Course Specifications

Institution:	College of Science at AzZulfi
Academic Department :	Computer Science and Information
Programme :	B.Sc. of Computer Science and Information.
Course :	Data Mining
Course Coordinator :	Dr. Wael Khedr
Programme Coordinator :	Dr. Yosry Azzam
Course Specification Approved Date :	22/ 12 / 1435 H

A. Course Identification and General Information

1 - Course title : Data Mining	Course Code: CSI 512

2. Credit hours :   (3 hrs) (2 Lect., 2 Lab)

3 - Program(s) in which the course is offered:
(B.Sc.) Computer Science &Information

4 – Course Language :   English

5 - Name of faculty member responsible for the course: Dr. Wael Khedr

6 - Level/year at which this course is offered :   Level 9

7 - Pre-requisites for this course (if any) : **Database CSI 314**

8 - Co-requisites for this course (if any) :
* ....

9 - Location if not on main campus **:**
(....)

10 - Mode of Instruction (mark all that apply)

A - Traditional classroom	√	What percentage?	**80 %**
B - Blended (traditional and online)		What percentage?	**……. %**
D - e-learning	√	What percentage?	**20 %**
E - Correspondence		What percentage?	**……. %**
F - Other		What percentage?	**….. %**

Comments :
....

B Objectives

What is the main purpose for this course?
The main purpose of this course is to develop the ability to analyze, classify and construct information, knowledge, facts, and rules from raw data.

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

Students should prepare small projects in the area of data Mining that encourage them to develop their skills in application of data Mining.

C. Course Description

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
What's data mining all about? Examples, field applications, generalization, and ethics on using data mining discipline.	2	8
Input: Concepts, instances, and attributes; data preparation	2	8
Output: Knowledge representation; decision tables and trees, classification rules, association rules, rules with exceptions, rules involving relations, trees for numeric prediction, instance based representation, and clusters.	2	8
Algorithms - The basic methods: inferring rules, statistical modeling, constructing decision trees, constructing rules, mining association rules, linear models, instance based learning, and clustering	3	12
Weka Machine learning workbench: an introduction and the explorer	2	8
Transformations: Engineering the input and output: attribute selection, discretization, and classification.	2	8
Running experiments with Weka software or Matlab.	2	8

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

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	45	-	-	15	-	60
Credit	30	-	-	15	-	45

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

5 Hrs.

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	Recall concepts, instances, and attributes; data preparation.	• Develop basic communication skills • Develop the ability of students through short discourse. • Lecturing • Team work in projects • Exercises	• Homework. • Group Discussion • Presentation • Mid-term exam • Final test
1.2	Describe knowledge representation; decision tables and trees.		
2.0	**Cognitive Skills**		
2.1	An ability to extract rules involving relations, trees for numeric prediction, instance based classification.	• Problem solving in class • Class discussion • presentation • Individual meeting with the instructor (encourage students to discuss different topics outside the classroom)	• Class participation • Presentation • Essay Question • Research
2.2	An ability to implement and use rules for numeric prediction, instance based representation and cluster data.		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Work in a group and learn time management.	• Discussion with students • Making students aware of time management in completing their assignments. • Counsel students on how to make a good presentation in data mining. • Encourage students to help	• Respect deadlines. • Showing active class participation. • Help other students to understand tasks in the class. • Give clear and logical arguments • Study seriously for midterms and final exams
3.2	Learn how to search for information in the library and over the internet.		

