معهد العبور العالى
للإدارة و الحاسبات ونظم المعلومات

معاهد العبور
Obour Institutes
عضو إتحاد الجامعات العربية
عضو المجلس العربى لتدريب الطلاب

توصيف برنامج علوم الحاسب – لائحة 2003

CS Program Specification – 2003 Bylaw

(سارى ومعتمد بمجلس إدارة المعهد رقم (11) بتاريخ 2017/8/30)

العام الدراسى 2019/2018

Ministry of High Education
Al-Obour High Institute
for Management & Informatics
Ministrial Decree No. 638 for Year 1999

وزارة التعليم العالى
معهد العبور العالى
للإدارة والحاسبات ونظم المعلومات
قرار وزارى رقم ٦٣٨ لسنة ١٩٩٩

محضر إجتماع مجلس الإدارة

رقم (١١) بتاريخ الاربعاء ٣٠ / ٨ / ٢٠١٧

إنه فى يوم الاربعاء الموافق ٣٠/ ٨ /٢٠١٧ وفى تمام الساعة الثانية عشر ظهراً بمقر المعهد إجتمع مجلس إدارة معهد العبور العالى للإدارة والحاسبات ونظم المعلومات بناءاً على طلب الأستاذ الدكتور / محمد عبد الرحمن حجازى بصفة سيادته عميد المعهد وبرئاسة السيدالأستاذ الدكتور/ عبد الله الدهشان - أكبر الاعضاء سناًوقد حضر الاجتماع كل من:-

أعضاء هيئة التدريس

١- أ.د / على نصر الوكيل — عضو هيئة التدريس بالمعهد
٢- د/ حسينى حسن بكر — عضو هيئة التدريس بالمعهد
٣- د/ مدحت محمد عبد المنعم — عضو هيئة التدريس بالمعهد

اعضاء مهتمين بالتعليم

١- أ.د / محمد محمد ابراهيم أستاذ الإدارة ورئيس جامعة المنوفية سابقاً
٢- م/ وليد عبد الله الدهشان — امين عام معهد العبور العالى للإدارة والحاسبات
٣- د/ هبه الله عبد الله الدهشان — مديروحدة ضمان الجودة

وقد إعتذر عن عدم حضورالاجتماع :

المستشار/ عبد الرازق محمود عثمان نائب رئيس مجلس الدولة

وقد دعى إلى الإجتماع كل من :-

١- الدكتور / محمد الدهشان — مدير المشروعات
٢- م.م / وائل شحاته عبد الحميد — نائب مديروحدة ضمان الجودة

وقد بدء الإجتماع بتوجيه التهنئة للساده اعضاء هيئة التدريس ومعاونهم والعاملين على المجهود الذى بذل خلال الفصل الصيفى للعام الجامعى ٢٠١٧/٢٠١٦، ولما كان النصاب قانونياً فقد عرض الأستاذ الدكتور / محمد عبد الرحمن حجازى الموضوعات الواردة بجدول الاعمال على النحو التالى :-

الموضوع التاسع : المذكره المقدمة من السيد أ.د/ عميد المعهد بخصوص إقتراح منح درجة البكالوريوس لطلاب السنة الرابعة فى المعهد لجميع الشعب للفصل الصيفى ٢٠١٦/٢٠١٧

القـــرار: استعرض المجلس احصائية النتائج المقدمة من السيد أ.د/ عميد المعهد عن الفصل الصيفى٢٠١٦/٢٠١٧ لطلاب السنة الرابعة بجميع الشعب وكذا الإحصائية الإجمالية لنسبة النجاح وأعداد المتخلفين والباقين للإعادة وإقتراح المنح وارسال النتائج إلى الادارة العامة لشئون الطلاب والامتحانات لاعتمادها من السيد أ.د/ وزير التعليم العالى .

