

**WBUOnline CAMPUS
SCHOOL OF MATHEMATICS & SCIENCES****Wayland Mission Statement:**

Wayland Baptist University exists to educate students in an academically challenging, learning-focused and distinctively Christian environment for professional success and service to God and humankind.

Course Title and Number: MATH 2309-Section; Discrete Structures

Name of Instructor: Dr. Scott R. Franklin, Professor of Math and Computer Science

Office Phone Number and WBU Email Address:

806-291-1130 (Office)

806-252-3855 (Mobile/Text)

franklin@wbu.edu (Email)

Office Hours, Building, and Location:

TBD

Moody Science Building (MSB) Room 121

Class Meeting Time and Location: Online (Asynchronous)

Catalog Description:

Sets, functions, basic counting and combinatorics, relations, number systems, logic including Boolean algebra, proof techniques, basic probability.

Prerequisite:

MATH 1304 (College Algebra) or equivalent

Required Textbook:

Discrete Mathematics: An Open Introduction, Oscar Levin 3rd edition

(<http://discrete.openmathbooks.org/dmoi3.html>) – **Open Source and Freely Available**

Supplies:

Scientific or graphing calculator, pencil, paper, and a camera for scanning images of handwritten homework (instructions will be included in course)

Course Outcome Competencies:

1. The student will demonstrate an understanding of sets and functions.
2. The student understands basic counting techniques, including combinations and permutations.
3. The student can use various numbering systems, including binary and hexadecimal systems.
4. The student can apply basic proof techniques, including direct and indirect proofs.
5. The student exhibits a basic understanding of probability.
6. The student understands relations and their properties.
7. The student demonstrates an understanding of Boolean functions.

Attendance Requirements:

All students are expected to attend all class sessions and are responsible for knowing the material covered. No quizzes or exams can be made up unless arrangements prior to the absence have been made. Any student missing more than 25% of the class will fail the class.

Statement on Plagiarism and Academic Dishonesty:

Wayland Baptist University observes a zero tolerance policy regarding academic dishonesty. Per university policy as described in the academic catalog, all cases of academic dishonesty will be reported and second offenses will result in suspension from the university.

Disability Statement:

In compliance with the Americans with Disabilities Act of 1990 (ADA), it is the policy of Wayland Baptist University that no otherwise qualified person with a disability be excluded from participation in, be denied the benefits of, or be subject to discrimination under any educational program or activity in the university. The Coordinator of Counseling Services serves as the coordinator of students with a disability and should be contacted concerning accommodation requests at (806) 291-3765. Documentation of a disability must accompany any request for accommodations.

Course Requirements and Grading Criteria:

Homework: There will be homework assignments for each section covered. Some of the assignments will be completed in Blackboard, but most of them will be handwritten, scanned via camera app, and mailed to the professor for grading. Each section's assignment counts as one grade. You may work together, but do not copy. No late homework will be accepted. If there are mitigating circumstances, contact your instructor and you MAY receive an extension. The two lowest homework assignments will be dropped.

Weekly Quizzes: At the end of each week of the course, you will be required to complete an online quiz covering the sections from that week. The quizzes will be completed in Blackboard. The quiz will cover the lecture videos (when included) and the reading assignments.

Exams: During the course, there will be two major exams: a Midterm and a Final. Each test will cover approximately half the course. Both of the tests are to be proctored. They will be tests but will include both computer and handwritten portions to be scanned and submitted to your professor. You can complete this at one of our campuses at Wayland, with a third-party proctor approved by WBUOnline, or via an online proctoring system called Proctorio. Proctorio costs \$10 per exam and if you use a third-party proctor, you will be responsible for any costs incurred.

Lecture Videos and Notes: You will be required to watch the videos (when provided) for this course. The videos are provided through VidGrid inside of Blackboard. There are embedded questions that will confirm that you watched the videos. Your watching of the videos is included as part of your participation grade.

Grading:

- 40% Exams
- 30% Homework
- 20% Quizzes
- 10% Participation (Videos, Concept Check Questions, Discussion Board)

A: 90 – 100; B: 80 – 89; C: 70 – 79; D: 60 – 69; F: Below 60

Students shall have protection through orderly procedures against prejudices or capricious academic evaluation. A student who believes that he or she has not been held to realistic academic standards, just evaluation procedures, or appropriate grading, may appeal the final grade given in the course by using the student grade appeal process described in the Academic Catalog. Appeals may not be made for advanced placement examinations or course bypass examinations. Appeals are limited to the final course grade, which may be upheld, raised, or lowered at any stage of the appeal process. Any recommendation to lower a course grade must be submitted through the Executive Vice President/Provost to the Faculty Assembly Grade Appeals Committee for review and approval. The Faculty Assembly Grade Appeals Committee may instruct that the course grade be upheld, raised, or lowered to a more proper evaluation.

Tentative Schedule:

Week	Dates	Material	Assignment	Quiz Due
1	10/19 - 10/25	Chapter 0 Introduction and Preliminaries		Week 1 Quiz
		Mathematical Statements	HW 0.2	
		Sets	HW 0.3	
2	10/26 - 11/1	Additional Topics		Week 2 Quiz
		Relations	HW A.1	
		Chapter 0 (Cont.)		
		Functions	HW 0.4	
		Additional Topics		
		Numbering Systems	HW A.2	
3	11/2 - 11/8	Chapter 1 Counting		Week 3 Quiz
		Additive and Multiplicative Principles	HW 1.1	
		Binomial Coefficients	HW 1.2	
		Combinations and Permutations	HW 1.3	
4	11/9 - 11/15	Chapter 1(Cont.)		Week 4 Quiz
		Combinatorial Proofs	HW 1.4	
		Stars and Bars	HW 1.5	
		Advanced Counting using PIE	HW 1.6	
5	11/16 - 11/22	MIDTERM EXAM (COVERS WEEK 1-4)		
		Chapter 2 Sequences		Week 5 Quiz
		Describing Sequences	HW 2.1	
		Arithmetic and Geometric Sequences	HW 2.2	
		Solving Recurrence Relations	HW 2.4	
X	11/23 - 11/29	THANKSGIVING HOLIDAY WEEK		
6	11/30 - 12/6	Chapter 2 (Cont.)		Week 6 Quiz
		Induction	HW 2.5	
		Chapter 3 Symbolic Logic and Proofs		
		Propositional Logic	HW 3.1	
7	12/7 - 12/13	Additional Topics		Week 7 Quiz
		Boolean Algebra	HW A.3	
		Chapter 3 (Cont.)		

Week	Dates	Material	Assignment	Quiz Due
		Proofs	HW 3.2	Week 8 Quiz
8	12/14 - 12/19	Additional Topics		
		Probability	HW A.4	
		FINAL EXAM (COVERS WEEK 5-8)		

Academic Honesty:

Disciplinary action for academic misconduct is the responsibility of the faculty member assigned to this course. The faculty member is charged with assessing the gravity of any case of academic dishonesty, and with giving sanctions to any student involved.

Important Dates:

Oct 26	Last day to drop without record
Nov 20	Last day to withdraw with "W"
Dec 4	Last day to withdraw with a "WP/WF"
Dec 19	Last Class

This syllabus is only a plan. The teacher may modify the plan during the course. The requirements and grading criteria may be changed during the course if necessary.

Revised 07/06/2020