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

Course Specification

1- Basic Information	
BSC 701	**Course Title:** seminar
Program: *Computer Science PhD*	**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: *FayoumUniversity*
Faculty: *Computers and Information*
Department: P.H(Computer Science)

1- Basic Information		
Code: CS716	**Course Title: Advanced Database Systems**	**Year/Level: Post Graduate**
Programme : PhD of Computer Science	**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 Database Security and Authorization
	   • Understand distributed databases and client/server architecture
	   • Understand object-oriented databases
	   • Understand emerging database technologies and Applications

3- Intended Learning Outcomes	
A- Knowledge and Understanding:	A1 Locate and classify the Theories, fundamentals and modern knowledge in the field of **Computer science** and related fields 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 a4.Discuss the concepts of query optimization, concurrency control, recovery management and distributed processing a5. Explain relational, semantic, and object-oriented data models a6.Understand distributed databases and client/server architecture a7.Understand emerging database technologies A4. Recognize Principles and basics of quality in professional practice in the field of **Computer science** a5. Explain relational, semantic, and object-oriented data models a9. learn different database model. A5. Recognize concerning the effects of professional practices on the environment and ways of developing and maintaining the environment a10.understand the problems and potentials of current database systems
B- Intellectual Skills:	B1.Analysis and evaluation of information in the field of **Computer science** and measurement and extraction 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 based on available data b3. Resolve a wide range of database systems problems B6. Planning to develop performance in the field of **Computer science** 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 **Computer science** c1. Support transaction in SQL C3 Evaluation and development of existing methods and methods in the field of **Computer science** c2 Demonstrate the existing methods and algorithms in concurrency control/ recovery c3 Demonstrate database security and authorization c4 Perform database experiments in which they transform theoretical models to a working system c5 Testing and evaluating database experiments c6 Examine and analyze the result C5 Planning to develop professional practice and develop the performance of others c7.link different knowledge to solve professional problems. c8. evaluate different database model
D- General and transferable Skills	D1 Recognize the Effective communication of various types D2 Use of Computer science to serve professional practice D3 Use to Educate others and assess their performance D4 Use to Self-assessment and continuous learning D5 Use different sources to obtain information and knowledge D6 Practice Work in a team, and lead teams D7 Practice Managing scientific meetings and the ability to manage time

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
	8. Database security and authorization
	9. Data Warehousing and Data Mining
	10. Distributed Databases and Client/Server Architecture
	11. Advanced database concepts and emerging applications
	12. Advanced database models, systems, and applications

5- Teaching and Learning Methods:	8. Lectures
	9. Tutorials
	10. Class discussions
	11. Internet searches
	12. Independent Work
	13. Group projects
	14. 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: P.HD (علوم الحاسب)

Course Specification

1- Basic Information		
Code: CS707	**Course Title:Advanced Intelligent Computing**	**Year/Level:**
Programme :	**Number of units:** Lecture: Tutorial: Practical:	

2- Aims of Course:	This course is designed for those who are interested in designing and developing intelligent systems and/or are about to start research in computational intelligence. The course will focus on the main CI approaches and methodologies, namely artificial neural networks, genetic algorithms, swarm optimization, and fuzzy systems. The course is a research-based course and therefore focuses on leading students to investigate the current state of research in CI areas as well as to gain comprehensive theoretical knowledge from scientific research about the basic concepts and features of CI methodologies and approaches. The course is very practical-oriented and hands-on since it focuses on showing students real world applications of CI approaches and guides them to use their theoretical knowledge to design and build CI algorithms for solving real world problems. Furthermore, the course aims at encouraging students to critically think and reflect about the learned concepts and algorithms as well as emphasizes discussions among students on CI related topics.

3- Intended Learning Outcomes		
A- Knowledge and Understanding:	A1	Locate and classify the Theories, fundamentals and modern knowledge in the field of computer vision and pattern recognition and related fields
	A2	Locate and classify The basics, methodologies and ethics of scientific research and its various tools

	A4	Recognize Principles and basics of quality in professional practice in the field of computer vision and pattern recognition
B- Intellectual Skills:	B1	Analysis and evaluation of information in the field of computer vision and pattern recognition and measurement and extraction
	B2	Solving specialized problems based on available data
	B3	*Compose* research studies that add to knowledge
	B4	Writing scientific papers
C- Professional and Practical Skills:	C1	Practice the professional, basic and modern skills in the field of computer vision and pattern recognition
	C2	Writing and evaluating professional reports
	C3	Evaluation and development of existing methods and methods in the field of computer vision and pattern recognition
D- General and transferable Skills	D1	Recognize the Effective communication of various types
	D2	Use of Computer science to serve professional practice
	D3	Use to Educate others and assess their performance
	D4	Use to Self-assessment and continuous learning

