جامعة المجمعة
Majmaah University

Course Specifications

Institution:	Majmaah University
Academic Department :	Computer Science and Information
Programme :	Computer Science and Information
Course :	Discrete Mathematics for Computer Science (2)
Course Coordinator :	Assoc. Prof. Hassan Aly
Programme Coordinator :	Assoc. Prof. Y. Azzam
Course Specification Approved Date :	22/ 12 / 1435 H

This form compatible with NCAAA 2013 Edition

A. Course Identification and General Information

1 - Course title :	**Discrete Mathematics for Computer Science (2)** Course Code: **CSI 222**
2. Credit hours :	2 **Credit hours (2 lectures)**
3 - Program(s) in which the course is offered:	**Computer Science & Information**
4 – Course Language :	English
5 - Name of faculty member responsible for the course:	Dr. Hassan Aly
6 - Level/year at which this course is offered :	**4th level**
7 - Pre-requisites for this course (if any) :	• **Discrete Mathematics for Computer Science (1) – CSI 212**
8 - Co-requisites for this course (if any) :	• **N/A**
9 - Location if not on main campus :	**College of Science at AzZulfi**

10 - Mode of Instruction (mark all that apply)

A - Traditional classroom	√	What percentage?	**80 %**
B - Blended (traditional and online)	√	What percentage?	**10 %**
D - e-learning		What percentage?	**5 %**
E - Correspondence		What percentage?	**……. %**
F - Other		What percentage?	**5 %**

Comments :

B Objectives

What is the main purpose for this course?

1.

Briefly describe any plans for developing and improving the course that are being implemented :

1. Using group discussion
2. Updating the materials of the course to cover the new topics of the field.
3. Encourage students to learn the benefits of this course to be engaged in other applications.

C. Course Description

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
1. Number Theory: Divisibility and Euclidean algorithms. Modular arithmetic, Fermat's and Euler's theorems, Chinese remainder theorem.	5	10
2. Concepts of Abstract Algebra: groups, rings, fields, Homomorphisms, Lagrange's theorem, Finite fields.	5	10
3. Automata Theory: Finite state machine, regular expressions, DFA, NDFA, and their equivalence, Grammars and Chomsky hierarchy.	5	10

2. Course components (total contact hours and credits per semester):

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	30	-	-	-	-	30
Credit	30	-	-	-	-	30

3. Additional private study/learning hours expected for students per week.

3 Hours

The private self-study of the attending student is crucial for this course. It includes:

- reading carefully the topics in the textbook or reference book,
- implementing security algorithms using C++ ,
- browsing the websites that concerned with the course,
- solving the exercises that are assigned in each chapter,
- discussing the course topics with the instructor in his office hours,

The total workload of the student in this course is then: 60 + 3 x 15 = 105 work hours.

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	**Knowledge**		
1.1	Describe efficient basic number-theoretic algorithms, including greatest common divisor, multiplicative inverse mod n, and raising to powers mod n.	Lectures. Lab demonstrations. Case studies. Individual presentations.	Written Exam Homework assignments Lab assignments Class Activities Quizzes
1.2	Discuss the concepts of finite state machines and context free grammar.		
1.3	Define the basic algebraic structures: group, ring, and field.		
2.0	**Cognitive Skills**		
2.1	Apply the properties of natural numbers to computer applications.	Lectures. Lab demonstrations. Case studies. Individual presentations. Brainstorming.	Written Exam Homework assignments Lab assignments Class Activities Quizzes Observations
2.2	Convert among equivalently powerful notations for a language, including DFAs, NFAs, and context free grammars.		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Solve problems in elementary number theory	Small group discussions. Whole group discussions. Brainstorming. Presentations.	Written Exam Homework assignments Lab assignments Class Activities Quizzes
3.2	Design an efficient finite state machine to accept a specified language.		
4.0	**Communication, Information Technology, Numerical**		
4.1	Compute without calculator.	Small group discussions. Whole group discussions. Brainstorming. Presentations.	Observations Homework assignments Lab assignments Class Activities
4.2	function effectively on teams to accomplish a common goal.		
5.0	**Psychomotor**		
5.1	**.....**	.....	.....

5. Schedule of Assessment Tasks for Students During the Semester:

	Assessment task	Week Due	Proportion of Total Assessment
1	First written mid-term exam	6	15%
2	Second written mid-term exam	12	15%
3	Presentation, class activities, and group discussion	Every week	10%
4	Homework assignments	After each chapter	10%
5	Implementation of presented methods	Every two weeks	10%
6	Final written exam	16	40%
7	Total		100%

D. Student Academic Counseling and Support

Office hours: Sun: 10-12, Mon. 10-12, Wed. 10-12
Office call: Sun. 12-1 and Wed 12-1

Email: h.haly@mu.edu.sa
Mobile: 0538231332

E. Learning Resources

1. List Required Textbooks :

Kenneth H. Rosen, “Discrete Mathematics and Its Applications”, Mcgraw-Hill College, 2011.

2. List Essential References Materials :

Ronald L. Graham, Donald E. Knuth, and Oren Patashnik, Concrete Mathematics: A Foundation for Computer Science, Addison-Wesley Professional, 1995.

3. List Recommended Textbooks and Reference Material :

- Discrete Mathematics.

4. List Electronic Materials :

5. Other learning material :
Videos and presentations are available for the Coordinator

F. Facilities Required

1. Accommodation

- Classrooms and Labs as that available at college of science at AzZulfi are enough

2. Computing resources

- Smart Board

3. Other resources

- N/A

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching:

- Questionnaires (course evaluation) achieved by the students and it is electronically organized by the university.
- Student-faculty management meetings.

2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor :

- Discussion within the staff members teaching the course
- Departmental internal review of the course.

3 Processes for Improvement of Teaching :

- Periodical departmental revision of methods of teaching.
- Monitoring of teaching activates by senior faculty members.
- Training course.

4. Processes for Verifying Standards of Student Achievement

- Reviewing the final exam questions and a sample of the answers of the students by others.
- Visiting the other institutions that introduce the same course one time per semester.
- Watching the videos of other courses by international institutions.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement :

- Course evaluation
- Exam evaluation
- Improvement plan

Course Specification Approved
Department Official Meeting No (6) Date 22 / 12 / 1435 *H*

Course's Coordinator		Department Head	
Name :	Hassan Aly	***Name :***	Dr Yosry Azzam.
Signature :	.....	***Signature :***	.....
Date :	22/ 12 / 1435 *H*	***Date :***	…./ … / …… *H*