5- Other	-	-

Coordinator: ***Signature:*** ***Date:*** / /
University: ***Fayoum University***
Faculty: ***Computers and Information***
Department: ***Computer Science***
Master of Big Data

Course Specification

1- Basic Information		
BSC 601	**Course Title:** seminar	
Program: Master of ***Big Data***	**Number of units: 3**	

2- Aims of Course:	1. The general aim of the seminar is to allow each student to integrate all the disciplines he has studied in a unified chunk of knowledge. 2. On the behavioral side, students are allowed to work in a team so as to practice working in a collaborative environment. 3. This emphasizes also a proper documentation and presentation procedure.

3- Intended Learning Outcomes	
A- Knowledge and Understanding:	a1) Providing all students with a culminating activity that demonstrates the skills of combining research, a2) Providing all students with writing, implementation and oral presentation/demonstration in a multidisciplinary seminar. a3) Giving students an opportunity outside the classroom to integrate their various courses of study with their individual interests.
B- Intellectual Skills:	b1) Challenge the student to go beyond his/her educational program. b2) Expand his/her personal knowledge to real life situations that will promote lifelong learning.
C- Professional and Practical Skills:	c1) Complete a project in one or more areas of concentrated study under the guidance and supervision of the faculty. c2) demonstrate self-initiative : initiate any request for support
D- General and transferable Skills	d1) Work in team to exchange data from different analytical techniques

	d2) Generate various an suitable reports d3) Prepare the student for future endeavors in post-secondary education or work. d4) Know the computing environment and installation procedure

4-Course Content:	Students are allowed to choose among a number of projects suggested by the different staff members. The main items which should be fulfilled are: 1. Selecting a topic, team and supervisor 2. Scheduling time to complete the project 3. Completing requirements on time. 4. seminar design and architecture 5. seminar documentation 6. Seeking help when needed. 7. Utilize the resources available at the Faculty

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

6- Teaching and Learning Methods for handicapped students :	-

7- Student Assessment	
A- Assessment Methods:	1. Year work evaluation 2. Oral exam
B- Assessment schedule:	Year work evaluation: All the year Oral Examination: At the end of the semester
C- Weighting of assessments:	Year work evaluation: 40% Oral Examination: 60%

8- Books and References	
A- Notes:	-
B- Essential Books (Text Books):	-
▪ C- Recommended Books:	-
D- Periodicals, Web sites, … etc	-

Course Professor: …… Department Head:

University: ***Fayoum University***
Faculty: ***Computers and Information***
Department: (Master) Big Data ***ماجستير أكاديمى***

Course Specification

1- Basic Information		
Code: GN 602	**Course Title:** Basic of Scientific research	**Year/Level:**
Programme:	**Number of units:** **Lecture:** 2 **Tutorial:** 2 **Practical:**	

2- Aims of Course:	This course is designed to provide a general appreciation of workplace and communication skills pertinent to computer science. Inter-personal and personal transferable skills will be given particular emphasis in an effort to better equip the student for the workplace .This course also introduces the main tools used in information management and explores why they are of importance to the research methodology.

3- Intended Learning Outcomes	
A- Knowledge and Understanding:	a1) Recognize the importance of research. a2) Discuss types of study design. a3) Demonstrate the sampling methods.
B- Intellectual Skills:	b1) Select the proper sample for the research. b2) Differentiate between causal and no causal association. b3) Discriminate between data collection methods and techniques.
C- Professional and Practical Skills:	c1) Conduct scientific research effectively. c2) implement software tools for information management. C3) configure appropriate case study for his research
D- General and transferable Skills	d1) Use critical thinking methods in solving scientific research problems.

4-Course Content:	This course includes the following topics: • Searching for information and appraisal skills • Qualitative methods، • Quantitative assessment and questionnaire design، • Needs assessment - and tools to achieve this، Requirements analysis، • Modelling - testing hypothesis، Research statistics، and Audit. • Cases in information systems will be used to demonstrate these concepts.

5- Teaching and Learning Methods:	Lectures, direct instruction, student-teacher dialogues, and student-centered activities such as group work. Choice of teaching methods subject to instructor's decision, depending on class size, student skill base, and other relevant factors.

6- Teaching and Learning Methods for handicapped students	Lectures, direct instruction, student-teacher dialogues, and student-centered activities such as group work. Choice of teaching methods subject to instructor's decision, depending on class size, student skill base, and other relevant factors.

