University: ***FayoumUniversity***

Faculty: ***Computers and Information***

Department: ***Information Systems***

Course Specification

1- Basic Information

Code: INF 482	**Course Title:** Information Engineering	**Year/Level:** Fourth year – First term
Programme: B.Sc degree in Information Systems	**Number of units:** **Lecture:** 4 hrs/ week **Tutorial:** 0hrs/week **Practical:** 2hrs/week	

2- Aims of Course:

1. Distinguish between knowledge management and knowledge engineering
2. Explain the skills required of a knowledge engineer, and the characteristics of KBSs
3. Explain how knowledge is acquired from a human expert, the purpose and types of interviews in obtaining knowledge
4. Evaluate the place of blackboard architectures in knowledge engineering, the use of control and domain knowledge within expert systems (ESs), and the advantages and limitations of using PSMs
5. Describe how a well-structured application can be implemented using an industry standard tool
6. Describe the current areas of methodology research
7. Explain how knowledge can be represented in declarative programs
8. Describe and analyze the inference process, the principles of backward and forward chaining
9. Analyze the type of chaining used by a specific expert system (ES)
10. Evaluate the risks associated with developing unintelligent explanation facilities
11. What is the role of knowledge management and knowledge management programs in business

3- Intended Learning Outcomes

A- Knowledge and Understanding:	A7. Demonstrate essential facts, concepts, principles and theories relating to computing and information and computer applications as appropriate to the program of study a1) Demonstrate basic knowledge and understanding of knowledge management and knowledge engineering a2) Explain the skills required of a knowledge engineer, and the characteristics of KBSs A8. Express the main concepts of statistics, probability theory, algebra and numerical analysis and their role in the computing and information discipline. a3) Describe how a well-structured application can be implemented using an industry standard tool a4) Describe the current areas of methodology research a5) Explain how knowledge can be represented in declarative programs a6) Explain how knowledge is acquired from a human expert, the purpose and types of interviews in obtaining knowledge
B- Intellectual Skills:	B1. Analyze real problems, and appropriate problem solving methods that satisfy commercial or industrial constraints and analyze results b1) Analyze the role of knowledge management and knowledge management programs in business b2) Comment on the professionalism, methods and standards required of a knowledge engineer B2, Determine different computer- system application attributes, components, relationships, patterns, architecture, and source of errors b3) demonstrate why it is necessary to record the results of interviews using techniques such as repertory grids b4) analyze types of systems that are used for enterprise-wide knowledge management and how do they provide value for businesses B6. Analyze the extent to which a computer-based system meets the criteria defined for its current use and future development b5) explain the business benefits of using intelligent techniques for knowledge management
C- Professional and Practical Skills:	C8.Deploy appropriate tools for the construction and documentation of computer-based systems that are used

	to solve practical problems c1) Evaluate the place of blackboard architectures in knowledge engineering, the use of control and domain knowledge within expert systems (ESs), and the advantages and limitations of using PSMs c2) Evaluate the risks associated with developing unintelligent explanation facilities c3) evaluate the use of control and domain knowledge within expert systems (ESs) C10.Evaluate computer-based systems from various perspectives c4) evaluate the advantages and limitations of using PSMs c5) Analyze the type of chaining used by a specific expert system (ES)
D- General and transferable Skills	D3) Work as a member of a development team, recognizing the different roles within a team and different ways of organizing teams d1) Work in teams to exchange data about knowledge engineering, knowledge acquisition, knowledge representation and reasoning d2) The communicational skills by contributing in a project depending on group efforts and cooperation practice D6) Demonstrate skills in team work, team management, time management and organizational skills d2)The communicational skills by contributing in a project depending on group efforts and cooperation practice

4-Course Content:	1. An Introduction to Knowledge Engineering, Data, Information and Knowledge, and Skills of a knowledge engineer 2. Knowledge Acquisition 3. Life Cycles and Methodologies , advantages and disadvantages of using conventional methodologies, and the Need for Methodologies 4. blackboardarchitectures, the use of control and domain knowledge within expert systems (ESs), advantages and limitations of using PSMs 5. The Hybrid Methodology (HyM), and the current areas of methodology research 6. Knowledge Representation and Reasoning 7. knowledge can be represented in declarative programs, analyze the inference process, the type of chaining used by a specific expert system (ES) 8. logic, RulesandRepresentation 9. Developing Rule-Based systems 10. Semantic Networks ,andhow semantic networks represent data, the advantages and disadvantages of semantic networks, how frames can be used to represent knowledge 11. Managing Knowledge, role of knowledge management and knowledge management programs in business, types of systems that are used for enterprise-wide knowledge management and how do they provide value for businesses, the major types of knowledge work systems and how do they provide value for firms, and the business benefits of using intelligent techniques for knowledge management

5- Teaching and Learning Methods:	1. Lectures 2. Tutorials 3. Computer-lab Sessions 4. Practical lab work 5. Class discussions 6. Internet searches 7. Independent Work 8. Group projects 9. Problem-based Learning

6- Teaching and Learning Methods for handicapped students :	-

7- Student Assessment

A- Assessment Methods:	1. Assignments and Quizzes 2. Midterm written exam 3. Oral exam 4. Practical exam 5. Final written exam
B- Assessment schedule:	Midterm Examination: Week 7 Practical Examination: Week 13 Oral Examination: Week 14 Final Examination: Week 15
C- Weighting of assessments:	Assignments and Quizzes: 0% Mid-Term Examination: 10% Oral Examination: 10% Practical Examination: 15% Final-term Examination: 65%

8- Books and References

A- Notes:	-
B- Essential Books (Text Books):	▪ An Introduction to Knowledge Engineering, S.L.Kendal, M.Creen. Springer, 2007
C- Recommended Books:	-
D- Periodicals, Web sites, … etc	-

Course Professor: …… Department Head: ……