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
		each other.	
4.0	**Communication, Information Technology, Numerical**		
4.1	Communicate with teacher, ask questions, solve clusters problems, and data classification.	• Exercises • Problem solving • oral quizzes • Essay questions • Encourage students to use dataset application provided by Weka/Matlab software.	• Write reports • Exercises related to specific topics
4.2	Illustrate ability to deal confidently with experiments in Weka or Matlab software.		
5.0	**Psychomotor**		

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

	Assessment task	Week Due	Proportion of Total Assessment
1	First exam*	6	15 %
2	Second exam*	12	15 %
3	Lab. Exam	15	15 %
4	Presentation	One/ semester	15 %
5	Homework	Every week	
6	quizzes	End topics	
7	Discussions	Every week	
8	Team group	Three time/ semester	
9	Tutorials	Every sub topic	

10	Computer tools used	Every report and presentation	
11	Project	-	
12	Peer project	-	
13	Final exam *	End of the semester	40%
	Total		100 %

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)
2. At least 6 well-declared office hours per week are available for all the students.

3. Supervision and reviewing of activities are conducted directly.

4. E-mail is permanently available.

E. Learning Resources

1. List Required Textbooks :

1. Tan, P., Steinbach, M., and Kumar, V., Introduction to Data Mining, Pearson Education, Inc., 2006.
2. Han, J., Kamber, M., Pei, J., Data Mining: Concepts and Techniques, Third Edition, 2011

2. List Essential References Materials :

3. List Recommended Textbooks and Reference Material :

- ……………………………………………………
- ……………………………………………………
- ……………………………………………………

4. List Electronic Materials :

- http://www-users.cs.umn.edu/~kumar/dmbook/index.php
- http://web.engr.illinois.edu/~hanj/bk3/

5. Other learning material :

Non.

F. Facilities Required

1. Accommodation

Lecture rooms are well equipped with:

- Air conditioned with at least 20 adequate seats.
- Interactive/smart board.
- Up-to-date projector.

An Auditorium is well equipped with:

- Air conditioned with at least 100 adequate seats.
- Interactive/smart board.
- Up-to-date projector.

2. Computing resources
- Personal computer with necessary up-to-date software.
- DBS Smart Systems.
- Interactive board.
- Laptop.

3. Other resources
- Colored printer (needed).
- Central laser-printer and scanner.
- Wall boards (are essentially needed).
- Internet inside the classroom (missed).
- Library: Up to date scientific books in the library.
- Wi-Fi and internet connections are available inside the teaching staff rooms and the seminar room.

G   Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching:
- **Questionnaires (course evaluation) filled by the students and acquired electronically by the University.**
- **Students-faculty management meetings.**

2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor :
A department committee is established to be responsible for the development of the strategies for teaching through:
- Discussions amongst the staff members teaching the course.
- Departmental internal review of the course.
- External review of the course.
- Discussion with the industrial partners to enhance the courses in order to meet their needs.
- Use web resources and e-learning to improve the course.

3 Processes for Improvement of Teaching :
- Providing the computer labs with up-to-date computers and software.
- Conducting and attending workshops given by experts on teaching and learning methodologies.
- Periodical departmental and external revisions of the methods of teaching.
- Monitoring of teaching activities by senior faculty members (course and program reports).
- Training Courses.

4. Processes for Verifying Standards of Student Achievement
Effectiveness of the course will be reflected from the results of the class, so reviewing the final exam questions and a sample of corrected papers is essential. This could be achieved by members of the teaching staff (or/and external reviewers) in addition to other duties such as discussing ideas and ways of teaching and learning. The course should be developed periodically to ensure that it contains the latest developments in the field of study. Development areas could be put as an objective in the report of the course to be achieved each semester.

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

1- **Course Evaluation**
2- **Exam Evaluation**
3- **Improvement plan**
4- **Program Outlearning with course outlearning**
5- **Outlearning from the pre-requisite course**

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

<table>
<tr><td colspan="2">Course's Coordinator</td><td colspan="2">Department Head</td></tr>
<tr><td><i>Name :</i></td><td>Dr. Wael Khedr</td><td><i>Name :</i></td><td>Dr. Yosry Azzam</td></tr>
<tr><td><i>Signature :</i></td><td>Wael Khedr</td><td><i>Signature :</i></td><td>..........................</td></tr>
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