7- Student Assessment	
A- Assessment Methods:	3. Assignments and Quizzes 4. Midterm written exam 5. Oral exam 6. Final written exam
B- Assessment schedule:	Midterm Examination: Week 7 Oral Examination: Week 14 Final Examination: Week 15
C- Weighting of assessments:	Assignments and Quizzes: 20% Mid-Term Examination: 10% Oral Examination: 10% Final-term Examination: 60%

8- Books and References	
A- Notes:	- PowerPoint presentations for the course.
B- Essential Books (Text Books):	Creswell, J. W. Research design: Qualitative, quantitative and mixed methods approaches. 5th Ed. Thousand Oaks, CA: Sage, 2018.
C- Recommended Books:	McBurney, Donald, and Theresa L. White. Research Methods. 7th ed. Belmont, Calif.: Thomson Wadsworth, 2007. - Neuman, W.L. (2008). Social research methods: Qualitative and quantitative approaches, Pearson Education.
D- Periodicals, Web sites, … etc	-

Course Professor: …… Department Head: ……

University: ***Fayoum University***
Faculty: ***Computers and Information***
Department: Master (Big Data ماجستير مهنى)

Course Specification

1- Basic Information		
Code: CS 619	**Course Title:** Big Data Fundamentals	**Year/Level:**
Programme :	**Number of units:** **Lecture:** **Tutorial:** **Practical:**	

2- Aims of Course:	1. Provide students with a solid understanding of the principles, methods and technologies for big data management to drive business innovations; 2. Equip students with the essential knowledge and skills to design a plan for big data management and evaluate the effectiveness of the proposed solution; 3. Enable students to apply the learnt methods and technologies in big data management for business improvements and innovations.

3-Course Content:	1. Introduction Concepts and principles of big data (e.g. volume, velocity, variety and veracity), market and business drivers, industry barriers and considerations for big data management in a business context. 2. The business cases Characteristics of big data applications, perception and quantification of business values, assessing organizational fitness, and design of business cases for big data applications. 3. Types of big data applications, product knowledge hub, infrastructure and operations studies, location-based services, profile-based recommendation services. 4. technologies are right for you, good practices for soliciting business user requirements. 5. High-performance appliance for big data management Storage considerations, big data appliances (hardware and software tuned for big data applications), architectural choices, performance characteristics, platform alternatives. 6. Big data tools and techniques Overview of high-performance architectures Hadoop, 7. Distributed File Systems GFS,OCSS,DOCSS,HDFS, 8. MapReduce and YARN, Spark, HBase, 9. Hive and Mahout. 10. Big data applications Managing the lifecycle of big data, machine-to-machine data, big transaction data, biometrics,

4- Teaching and Learning Methods:	1. Lectures 2. Literature Reviews 3. Computer-lab Sessions 4. Practical lab work 5. Class discussions 6. Internet searches 7. Problem-based searching

5- Student Assessment	
A- Assessment Methods:	7. Assignments and Quizzes 8. Midterm written exam 9. Oral Exam 10. Practical exam 11. Final written exam
B- Assessment schedule:	Midterm Examination: Week 6 Practical examination: Week 12 Oral Examination: Week 12 Final Examination: Week 15
C- Weighting of assessments:	Assignments and Quizzes: 0% Mid-Term Examination: 20% Oral Examination: 10% Practical Examination: 10%

	Final-term Examination: 60%

6- Books and References	
A- Notes:	Handouts and notes prepared by the instructor
B- Essential Books (Text Books):	David Loshin, 2013, Big Data Analytics: From strategic planning to enterprise integration with tools, techniques, NoSQL and graph, Elsvier, ISBM: 978-0-12-417319-4.
D- Periodicals, Web sites, … etc	Arvind Sathi, 2012, Big Data Analytics: Disruptive Technologies for Changing the Game, MC Press Online, ISBN: 978-1-58347-380-1.

Course Professor: …… Department Head: ……

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University: ***Fayoum University***
Faculty: ***Computers and Information***
Department: Computer Science

Course Specification

1- Basic Information		
Code: CS 614	**Course Title:** Data Mining algorithms	**Year/Level: Master (Big Data ماجستير مهنى)**
Programme :	**Number of units:** **Lecture:** 3 **Tutorial:** 2 **Practical:** 2	

2- Aims of	The aims of this course are to: • Expand on the student's understanding and awareness of the concept of data mining basics, techniques, and applications.

Course:	• Introduce the basic concepts of 'Data Pre-processing & Summary Statistics'. • Introduce the concepts of 'Frequent Item set Generation, Associations and Correlations measures'. • Introduce the concepts of 'Classification, Prediction, and Clustering Algorithms'. • Build on the programming and problem solving skills developed in previous subjects studied by the student, to achieve an understanding of the development of Classification, Prediction, and Clustering applications.

3- Intended Learning Outcomes	
A- Knowledge and Understanding:	On completing the course, students should be able to: K.1 Explain the basic concepts of Data Mining. K.2 Illustrate the concept of Data Pre-processing & Summary Statistics. K.3 Know and understand the concepts and techniques of Frequent Item set Generation, Associations and Correlations measures. K.4 Know and understand the concepts and techniques of Classification, Prediction, and Clustering Algorithms. K.5 Know applications of data mining in real life.
B- Intellectual Skills:	On completing the course, students should be able to: I.1 Learn how to use Statistical measures. I.2 Learn how to apply the Graphic Displays of Data Summaries. I.3 Handle data quality problems Noisy and outliers Data, and missing values. I.4 Learn how to apply Data Transformation and Reduction. I.5 Measure data similarity and dissimilarity. I.6 Mine Frequent Patterns, Associations, and Correlations.
C- Professional and Practical Skills:	On completing the course, students should be able to: P.1 Predict useful information from given data. P.2 Use data mining techniques in real data mining life applications. P.3 Find the impact of data analysis techniques in decision making process. P.4 Implement different Classification/Prediction/Clustering techniques.
D- General and transferable Skills	On completing the course, students should be able to: G.1 Work effectively as individuals or as a part of a team to apply skills gained throughout the course to design and implement different data mining techniques. G.2 Apply problem solving capabilities. G.3 Know the role of data mining in real life applications. G.4 Know the importance of data analysis in decision

	support systems and applications.

