2302 CS120 Course Outline

Subject Code	:	CS120
Subject Title	:	Discrete Mathematics
Course Type	:	Compulsory
Level	:	1
Credits	:	3
Teaching Activity	:	Lecture 45hours
Prior	:	None

Class Schedule :

Class	Week	Time	Classroom	Date
D1	Thu	15:30-18:20	C309	30/01/2023 - 14/05/2023
D2	Tue	15:30-18:20	C309	30/01/2023 - 14/05/2023

Instructor	:	Li WANG
Contact Number	:	8897 3008
E-mail Address	:	liwang-fi@must.edu.mo
Office	:	A306a
Office Hour	:	Monday (10:30-13:30) Tuesday (10:30-12:30) Wednesday (14:30-17:30) Thursday (10:30-12:30)

COURSE DESCRIPTION

This subject is designed to provide the mathematical foundation of computer science to undergraduate students. The course will cover the material commonly known as “discrete mathematics”. Topics include logic and sets, proofs, functions, sequences, relations, introduction to algorithms, recurrence relations, counting methods, graph theory, and trees. The emphasis is put on understanding the concepts and being able to solve problems using them.

TEXT BOOK

Required Text Book:

1. K. H. Rosen. *Discrete Mathematics and Its Applications*, 8th Edition, McGraw-Hill, 2019.

Reference Book:

1. D. Makinson. *Sets, Logic and Maths for Computing*, Springer, 2012.
2. S. S. Epp. *Discrete Mathematics with Applications*, 4th Edition, Brooks/Cole, 2011.
3. T. Jenkyns and B. Stephenson. *Fundamentals of Discrete Math for Computer Science*, Springer, 2013.

INTENDED LEARNING OUTCOMES

Upon successful completion of this subject, students will be able to:

1. Appreciate the importance of discrete mathematics in computer systems
2. Understand various concepts in mathematics used in computer systems
3. Analyze different methods of mathematic proofs in solving problems using computer systems
4. To apply what have been learned in solving existing problems
5. To analyse the complexity of an algorithms using mathematical tools/knowledge

Weekly Schedule

Index	Topic	Hours	Teaching Method
1	Logic, Propositional equivalences, Predicates and quantifiers, Rules of inferences	3	Lecture
2	Sets, and set operators, Functions, Sequences, Sums, and matrices	3	Lecture
3	Algorithms,	3	Lecture
4	Number theory, Induction	3	Lecture
5	Counting methods I, Pigeonhole principle, Permutation and combinations	3	Lecture
6	Counting methods II, recursion, and recurrence relations, inclusion-exclusion	3	Lecture
7	Midterm Exam	3	Exam
8	Discrete probability	3	Lecture
9	Relation I	3	Lecture
10	Relation II	3	Lecture
11	Graphs I	3	Lecture

12	Graphs II	3	Lecture
13	Trees I	3	Lecture
14	Trees II	3	Lecture
15	Review	3	Lecture

ASSESSMENT APPROACH

Assessment method	**Percentage**
1.Attendance	**5%**
2.Assignment	**15%**
3.Midterm exam	**30%**
5.Final exam	**50%**
Total	**100 %**

Guideline for Letter Grade:

Marks	Grade
93-100	A+
88-92	A
83-87	A-
78-82	B+
72-77	B
68-71	B-
63-67	C+
58-62	C
53-57	C-
50-52	D
0-49	F

Notes:
Students will be assessed based on the continuous assessment (i.e. coursework in the form of individual written assignments, midterm exam) and by the end of the semester one final examination.

ADDITIONAL READINGS

Journals:N/A

Trade and other Publications:N/A

Website:N/A