the University's [grading scale](#).

Grading:

Name	Grade %
Introduction	1.00 %
Introduce Yourself Forum	1.00 %
Forums	14.00 %
Forum Wk 2	2.00 %
Forum Wk 3	2.00 %
Forum Wk 4	2.00 %
Forum Wk 5	2.00 %
Forum Wk 6	2.00 %
Forum Wk 7	2.00 %
Forum Wk 8	2.00 %
Assignments	40.00 %
HW 1	5.00 %
HW 2	5.00 %
HW 3	5.00 %
HW 4	5.00 %
Test 1 Critique	5.00 %
Test 2 Critique	5.00 %
Test 3 Critique	5.00 %
Test 4 Critique	5.00 %
Tests & Quizzes	30.00 %
Quiz 5	10.00 %
Quiz 7	10.00 %
Quiz 6	10.00 %
Final Exam	15.00 %
Final Exam Critique	15.00 %
Honor Code	1.00 %
APUS Honor Code and Pledge	1.00 %

Materials

Book Title: MATH200 Pearson MyLab access provided inside the classroom

Author:

Publication Info: Pearson

ISBN: 1269565818

Book Title: Discrete Mathematical Structures, 6th Ed - The VitalSource e-book is provided via the APUS Bookstore

Author: Kolman, Bernard

Publication Info: Pearson

ISBN: 9781256525684

Book Title: You must validate your cart to get access to your VitalSource e-book(s). If needed, instructions are available here - <http://apus.libguides.com/bookstore/undergraduate>

Author: N/A

Publication Info: N/A

ISBN: N/A

Additional Resources

Students will need a calculator (either a physical calculator or an online calculator) to successfully complete this course. The calculator should include a memory and square root function. At the student's discretion, a scientific calculator capable of performing statistical functions or a computer spreadsheet program like Microsoft

Excel may be used. Students may make use of the above for all graded assignments and exams during the course.

Web Sites

In addition to the required course texts, the following public domain web sites are useful. Please abide by the university's academic honesty policy when using Internet sources as well. Note web site addresses are subject to change.

Site Name	Web Site URL/Address
Mathematics Videos	http://www.apus.edu/media/mathWV/contemporary.htm
Apus YouTube Videos	https://www.youtube.com/playlist?list=PL7C0A83E5C7608F6D
Microsoft Mathematics	http://microsoft-mathematics.en.softonic.com/
Purple Math	http://www.purplemath.com/
Khan Academy	https://www.khanacademy.org/
Just Math Tutorials	http://patrickjmt.com/
Combinations and Permutations	http://www.mathsisfun.com/combinatorics/combinations-permutations.html
Wolfram	http://mathworld.wolfram.com/
Math Vids	http://mathvids.com/

Course Guidelines

Citation and Reference Style

- Attention Please: Students will follow the APA Format as the sole citation and reference style used in written work submitted as part of coursework to the University. Assignments completed in a narrative essay or composition format must follow the citation style cited in the APA Format.

Tutoring

- [Tutor.com](http://www.tutor.com) offers online homework help and learning resources by connecting students to certified tutors for one-on-one help. AMU and APU students are eligible for 10 free hours* of tutoring provided by APUS. Tutors are available 24/7 unless otherwise noted. Tutor.com also has a SkillCenter

Resource Library offering educational resources, worksheets, videos, websites and career help. Accessing these resources does not count against tutoring hours and is also available 24/7. Please visit the APUS Library and search for 'Tutor' to create an account.

Late Assignments

- Students are expected to submit classroom assignments by the posted due date and to complete the course according to the published class schedule. The due date for each assignment is listed under each Assignment.
- Generally speaking, late work may result in a deduction up to 15% of the grade for each day late, not to exceed 5 days.
- As a working adult I know your time is limited and often out of your control. Faculty may be more flexible if they know ahead of time of any potential late assignments.

Turn It In

- Faculty may require assignments be submitted to Turnitin.com. Turnitin.com will analyze a paper and report instances of potential plagiarism for the student to edit before submitting it for a grade. In some cases professors may require students to use Turnitin.com. This is automatically processed through the Assignments area of the course.

Academic Dishonesty

- Academic Dishonesty incorporates more than plagiarism, which is using the work of others without citation. Academic dishonesty includes any use of content purchased or retrieved from web services such as CourseHero.com. Additionally, allowing your work to be placed on such web services is academic dishonesty, as it is enabling the dishonesty of others. The copy and pasting of content from any web page, without citation as a direct quote, is academic dishonesty. When in doubt, do not copy/paste, and always cite.

Submission Guidelines

- Some assignments may have very specific requirements for formatting (such as font, margins, etc) and submission file type (such as .docx, .pdf, etc) See the assignment instructions for details. In general, standard file types such as those associated with Microsoft Office are preferred, unless otherwise specified.

Disclaimer Statement

- Course content may vary from the outline to meet the needs of this particular group.

Communicating on the Forum

- Forums are the heart of the interaction in this course. The more engaged and lively the exchanges, the more interesting and fun the course will be. Only substantive comments will receive credit. Although there is a final posting time after which the instructor will grade comments, it is not sufficient to wait until the last day to contribute your comments/questions on the forum. The purpose of the forums is to actively participate in an on-going discussion about the assigned content.
- “Substantive” means comments that contribute something new and hopefully important to the discussion. Thus a message that simply says “I agree” is not substantive. A substantive comment contributes a new idea or perspective, a good follow-up question to a point made, offers a response to a question, provides an example or illustration of a key point, points out an inconsistency in an argument, etc.
- As a class, if we run into conflicting view points, we must respect each individual's own opinion. Hateful and hurtful comments towards other individuals, students, groups, peoples, and/or societies will not be tolerated.

University Policies

[Student Handbook](#)

- [Drop/Withdrawal policy](#)
- [Extension Requests](#)
- [Academic Probation](#)
- [Appeals](#)
- [Disability Accommodations](#)

The mission of American Public University System is to provide high quality higher education with emphasis on educating the nation's military and public service communities by offering respected, relevant, accessible, affordable, and student-focused online programs that prepare students for service and leadership in a diverse, global society.

STUDENT WARNING: This course syllabus is from a previous semester archive and serves only as a preparatory reference. Please use this syllabus as a reference only until the professor opens the classroom and you have access to the updated course syllabus. Please do NOT purchase any books or start any work based on this syllabus; this syllabus may NOT be the one that your individual instructor uses for a course that has not yet started. If you need to verify course textbooks, please refer to the online course description through your student portal. This syllabus is proprietary material of APUS.