4-Intended Learning Outcomes of Course (ILOs)

5- Course Matrix Contents

	Main Topics / Chapters	Duration (Weeks)	Course ILOs Covered by Topic (By ILO Code)			
			K & U	I.S.	P.S.	G.S.
1	Introduction to Data Mining & Basic concepts	2	K1			
2	Data Pre-processing	1	K2	I1,I2,I3,I4,I5		
3	Summary Statistics	1	K2	I1,I2,I3,I4,I5		
4	Mining Frequent Patterns, Associations, and Correlations	2	K3,K5	I6	P1,P2,P3	All
5	Classification	4	K4,K5		All	All
6	Prediction	1	K4,K5		All	All
7	Clustering	1	K4,K5		All	All
	Net Teaching Weeks	13				

4-Course Content:	

Week No.	Sub-Topics	Total Hours	Contact Hours	
			Theoretical Hours	Practical Hours
1	Introduction to Data Mining & Basic Concepts	2.5	2.5	
2	Introduction to Data Mining & Basic Concepts	4	2.5	1.5
3	Data Pre-processing	4	2.5	1.5
4	Summary Statistics	4	2.5	1.5
5	Mining Frequent Patterns, Associations, and Correlations: Association Rules & Frequent Item set Generation	4	2.5	1.5
6	Mining Frequent Patterns, Associations and Correlations :Correlation Measures	4	2.5	1.5
7	Midterm Exam			
8	Classification: Decision Tree Induction	4	2.5	1.5
9	Classification : Bayesian Classification	4	2.5	1.5
10	Classification: Rule-Based Classification	4	2.5	1.5
11	Classification: Artificial Neural Networks & Lazy Learners	4	2.5	1.5

12	Prediction : Linear Regression	4	2.5	1.5
13	Clustering: Distance measures & K-means clustering	4	2.5	1.5
14	Review	4	2.5	1.5
15	Final Exam			
Total Teaching Hours		51	33	18

5- Teaching and Learning Methods:

Teaching/Learning Method	Selected Method	Course ILOs Covered by Method (By ILO Code)			
		K&u	Intellectual Skills	Professional Skills	General Skills
Lectures & Seminars	Y	All	All	P1 ,P2	
Tutorials					
Computer lab Sessions	Y		All	P4	
Practical lab Work	Y		I6	P1, P4	All
Reading Materials	Y	All	All	P1, P2, P3	
Web-site Searches					
Problem Solving / Problem-based Learning	Y				
Projects					
Independent Work	Y			All	All
Group Work	Y				

Case Studies					G1
Presentations					
Simulation Analysis					
Others (Specify):					

7- Student Assessment

A- Assessment Methods:	
B- Assessment schedule:	
C- Weighting of assessments:	

Assessment Method	Selected Method	Course ILOs Covered by Method (By ILO Code)				Assessment Weight / Percentage	Week No.
		K&U	I.S.	P.S.	G.S.		
Midterm Exam	Y	All	All			15%	7
Final Exam	Y	All	All			60%	
Quizzes							
Course Work	Y		All			10%	3,5,8,10
Report Writing							
Case Study Analysis							
Oral Presentations							
Practical	Y			All	All	15%	4,6,9,11
Group Project							

Individual Project Others (Specify):							

8- Books and References

A- Notes:	-available on book's site:
B- Essential Books (Text Books):	▪ Data Mining: Concepts and Techniques 2nd Edition (Jiawei Han & Micheline Kamber
C- Recommended Books:	- Introduction to Data Mining by Pang-Ning Tan, Michael Steinbach, Vipin Kumar.
D- Periodicals, Web sites, … etc	-ACM digital Library:http://portal.acm.org/dl.cfm?coll=portal&dl=ACM&CFID=21491530&CFTOKEN=49241968 IEEE computer society:http://www.computer.org/portal/site/ieeecs/index.jsp

Course Professor: …… Department Head: ……

University: ***Fayoum University***
Faculty: ***Computers and Information***
Department: Master (Big Data ماجستير مهنى)

Course Specification

1- Basic Information		
Code: CS 623	**Course Title:** Advanced Database Systems	**Year/Level: Post Graduate**
Programme : Professional Master of Big Data	**Number of units:** **Lecture:** 2 hrs/ week **Tutorial:** 0 hrs/ week **Practical:** 2 hrs/ week	

