NAU NORTHERN ARIZONA UNIVERSITY

Course Title: MAT 226 Discrete Mathematics
Term: Fall 2022
Instructor: TBA
Course Credit: 3
Mode of Instruction: Online

Course Description:

Elementary discrete mathematics including topics from graph theory and combinatorics with emphasis on problem solving. This course will fulfill either the Mathematics foundation requirement or a Science Applied Science liberal studies distribution block requirement. If you have already fulfilled your Mathematics foundation requirement, this course will fulfill a Science Applied Science liberal studies distribution block requirement.

Course Prerequisites:

MAT 121 Finite Mathematics With Calculus

Learning Outcomes:

By the end of the course, the student should be able to:

A. Understand and construct mathematical arguments;

B. Develop recursive algorithms based on mathematical induction;

C. Know essential concepts in graph theory and related algorithms;

D. Understand basic concepts in formal languages and computability;

E. Apply knowledge about discrete mathematics in problem solving.

Course Material:

Rosen, Kenneth H, ***Discrete Mathematics and its Applications***, 8th Edition, McGraw-Hill, 2019.

Evaluation:

- 4 Assignment [40%]
- Mid-term Exam [25%]
- Final Exam [35%]

Description of the Evaluation tasks:

Assignment/ Essay/ ... : During the term, students will be required to finish several evaluation tasks within due date. All the tasks are linked with specific course topics/outcomes and will adequately assess students' competence and learning outcomes. Students are encouraged to meet with instructor about these tasks at any point.

Mid-term/ Final Exams/ Quiz/... : There may be periodic quizzes given at the beginning of lecture sessions; the feedback from these quizzes will monitor the progress of the learners and help to set learning priorities. There will be mid-term exam/ final exam for the course. They are the basic criteria for the evaluation of students' learning outcomes and final grade.

Grading Policy:

Students are supposed to finish each online lecture. Prior to each class, students should finish the required readings. During the class time, students are encouraged to make use of all relevant online course resources and communicate with the instructor. Students' grades are accumulated based on the cumulative evaluations.

Students' letter grade will be assigned according to the following scale:

A+ 90-100	A 85-89	A- 80-84
B+ 77-79	B 73-76	B- 70-72
C+ 67-69	C 63-66	C- 60-62
D+ 57-59	D 53-56	D- 50-52
F < 50		

Academic Integrity:

Students must strictly adhere to the university's academic integrity rule; and all essays, exams and any other form of academic assignments must adhere to these rules. Any form of plagiarism, cheating, or misappropriation of materials will be considered a violation of academic integrity and will be punishable by the university.

Withdrawal from the Course(s):

Students will be able to apply for a transfer or withdrawal within 3 days of the starting date of the course. If a withdrawal is applied for within 3 working days, the tuition fee will be fully refunded. After 3 days, the tuition fee will not be refunded. If a withdrawal is applied for in the first two weeks, it will be recorded as W (Withdraw) on the course transcript. After this initial two-week period, the class will be recorded as F (Fail).

Tentative Schedule:

Week 1

1	The foundations: logic and proofs
2	Basic structures: sets, functions, sequences
3	Sums and matrices
4	Algorithms
5	Number theory and cryptography **Assignment#1**

Week 2	
6	Induction and recursion
7	Counting
8	Discrete Probability
9	Discrete Probability（Cont.)
10	Advanced counting techniques **Assignment#2**
Week 3	
11	Relations
12	Relations and their properties
13	**Mid-term Exam**
14	Graphs
15	Graphs (Cont.) **Assignment#3**
Week 4	
16	Trees
17	Tree traversal
18	Spanning Trees
19	Boolean Algebra
20	Logic Gates **Assignment#4**
Week 5	
21	Modeling Computation
22	Language and grammars
23	Language Recognition
24	Turning Machines
25	**Final Exam**