4-Course Content:	- Introduction to Computational Intelligence topics Fundamental concepts - Computational Intelligence Basic Principles - Classification, Learning, and Adaptation Supervised, Unsupervised, Reinforcement Learning - Classification, Learning, and Adaptation Supervised, Unsupervised, Reinforcement Learning

	• Artificial Neural Networks • Genetic Algorithms • Optimization • Fuzzy Systems • CI Algorithms

5- Teaching and Learning Methods:	15. Lectures 16. Tutorials 17. Computer-lab Sessions 18. Practical lab work 19. Class discussions 20. Internet searches 21. Independent Work 22. Group projects 23. Problem-based Learning 24. Writing reports

6- Teaching and Learning Methods for handicapped students :	-

7- Student Assessment	
A- Assessment Methods:	3. Assignments and Quizzes 4. Midterm written exam 5. Oral exam 6. 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	Russell Eberhart and Yuhui Shi - Computational Intelligence:

(Text Books):	Concepts to Implementations (2007)
C- Recommended Books:	• Fakhreddine Karray and Clarence de Silva - Soft Computing and Intelligent Systems Design (2004) [companion amazon] • Andries Engelbrecht - Computational Intelligence: an Introduction (2007) [companion amazon] • Amit Konar - Computational Intelligence: Principles, Techniques, and Applications (2005) [publisher link] • Vojislav Kecman - Learning and Soft Computing: Support Vector Machines, Neural Networks, and Fuzzy Logic Models (2001)
D- Periodicals, Web sites, … etc	-

Course Professor: ………………………   Department Head: ……………

University: *FayoumUniversity*
Faculty: *Computers and Information*
Department: P.H(Computer Science)

1- Basic Information		
Code: CS 711	**Course Title: Advanced Topics in Computer Science**	**Year/Level:**
Programme :	**Number of units:** Lecture: [ ] Tutorial: [ ] Practical: [ ]	

2- Aims of Course:	To give students a broad knowledge on, and techniques used in contemporary research on Image and Pattern Recognition. This course gives an introduction to the main methods of image analysis and pattern recognition. Moreover, introduction to Mathematical Morphology Examples and applications.

3- Intended Learning Outcomes		
A- Knowledge and Understanding:	A3	Locate and classify the Theories, fundamentals and modern knowledge in the field of computer vision and pattern recognition and related fields
	A4	Locate and classify The basics, methodologies and ethics of scientific research and its various tools
	A4	Recognize Principles and basics of quality in professional practice in the field of computer vision and pattern recognition
B- Intellectual Skills:	B5	Analysis and evaluation of information in the field of computer vision and pattern recognition and measurement and extraction
	B6	Solving specialized problems based on available data
	B7	*Compose* research studies that add to knowledge
	B8	Writing scientific papers
C- Professional and Practical Skills:	C1	Practice the professional, basic and modern skills in the field of computer vision and pattern recognition
	C2	Writing and evaluating professional reports
	C3	Evaluation and development of existing methods and methods in the field of computer vision and pattern

		recognition
D- General and transferable Skills	D5	Recognize the Effective communication of various types
	D6	Use of Computer science to serve professional practice
	D7	Use to Educate others and assess their performance
	D8	Use to Self-assessment and continuous learning

4-Course Content:	I. Overview of Computer Vision and Pattern Recognition
	II. Basic Theories and Techniques in Pattern Recognition
	A. Bayesian decision theory
	B. Parametric techniques
	C. Non-parametric techniques
	D. Formal linguistics theory
	E. Linear discriminant function
	F. Syntactic / structural PR techniques
	III. Feature Extraction
	A. Feature extraction techniques in statistical PR
	B. Feature extraction techniques in syntactic / structural PR
	IV. Image Formation
	A. Photometric image formation
	B. Geometric primitives and transformations
	V. Image Processing
	A. Image analysis
	B. Image filtering and enhancement
	VI. Object Representation and Tracking
	A. Object representation
	B. Point tracking C. Kernel tracking
	VII. Applications

5- Teaching and Learning Methods:	25. Lectures
	26. Tutorials
	27. Computer-lab Sessions
	28. Practical lab work
	29. Class discussions
	30. Internet searches
	31. Independent Work
	32. Group projects
	33. Problem-based Learning
	34. Writing reports