2- Aims of Course:	1.This course aims to provide students with the advanced concepts of relational databases. 2. Students will gain knowledge to: • Understand transaction management and concurrency control • Understand file organization, indexing and hashing • Understand query processing and query optimization • Understand recovery systems. • Understand distributed databases and client/server architecture • Understand object-oriented databases

3- Intended Learning Outcomes	
A- Knowledge and Understanding:	A1 Locate and classify the Theories and fundamentals related to the field of learning as well as Big Data a1.Understand file organization, indexing and hashing a2. understand of fundamental concepts and issues of transaction management, concurrency control, and recovery systems a3.Understand query processing and query optimization A2. Recognize The mutual influence between practice and its reflection on the environment a4.understand the problems and potentials of current database systems A3. Recognize Scientific developments in **Big Data** a5. Explain relational, semantic, and object-oriented data

	models a6.Understand distributed databases and client/server architecture A4. Recognize the Principles and basics of quality in professional practice in the field of **Big Data** a7. learn different database model
B- Intellectual Skills:	B1.Analysis and evaluation of information in the field of specialization and measurement to solve problems b1.analyze and evaluate information in database organization b2.analyze the performance of database systems using test collections b3.Characterize Schedules based on Recoverability/ Serializability b4.analyze the recovery schemes b5. analyze the recovery in multi-database system B2. Solving specialized problems with some lake of data b3. Resolve a wide range of database systems problems B4. Planning to develop performance in the field of **Big Data** b4.link different knowledge to solve professional problems. b5. evaluate different database model
C- Professional and Practical Skills:	C1. Practice the professional, basic and modern skills in the field of **Big Data** c1. Support transaction in SQL C3 Demonstrate the existing methods and tools in the field of **Big Data** c2 Demonstrate the existing methods and algorithms in concurrency control/ recovery c3 Perform database experiments in which they transform theoretical models to a working system c4 Testing and evaluating database experiments c5 Examine and analyze the result
D- General and transferable Skills	D1 Recognize the Effective communication of various types D2 Use of information technology to serve professional practice D3 Recognize the Self-assessment and identification of personal educational needs D4 Use different sources to access information and knowledge D5 Develop rules and indicators to evaluate the

	performance of others D6 Practice to Working in a team, leading teams in different professional contexts D7 Demonstrate the Time management efficiently D8 Practice to Self-learning and continuous

4-Course Content:	1. File Organization 2. Internal Design of a Mini Database Engine 3. Object-Oriented Databases 4. Query Processing and Query Optimization 5. Transaction Management and Concurrency Control 6. Concurrency control techniques 7. Database Recovery Techniques Distributed Databases and Client/Server Architecture

5- Teaching and Learning Methods:	1. Lectures 2. Tutorials 3. Class discussions 4. Internet searches 5. Independent Work 6. Group projects 7. Problem-based Learning

6- Teaching and Learning Methods for handicapped students :	-

7- Student Assessment	
A- Assessment Methods:	1. Assignments 2. Practical exam 3. Oral exam 4. Final written exam
B- Assessment schedule:	Practical Examination: Week 13 Oral Examination: Week 14 Final Examination: Week 15
C- Weighting of assessments:	Practical Examination: 20% Oral Examination: 20% Final-term Examination: 60%

8- Books and References

A- Notes:	-
B- Essential Books (Text Books):	Fundamentals of Database Systems. Ramez Elmasri, and Shamkant B. Navathe , Sixth Edition, Boston:Addison-Wesley , 2011
C- Recommended Books:	- Fundamentals of Database Management Systems. Mark L.Gillenson, 2012
D- Periodicals, Web sites, … etc	-

Course Professor: …… Department Head: ……

University: ***FayoumUniversity***
Faculty: ***Computers and Information***
Department: Master (Big Data ماجستير مهنى + اكاديمى)

Course Specification

1- Basic Information		
Code: IS614	**Course Title:**Information Retrieval and Web Search	**Year/Level: Post Graduate**
Programme : Master of Big Data	**Number of units:** **Lecture:** 2 hrs/week **Tutorial:** 0 hrs/week **Practical:** 2 hrs/week	

2- Aims of Course:	1. The main objective of this course is to present the basic concepts techniques, and methods in information retrieval and more advance techniques for information retrieval 2. Understand the underlined problems related to IR 3. Acquire the necessary experience to design, and implement real applications using Information Retrieval systems

3- Intended Learning Outcomes	
A- Knowledge and Understanding:	A1 Locate and classify the Theories and fundamentals related to the field of learning as well as **Big Data** a1) Demonstrate the basic theories and analysis tools as they apply to information retrieval a2) understand the different models of IR a3) understand the common algorithms and techniques for information retrieval A2 Recognize the mutual influence between practice and its reflection on the environment a4) understand the problems and potentials of current IR systems a5) Show a critical understanding of the efficient text indexing within which IR is constructed

