The University of Jordan

Accreditation & Quality Assurance Center

COURSE Syllabus

1	Course title	Machine Learning
2	Course number	1902442
3	Credit hours (theory, practical)	3
	Contact hours (theory, practical)	3
4	Prerequisites/corequisites	Introduction to Database systems 1902223
5	Program title	Computer Information Systems
6	Program code	2
7	Awarding institution	The University of Jordan
8	Faculty	King Abdullah II School for Information Technology
9	Department	Computer Information Systems
10	Level of course	Fourth Year
11	Year of study and semester (s)	Spring 2016/2017
12	Final Qualification	BS.c
13	Other department (s) involved in teaching the course	None
14	Language of Instruction	English
15	Date of production/revision	29/Jan/2017
16	Required/ Elective	Elective

16. Course Coordinator:

Office numbers, office hours, phone numbers, and email addresses should be listed.
Loai Alnemer
Monday 12.30-1.30, Wednesday 3-4, Thursday 1-2
Phone: 22613
l.nemer@ju.edu.jo

17. Other instructors:

Office numbers, office hours, phone numbers, and email addresses should be listed.

18. Course Description:

As stated in the approved study plan.

"Introduction and learning bayesian learning, decision tree learning; learning sets of rules, genetic algorithms, analytical learning; reinforcement learning; applications. Weekly practice in the lab."

19. Course aims and outcomes:

A- Aims:

B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to …

    A- Intellectual skills: with the ability to …

A1) Understand the concept of Data Mining

A2) Understand each of the DataMining techniques.

A3) Understand the formal definition of any DM task

A4) Understand the difference between supervised, unsupervised, and reinforcemnet learning.

    B- Subject specific skills- with ability to …

B1) Distinguish between different Data Mining techniques.

B2) Have breadth knowledge on supervised, unsupervised learning

B3) Obtain practical ability on applying the DM techniques on a given set of data

B4) Explain why we need different DM algorithms.

    C- Transferable skills – with ability to …

C1) analyze simple mathematical formulae.

C2) Analyze some computational aspects related to supervised learning tasks.

C3) Analyze some computational aspects related to unsupervised learning tasks.

C4) Analyze some Data reduction techniques.

    D-

D1) Work individually and within a group to design a DM model.

D2) Work effectively, to implement a programs to classify a dataset.

D3) Perform a graduate-level research task via a self-selected project that ends up with a publishable quality research paper.

D4) Present the final project and make a demo.

20. Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
Introduction to Data mining	1	Loai Alnemer		Exam, Assignment	
Classification	2	Loai Alnmer		Exam, Assignment	
Introduction to Probability Theory	2	Loai Alnemer		Exam, Assignment	
Naïve Bayes Classifier	3	Loai Alnemer		Exam, Coding Assignment	

Bayesian Networks	4	Loai Alnemer		Exam, Assignment	
K-Nearest Neighbor	5	Loai Alnemer		Exam, Assignment	
Classification in WEKA	5	Loai Alnemer		Assignment, Project	
Decision Trees	6	Loai Alnemer		Exam, Assignment	
Classifier Evaluation	7	Loai Alnemer		Exam	
Introduction to DM in Python	7	Loai Alnemer		Assignment, Project	
Revision and Midterm Exam	8	Loai Alnemer		Exam	
Neural Networks	9	Loai Alnemer		Exam, Assignment	
Genetic Algorithm	10	Loai Alnemer		Exam, Assignment	
Overview of SVM, HMM	11	Loai Alnemer		Exam, Assignment	
Introduction to Clustering	12	Loai Alnemer			
K-Mean Clustering	13	Loai Alnemer		Exam, Assignment	
Frequent Item Set	14,15	Loai Alnemer		Exam, Assignment	
Ensemble Based Methods	15	Self-Reading		Exam	
Revision and Final Exam	16	Loai Alnemer		Exam	

21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following <u>teaching and learning methods</u>:

Self-Reading, Slides, Coding examples in Class, Book.
4 written assignment and 3 Coding assignment and 1 team project

22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following <u>assessment methods and requirements</u>:

30% Midterm exams
10% Assignment
10% Project
50% Final Exam

23. Course Policies:

A- Attendance policies:
        1. Students are allowed up to 7 absences. If you exceed this number, you will fail the class.
        2. Tardiness will not be tolerated. If you come to class after I take attendance, you are welcome to attend but you will be considered absent.
        3. Participation is an essential part of course works.

B- Absences from exams and handing in assignments on time:

- All projects and assignments are to be uploaded to the course website.
- Upload assignments to elearning.ju.edu.jo (moodle) by 11:55 PM on its due date.
- Everyone should check their e-mail and moodle regularly. Students are responsible for information posted there. If critical information is posted in moodle that you must read today, an announcement to check
moodle will be sent to the mailing list.
- Project should be determined by the end of the 7th week of the semester. I'll provide you with some suggested project. And these projects will be distributed as a queue.
- By the end of the 9th week the group should send me a project proposal. 30% of the project grade is for the proposal.

C- Health and safety procedures:

Check University outline

D- Honesty policy regarding cheating, plagiarism, misbehavior:

    Discussion of the concepts and principles between students is fine and very welcomed. Also, students are allowed to debug each other's code. However, Student cooperation should not result in identical or near identical answers/code/documentation. ALL THE MATERIAL SUBMITTED FOR GRADING MUST BE YOUR OWN EFFORT.
    If this policy is violated then the following steps may be taken: (1) reduction of points by dividing by the number of students involved in an incident, (2) assignment of a grade of ZERO for all students involved in an incident.

E- Grading policy:

F- Available university services that support achievement in the course:

24. Required equipment:

<div style="border:1px solid black">

5

</div>

25. References:

A- Required book (s), assigned reading and audio-visuals:

Data Mining: Concepts and Techniques By Jiawei Han, Jian Pei, Micheline Kamber

B- Recommended books, materials, and media:

1. Data Mining and Analysis: Fundamental Concepts and Algorithms By Mohammed J. Zaki, Wagner Meira, Jr, Wagner
2. Introduction to Data Mining by Vipin Kumar

26. Additional information:

Name of Course Coordinator: ------------------Signature: ------------------------ Date: ------------------------

Head of curriculum committee/Department: ------------------------ Signature: ---------------------------------

Head of Department: ------------------------- Signature: ---------------------------------

Head of curriculum committee/Faculty: ------------------------ Signature: ---------------------------------

Dean: -- -Signature: ---------------------------------

Copy to:

Head of Department
Assistant Dean for Quality Assurance
Course File