6- Teaching and Learning Methods for handicapped students :	-

7- Student Assessment	
A- Assessment Methods:	7. Assignments and Quizzes
	8. Midterm written exam
	9. Oral exam
	10. 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):	- **Computer Vision: Algorithms and Applications, Richard Szeliski, September 3, 2010 Springer.**
C- Recommended Books:	✓ - **Digital Image Processing, 2nd edition, Rafael C. Gonzalez and Richard E. Woods, Prentice Hall, 2008. http://www.imageprocessingplace.com** ✓ Also see textbook website, **http://www.imageprocessingplace.com** ✓ The Essential Guide to Image Processing, Alan C. Bovik, Academic Press, 2009. ✓ Digital Image Processing Using MATLAB, 2nd edition, Rafael C. Gonzalez, Richard E. Woods, and Steven L. Eddins, Gatesmark Publishing, 2009.
D- Periodicals, Web sites, … etc	-

Course Professor: Shereen Aly Taie   Department Head: …………

University: *Fayoum University*
Faculty: *Computers and Information*
Department: P.H (علوم الحاسب)

Course Specification

1- Basic Information		
Code: CS 703	**Course Title: Advanced Topics in Data Security**	**Year/Level:**
Programme :	**Number of units:** Lecture: 2 Tutorial: 2 Practical:	

2- Aims of Course:	Study of contemporary and emerging cryptographic and cryptanalytic techniques and their importance in implementing secure systems. Introduction to cyber security. Linear and Differential Cryptanalysis techniques are introduced. You will study a selection of special topics in cryptography such as: Elliptic curve cryptography، malleable cryptography، primarily testing and factorization

3- Intended Learning Outcomes	
A- Knowledge and Understanding:	a1) Define different types of hacking a2) Understand what is a cyber security a3) Discuss Security Strategies for Web Applications and Social Networks a4) Describe existing practices, methods, techniques & technologies underpinning cyber security and information assurance along with their future evolution a5) Explain the concepts, principles and policies used in the development and securing of IT solutions a6) Know Principles of Digital Security
B- Intellectual Skills:	b1) Evaluate common open source and commercial security applications. b2) Analyze the performance and quality of cyber security architectures b3) Apply appropriate models, approaches, protocols and policies to design and protect IT infrastructure of an enterprise b4) Evaluate and apply appropriate approaches, policies, architectures & systems to implement & secure information technology solutions in an enterprise
C- Professional and Practical Skills:	c1) Design security system for protecting data security system. c2) Manage and audit secure information technology solutions

	c3) Configure, secure and deploy network and computing subsystems of IT infrastructure c4) Use appropriate tools for analysis, development and monitoring of IT infrastructure and its subsystems
D- General and transferable Skills	d1) Use critical thinking methods in solving scientific research problems.

4-Course Content:	• Network Security, Firewalls and VPNs • Hacker Techniques Tools & Incident Handling • Security Strategies for Web Applications and Social Networks • Incident Response & Investigation Distance Learning • Principles of Digital Security • Principles of cyber Security

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 :	**-**

7- Student Assessment

A- Assessment Methods:	1. Assignments and Quizzes 2. Midterm written exam 3. Oral exam 4. 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):	▪ Stallings, William. "Cryptography and network security: principles and practices".
C- Recommended Books:	▪ - Arthur E. Hutt, Douglas B. Hoyt, Seymour Bosworth. "Computer Security Handbook". ▪ Rick Lehtinen. "Computer Security Basics". Raymond R. Panko. "Corporate Computer and Network

	Security".
D- Periodicals, Web sites, … etc	-

Course Professor: ………………………   Department Head: ……………

University: *Fayoum University*
Faculty: *Computers and Information*
Department: : P.H *(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) *Computer Science*

Course Specification

1- Basic Information		
Code: CS 601	**Course Title:** Parallel Algorithm	**Year/Level:**

Programme:	**Number of units:** **Lecture:** 2
	                  Tutorial: 2
	               Practical:	

2- Aims of Course:	This course is about the design and analysis of parallel and distributed algorithms. We study specific algorithms for a variety of problems، as well as general design and analysis techniques. Specific topics include searching، sorting، algorithms for graph problems، efficient data structures، lower bounds and up- completeness'. Recent correlated software packages should be used through labs.