	A3 Recognize Scientific developments in **Big Data** a6) understand the different models and evaluation measures of information retrieval a7) understand the common algorithms and techniques for information retrieval A4 Recognize the Principles and basics of quality in professional practice in the field of **Big Data** a8) learn and evaluate different retrieval algorithms and systems
B- Intellectual Skills:	B1 Analysis and evaluation of information in the field of specialization and measurement to solve problems b1) Describe the measures of IR systems b2) analyze the performance of retrieval systems using test collections b3) evaluate IR systems B2 Solving specialized problems with some lake of data b4) Resolve a wide range of IR problems B6 Planning to develop performance in the field of **Big Data** b5) Analyze different models and algorithms and produce the right architecture b6) Describe and clarify how do we answer and process a query using different IR models b7) Discuss how the search engine could be improved
C- Professional and Practical Skills:	C1 Practice the professional, basic and modern skills in the field of **Big Data** c1 Apply various indexing, matching, organizing, and evaluating methods to IR problems c2 deploy efficient techniques for the indexing of document objects that are to be retrieved C3 Demonstrate the existing methods and tools in the field of **Big Data** c3 apply information retrieval principles to locate relevant information in large collections of data c4 Perform IR experiments in which they transform theoretical models to a working system c5 Testing and evaluating IR experiments c6 Examine and analyze the result

	c7 implement advanced techniques for information retrieval
D- General and transferable Skills	D1 Recognize the Effective communication of various types D2 Use of information technology to serve professional practice D3 Recognize the Self-assessment and identification of personal educational needs D4 Use different sources to access information and knowledge D5 Develop rules and indicators to evaluate the performance of others D6 Practice to Working in a team, leading teams in different professional contexts D7 Demonstrate the Time management efficiently D8 Practice to Self-learning and continuous

4-Course Content:	• Boolean and vector-space retrieval models • Dictionaries and tolerant retrieval • Term vocabulary, Word statistics, Text preprocessing, Term weighting, Similarity function, Indexing, • Efficient text indexing • Computing scores in complete search system • Evaluation of retrieval

5- Teaching and Learning Methods:	1. Lectures 2. Tutorials 3. Class discussions 4. Internet searches 5. Independent Work 6. Group projects 7. Problem-based Learning

6- Teaching and Learning Methods for handicapped students :	-

7- Student Assessment	
A- Assessment Methods:	1. Assignments 2. Practical exam 3. Oral exam 4. Final written exam
B- Assessment schedule:	Practical Examination: Week 13 Oral Examination: Week 14 Final Examination: Week 15
C- Weighting of assessments:	Practical Examination: 20% Oral Examination: 20% Final-term Examination: 60%

8- Books and References	
A- Notes:	-
B- Essential Books (Text Books):	C.D. Manning, P. Raghavan, H. Schütze. Introduction to Information Retrieval, Cambridge UP, 2008. (available in the Web, http://nlp .stanford.edu/IR-book/)

C- Recommended Books:	• R. Baeza-Yates, B. Ribeiro-Neto, Modern Information Retrieval, Addison-Wesley, 2011 (2nd Edition). • B. Croft, D. Metzler, T. Strohman, Search Engines: Information Retrieval in Practice, Addison-Wesley, 2009. • Ricci, F.; Rokach, L.; Shapira, B.; Kantor, P.B. (Eds.), Recommender Systems Handbook. 1st Edition., 2011, 845 p. 20 illus., Hardcover, ISBN: 978-0-387-85819-7 (a new edition is going to be published on 2015)
D- Periodicals, Web sites, … etc	- http://nlp.stanford.edu/IR-book/pdf/irbookonlinereading.pdf - http://nlp.stanford.edu/IR-book/newslides.html

Course Professor: …… Department Head: ……

University: ***Fayoum University***
Faculty: ***Computers and Information***
Department: Master (Big Data اكاديمى + مهنى + ماجستير علوم الحاسب)

Course Specification

1- Basic Information		
Code: CS 620	**Course Title:** Machine Learning	**Year/Level:**
Programme :	**Number of units:** **Lecture:** 3 **Tutorial:** 2 **Practical:** 2	

2- Aims of Course:	Introducing the field of Machine learning, its models and applications and how to design and develop algorithms for real life applications.

3- Intended Learning Outcomes	
A- Knowledge and Understanding:	On completing the course, students should be able to: K.1 Define essential facts, concepts, principles, and theories for Machine Learning, computing and software applications. K.2 Recognize and explain essential facts, concepts, principals, and theories related to Machine Learning and software applications K.3 Recognize different algorithms that are suitable for real life applications
B- Intellectual Skills:	I.1 Distinguish Machine Learning concepts and Decision Support approaches to solve problems in scientific and systematically way. I.2 Apply appropriate approach to achieve partial or approximate solution. I.3 Design and develop algorithms that are suitable for real life applications.
C- Professional and Practical Skills:	P.1 Apply the principles of machine learning using appropriate techniques, tools, and languages. P.2 Apply the principles of machine learning techniques to various types of data.

D- General and transferable Skills	G.1 Work as a part of a team to produce reports. G.2 Work as a part of a team to find a solution for practical problems and projects. G.3 Write structural reports. G.4 Apply specific task in certain period of time “training problems in labs.

4-Course Content:	

Week No.	Sub-Topics	Total Hours	Contact Hours	
			Theoretical Hours	Practical Hours
1	Introduction	2.5	2.5	
2	Learning by Risk Minimization	4	2.5	1.5
3	Kernels and Linear Classifiers	4	2.5	1.5
4	Support Vector Classification Learning I	4	2.5	1.5
5	Support Vector Classification Learning II	4	2.5	1.5
6	Adaptive Margin Machines	4	2.5	1.5
7	Midterm Exam			
8	The Bayesian Framework	4	2.5	1.5
9	Gaussian Processes I	4	2.5	1.5
10	Gaussian Processes II	4	2.5	1.5
11	The Relevance Vector Machine	4	2.5	1.5
12	Bayes Point Machines	4	2.5	1.5
13	Fisher Discriminants	4	2.5	1.5
14	Learning Theory	4	2.5	1.5
15	Final Exam			
	Total Teaching Hours	51	33	18

5- Teaching and Learning Methods:

Teaching/Learning Method	Selected Method	Course ILOs Covered by Method (By ILO Code)			
		K&u	Intellectual Skills	Professional Skills	General Skills
Lectures & Seminars	Y	K1,k2,k3	I1,I2		
Tutorials					
Computer lab Sessions				P1,p2	G2,G4
Practical lab Work					
Reading Materials					G3,G1
Web-site Searches					G3,G1
Problem Solving / Problem-based Learning			I1,I2,I3		G3,G1
Projects					G3,G1
Independent Work					
Group Work			I1,I2,I3		G1,G2
Case Studies					
Presentations					
Simulation Analysis					
Others (Specify):					

7- Student Assessment	
A- Assessment Methods:	
B- Assessment schedule:	
C- Weighting of assessments:	

Assessment Method	Selected Method	Course ILOs Covered by Method (By ILO Code)				Assessment Weight / Percentage	Week No.
		K&U	I.S.	P.S.	G.S.		
Midterm Exam	Y	All	I1,I2			110%	7
Final Exam	Y	All	I1,I2			60%	15
Quizzes							
Course Work	Y				G4	15%	
Report Writing					G1,G3		
Case Study Analysis							
Oral Presentations							
Practical	Y			P1,p2		15%	
Group Project			I1,I2,I3	P1,p2	G2	15%	
Individual Project							
Others (Specify):							

8- Books and References

A- Notes:	Ralf Herb Rich. Learning Kernel Classifiers: Theory and Algorithms. MIT Press
B- Essential Books (Text Books):	Course notes provided by the DR
C- Recommended Books:	
D- Periodicals, Web sites, … etc	

Course Professor: …… Department Head: ……

University: ***Fayoum University***
Faculty: ***Computers and Information***
Department: ***Master (علوم الحاسب)***

Course Specification

1- Basic Information		
Code: CS 612	**Course Title:** Mobile Computing	**Year/Level: Master of Computer Science**
Programme	**Number of units:** **Lecture:** 2 **Tutorial:** 2 **Practical:**	

2- Aims of Course:	This course will give you an understanding of mobile computer systems particularly in the context of wireless network systems such as 2G/3G/4G mobile telephony، data networks، and other wireless networks and infrastructure. The course emphasises how to interface hardware to mobile computing devices، and programming those devices.

3- Intended Learning Outcomes	
A- Knowledge and Understanding:	A1. grasp the concepts and features of mobile computing technologies and applications; A2. have a good understanding of how the underlying wireless and mobile communication networks work, their technical features, and what kinds of applications they can support; A3. identify the important issues of developing mobile computing systems and applications; A4. Student is familiar with wireless communications standards and data transmission standards
B- Intellectual Skills:	B1. organize the functionalities and components of mobile computing systems into different layers and apply various techniques for realizing the functionalities; B2. develop mobile computing applications by analyzing their characteristics and requirements, selecting the appropriate computing models and software architectures, and applying standard programming languages and tools;

	B3. Student knows how to prepare a mobile application for distribution
C- Professional and Practical Skills:	C1. Communication skills C2. Time management C3. Learning and working both independently and in groups C4. Writing and evaluating professional reports and presentations.
D- General and transferable Skills	D1.Use of range of specialized mobile computing technology such as programming languages, web based systems and other means of dealing with mobile devices and networks D2. Preparation of essays, reports and presentations. D3. Recognize the Self-assessment and identification of personal educational needs D4. Use different sources to access information and knowledge

4-Course Content:	• Basics of Mobile Apps & Wireframing • Mobile App Development Tools & Strategies • Localization • Mobile Cloud and Back-End Servers • Location Awareness • Context-Aware Systems • Sensors and Sensing • RFID & NFC • Fundamentals of Networks • Wireless Networks • Ad-Hoc Networks • Bluetooth and BLE • Cellular Networks • Wearable Computing & Internet of Things