3- Intended Learning Outcomes	
A- Knowledge and Understanding:	a1. Define parallel programming principles, parallelism models, communication models, and resource limitations. a2. Describe the fundamental steps for designing and analyzing parallel algorithms. a3. Identify the fundamental of writing parallel codes. a4. Explain the main architectures in high performance computing. a5. Identify the essential mathematics relevant to the analysis of parallel algorithms. a6. Use high-level parallel programming language. a7. Identify core of analysis and applied mathematics related to parallel algorithms.
B- Intellectual Skills:	b1. Analyze and improve the performance of parallel applications. b2. Define traditional and nontraditional problems, set goals towards solving them, and. observe results. b3. Perform comparisons between (algorithms, methods, techniques...etc). b4. Identify attributes, components, relationships, patterns, main ideas, and errors.
C- Professional and Practical Skills:	c1. Write, debug and run simple distributed/parallel programs using the Message Passing Interface. c2. Design parallel programming applications. c3. Use appropriate programming languages and design

	methodologies. c4. Specify, design, and implement computer-based systems.
D- General and transferable Skills	d1. Communicate effectively by oral, written and visual means. d2. Work effectively as an individual and as a member of a team. d3. Lead and motivate individuals.

4-Course Content:	• Course introduction and motivation • Parallel algorithm design and analysis. • Collective communications • Parallel programming efficiency. • Parallel languages and architectures. • Application problems.

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 :	**-**

7- Student Assessment

A- Assessment Methods:	5. Assignments and Quizzes 6. Midterm written exam 7. Oral exam 8. 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):	Ananth Grama, Anshul Gupta, George Karypis, and Vipin Kumar. Introduction to parallel computing, second edition, Addison-Wesley, 2003.
C- Recommended Books:	-Parallel Algorithms by Guy Blelloch and Bruce Maggs. From Computer Science Handbook, Second Edition, Allen B. Tucker (Editor).
D- Periodicals, Web sites, … etc	-

Course Professor: ………………………   Department Head: ……………

University: *FayoumUniversity*
Faculty: *Computers and Information*
Department: **P.H** (**علوم الحاسب**)

Course Specification

1- Basic Information		
Code: CS715	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, fundamentals and modern knowledge in the field of computer vision and pattern recognition and related fields
	A6	Locate and classify The basics, methodologies and ethics of scientific research and its various tools
	A4	Recognize Principles and basics of quality in professional practice in the field of computer vision and pattern recognition
B- Intellectual Skills:	B9	Analysis and evaluation of information in the field of computer vision and pattern recognition and measurement and extraction
	B10	Solving specialized problems based on available data
	B11	*Compose* research studies that add to knowledge
	B12	Writing scientific papers
C- Professional and Practical Skills:	C1	Practice the professional, basic and modern skills in the field of computer vision and pattern recognition
	C2	Writing and evaluating professional reports
	C3	Evaluation and development of existing methods and

		methods in the field of computer vision and pattern recognition
D- General and transferable Skills	D9	Recognize the Effective communication of various types
	D10	Use of Computer science to serve professional practice
	D11	Use to Educate others and assess their performance
	D12	Use to Self-assessment and continuous learning

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:	35. Lectures 36. Tutorials 37. Computer-lab Sessions 38. Practical lab work 39. Class discussions 40. Internet searches 41. Independent Work 42. Group projects 43. Problem-based Learning 44. Writing reports

6- Teaching and Learning Methods for handicapped students :	-

7- Student Assessment	
A- Assessment Methods:	9. Assignments and Quizzes 10. Midterm written exam 11. Oral exam 12. 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 Computer Science PhD graduate & the ILO's: :

The attributes of the Computer Science PhD graduate	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	B8	B9	C1	C2	C3	C4	C5	D1	D2	D3	D4	D5	D6	D7
1. Mastering the applying of the basics and methodologies of scientific research.		√						√	√																	
2. Continuous work on the addition of knowledge in the field of specialization.	√																									
3. Integrating specialized knowledge with relevant knowledge and developing environmental relationships between them.					√			√					√	√	√		√	√			√			√		
4. Demonstrate deep awareness of current problems and modern theories in the area of specialization	√				√	√	√			√			√		√			√	√					√		
5. Identify professional problems and find innovative solutions.						√	√											√								
6. Mastering a wide range of specialized professional skills in the field of specialization	√					√	√	√					√	√	√	√		√		√	√	√			√	√
7. To develop new methods, tools and methods for practicing professionally.								√					√	√	√	√	√									
8. Use appropriate technological to serve his professional practice													√		√			√			√					
9. Communicate effectively and lead a team in different professional contexts												√									√				√	√
10. Utilizing and developing available resources efficiently and working to find new resources							√			√						√	√							√		√
11. Awareness of his role in community development and environmental conservation				√																						
12. Act to reflect the commitment to integrity, credibility and adherence to the rules of the profession		√	√	√							√						√									
13. Commitment to continuous self-development and the transfer of his work and experience to others													√			√						√	√		√	√

Program coordinator: Ass.Prof Sheren Tie   Department Head: Prof.Nabila Hasan