5- Teaching and Learning Methods:	lecture, tutorial, seminar

6- Teaching and Learning Methods for handicapped students :	-

7- Student Assessment	
A- Assessment Methods:	Reports, presentation, exams
B- Assessment schedule:	
C- Weighting of assessments:	**40% classwork, 60% final exam**

8- Books and References	
A- Notes:	-
B- Essential Books (Text Books):	*Ubiquitous Computing: Smart Devices, Environments and Interactions* – Stefan Poslad – Wiley 2009
C- Recommended Books:	Mobile Computing: Technology, Applications, and Service Creation – Asoke K. Talukder, Roopa R. Yavagal - McGraw-Hill Communications Engineering 2007
D- Periodicals, Web sites, … etc	-

Course Professor: Howida Youssry Department Head: ……

University: ***Fayoum University***
Faculty: ***Computers and Information***
Department: Master (Big Data ماجستير أكاديمى)

Course Specification

1- Basic Information		
Code: CS 633	**Course Title:** Selected Topics1	**Year/Level: Big Data Master**
Programme :	**Number of units:** **Lecture:** 3 hrs/ week **Tutorial:** 0 hrs/ week **Practical:** 2 hrs/ week	

2- Aims of Course:	The purpose of this course is to give a complete picture for the Semantic Web as a new emerging field that makes the content available to be read and used by human and intelligently by machines. In addition to that establishes meaning to data to be shared, automatically reasoned and reused via machine-readable applications. This course will give a brief history of the web and explains the meaning and the importance of the "Semantic Web." Then will cover the different technologies used for building the Semantic Web including Ontology representation, creation, design, reasoning, programming and applications. Start from URIs and namespaces, and then move to XML, XML Schema, RDF, RDF/XML, RDFS, Individuals, OWL , SPARQL , Reasoning, and SWRL .

3- Intended Learning Outcomes	
A- Knowledge and Understanding:	A7. Demonstrate essential facts, concepts, principles and theories relating to computing information & computer applications as appropriate to the program of study. a1) Study the concepts and principles relating to the Semantic web. a2) Define the differences between web2.0 and web3.0 A12. Selects advanced topics to provide a deeper understanding of some aspects of the subject such as Unified Process, object-oriented analysis and design, e-commerce technologies, and Decision support systems. a3) Study of ontology engineering as an advanced topic related to the semantic web. a4) study of advanced vocabularies used on the

	web3.0 that extends the current web. A17. Demonstrate the new concepts and techniques that represent the future of information systems such as semantic web and Linked Open Data (LOD) *a5*) Demonstrate RDF,RDF Schema, and OWL as technologies representing ontologies via the semantic web *a6*) Study the principles of open data, linked open data and to represent the future of data through the web
B- Intellectual Skills:	B9. Compare between the classifications of (data, results, methods, techniques, algorithms... etc.). *b1*) Define the different methodologies used for building an ontology. *b2*) Apply the principles of ontology engineering for the ontology used in the course using RDF & OWL.
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) Apply the different tools used in this course such as portage and Jena to solve practical problems. c2) Compare between different tools used according to their capabilities, needs and when to use. C9.Deploy different modeling techniques to model and analyze real life computing problems. c3) Apply the ontology principles and life cycle to model real life problems.
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) Identify the roles of the teamwork, how they can work with each other and how can distribute the tasks between team members. d2) Measure the team performance, and how they collaborate with each other. D5. Communicate effectively through oral, written, and visual means. d3) concentrate on the communication between the tutor and students in addition to the communication between the team itself. d4) Giving a chance to Students to present their work and negotiate with each other. D6. Demonstrate skills in team work, team management, time management and organizational skills.

	d5) Focus on how Students respect time , deadline and time management
4-Course Content:	▪ Introduction to Knowledge Representation and the Semantic Web o XML o DTD o RDF o RDFS o SPARQL ▪ Introduction to the Web Ontology Language OWL ▪ Methods for developing and evaluating ontologies. ▪ Developing Semantic Application based on jena and sesame Frameworks
5- Teaching and Learning Methods:	1. Lectures 2. Tutorials 3. Class discussions 4. Internet searches

6- Teaching and Learning Methods for handicapped students :	
7- Student Assessment	
A- Assessment Methods:	1. Assignments and Quizzes 2. Mid-Term written exam 3. Oral exam 4. Practical exam 5. Final written exam
B- Assessment schedule:	1. Mid-Term Examination: Week 7 2. Practical Examination: Week 13 3. Oral Examination: Week 14 4. Final Examination: Week 15
C- Weighting of assessments:	• Assignments and Quizzes: 0% • Mid-Term Examination: 10% • Practical Examination: 20% • Oral Examination: 10% • Final-term Examination: 60%
8- Books and References	
A- Notes:	- Handed out to the students part by part.
B- Essential Books (Text Books):	• Semantic Web for Dummies. (2009) • Semantic Web Primer, Snellenburg JJ, van Stokkum

	IHM (2012). • Learning SPARQL: Querying and Updating with SPARQL 1.1 - 2011,Author: Bob DuCharme
C- Recommended Books:	- Semantic Web Programming (Recommended) (2009) ▪ Owl: Representing Information Using the Web (2006) ▪ Ontology Language – Lee Lacy (2006)
D- Periodicals, Web sites, … etc	-

Course Professor: **Department Head:**

Assoc. Prof. Dr. Haytham Al-Feel **Prof.Dr. Nabila Hassan**

University: ***FayoumUniversity***
Faculty: ***Computers and Information***
Department: Master (Big Data ماجستير مهنى + أكاديمى)

Course Specification

1- Basic Information		
Code: CS 634	**Course Title:** Selected Topics2	**Year/Level:**
Programme :	**Number of units:** **Lecture:** **Tutorial:** **Practical:**	

2- Aims of Course:	This course is an introduction to data science. The major goals of this course are to learn how to use tools for acquiring, cleaning, analyzing, exploring, and visualizing data; making data-driven inferences and decisions; and effectively communicating results. Moreover, this course will introduce students to data preparation and analysis methods

3- Intended Learning Outcomes	
A- Knowledge and Understanding:	A5 Locate and classify the Theories and fundamentals related to data science A6 Recognize The mutual influence between practice and its reflection on the environment for the basic functions and methods for data science. A7 Recognize Scientific developments in various approaches of data science.
B- Intellectual Skills:	B3 How to solve a problem using the data science techniques and methodologies. B4 How to interact with the data science to represent well semantic information B4 Prepare a research study and / or writing a systematic scientific study on data science
C- Professional and Practical Skills:	C2 Practice the professional, basic and modern skills in the field of data science to handle certain problem C3 Prepare the Writing and evaluating professional reports in the field of data science. C4 Demonstrate the existing methods and tools in the

	field of data science to Solve different problems in this field.
D- General and transferable Skills	D9 Work as a part of a team to find a solution for practical problems and projects. D10 Write structural reports. D11 Make oral communication skills by making report presentation.

4-Course Content:	• Acquiring data through web-scraping and data APIs • Cleaning and reshaping messy datasets using methods such as regular expressions or dedicated tools such as open refine • Exploratory data analysis and visualization • Rating and ranking • Clustering and classification • Recommendation • Network analysis • Regression and statistical inference

5- Teaching and Learning Methods:	8. Lectures 9. Tutorials 10. Computer-lab Sessions 11. Practical lab work 12. Class discussions 13. Internet searches 14. Independent Work 15. Group projects 16. Problem-based Learning 17. Writing reports

6- Teaching and Learning Methods for handicapped students :	-

7- Student Assessment

A- Assessment Methods:	12. Assignments and Quizzes 13. Midterm written exam 14. Oral exam 15. Practical exam Final written exam
B- Assessment schedule:	Assignments: Week 7 Practical examination: Week 13 Oral Examination: Week 14 Final Examination: Week 15
C- Weighting of assessments:	Assignments: 20% Oral Examination: 10% Practical Examination: 10% Final-term Examination: 60%

8- Books and References	
A- Notes:	-
B- Essential Books (Text Books):	Software for Data Analysis: Programming with R (Statistics and Computing) 1st ed. 2008. Corr. 2nd printing 2009 Edition, John M. Chambers
C- Recommended Books:	- Data Science from Scratch: First Principles with Python 1st Edition, Joel Grus - Doing Data Science: Straight Talk from the Frontline 1st Edition, Cathy O'Neil, Rachel Schutt - Learning the Pandas Library: Python Tools for Data Munging, Analysis, and Visualization (Treading on Python Book 3), Matt Harrison, Michael Prentiss
D- Periodicals, Web sites, … etc	-

Course Professor: …… Department Head: ……

1- The attributes of the Academic Master of Big Data graduate & the ILO's: :

The attributes of the Academic Master of Big Data graduate	A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	D1	D2	D3	D4	D5	D6	D7	D8
1. Proficiency in applying the basics and methodologies of scientific research and using its various tools.										√					√									√
2. Apply of the analytical method and its use in the field of specialization.							√	√					√											
3. Apply specialized knowledge and integrate it with relevant knowledge in his professional practice.			√					√						√				√		√				
4. Demonstrate awareness of current problems and modern visions in the field of specialization	√	√	√					√	√		√	√						√		√				
5. Identify professional problems and find solutions.								√	√				√			√								
6. Mastering an appropriate range of specialized professional skills and using appropriate technology to serve his professional practice.	√						√				√	√		√	√	√		√						
7. Communicate effectively and be able to lead teams.					√												√				√	√	√	√
8. Decision-making in different professional contexts																								
9. Use available resources to achieve the highest utilization and preservation				√	√	√							√											
10. To show awareness of his role in the development of society and the preservation of the environment in the light of global changes.		√					√																	
11. Act in a way that reflects the commitment to integrity, credibility and adherence to the rules of the profession				√	√	√							√											

12. Develop himself academically, professionally and capable of continuous learning													√						√			√	√	√

Program coordinator: Dr. Hssien Ocasha Department Head: Prof.Nabila Hasan