الموضوع العاشر: إستعراض خطاب الإدارة العامة لرعاية الطلاب عن مشاركة طلاب المعهد فى أسبوع شباب الجامعات بالمنوفية المقرر فى ٢٠١٧/٩/٦وحتى ٢٠١٧/٩/١٥

القـــرار: أحيط المجلس علماً بخطاب الشكر المقدم من الإدارة العامة لرعاية الطلاب إلى السيد الأستاذ الدكتور / عبد الله الدهشان رئيس مجلس الادارة وترشيح طلاب المعهد لتمثيل الوزارة باسبوع شباب الجامعات بالمنوفيه ، كما أوصى المجلس بتوفير الدعم اللازم لطلاب المعهد وتوفير كافة الامكانيات لهولاء الطلاب للتمثيل المشرف والدعم المستمر لهم فى إطار إعداد جيل قادر على العطاء والتميز فى ظل السياسة العامة للمعهد من منظور الجودة الشاملة والخطة الاستراتيجية للمعهد للنهوض والدعم المستمر للمشاركة المجتمعية على جميع المستويات الطلابية والقيادية والادارية والاكاديمية.

ثالثاً: إدارة الجودة والتطوير:

الموضوع الحادى عشر:إستعراض تقرير أنشطة وحدة ضمان الجودة عن شهر اغسطس ٢٠١٧ وما ورد به من مقترحات وهى:

- اعتمدالمجلس التعديلات التى تمت لتوصيف البرامج والمقررات فى ضوءالتقرير الشفهي لزياره الاعتماد
- إحاطة المجلس بتنفيذ البرنامج التدريبى "توصيف المقررات والبرامج وتقويم نواتج التعلم" تنفيذاً لخطة التدريب المعتمدة للعام الدراسى ٢٠١٧/٢٠١٨ والذى عقد بمقر المعهد من خلال مدرب الهيئة القومية لجودة التعليم والإعتمادفى الفترة من ١٤-١٦ أغسطس٢٠١٧، وإستفاد من التدريب عدد (١٥) عضو هيئة تدريس من أقسام مختلفة.
- إستكمال تنفيذ خطة التدريب للجهاز الأكاديمى للعام الدراسى ٢٠١٧/٢٠١٨ ببرنامج "إستراتيجيات التدريس والتعلم الفعال لمؤسسات التعليم العالى" والمقرر عقده من قبل مدربى الهيئة القومية لجودة التعليم والإعتماد فى ١٢و ١٣ سبتمبر ٢٠١٧ بمقر المعهد، والمستهدف عدد (١٥) متدرب من أعضاء هيئة التدريس والهيئة المعاونة.

المحتوى

INSTITUTE VISION

To be among the best 10 Egyptian institutions of high education within the next decade, with effective participation in achieving the objectives of sustainable development in the Egyptian society.

Institute MISSION

Obour High Institute participates in providing the national market needs of specialists in fields of accounting, management, information systems, and computer sciences through highly qualified educational & research processes that abide with the national norms within ethical and professional regulations. Plus the continuous interaction with different societal parties which contributes in achieving the economical and social development objectives.

Computer Sciences Program MISSION

Providing the market with specialized graduates in computer sciences skilled with modern knowledge and professional tactics connected strongly with programming languages, expert systems and artificial intelligence, through a highly qualified educational system based on the national reference standards which privileges the institute with competitive advantage in light of ethical and regulative social norms.

A) Basic Information

1. **Program Title:** Computer Science
2. **Program Type:** Single ☐ Double ✓ Multi ☐
3. **Department responsible for the program:** Computer Science
4. **Program accreditation documents:**
   - The ministerial decree no. 638 dated 9/6/1999.
   - The ministerial decree no. 1148 dated 5/8/2003 and working according to the rules declared through the internal framework of the Institute.
   - The modified framework from the Higher Council of Universities in its session dated 28/6/2007
5. **Program Coordinator:** Assist. Prof. Ahmed Said

B) Professional Information

1. Program Objectives and Aims:

1- الأهداف العامة للبرنامج:

The Computer Science Program aims are a brief statement setting out the intention in providing the program degree in terms of the scope of the subject, and the overall learning outcomes sought. Aims are articulated through statements of graduate attributes in compliance with NARS:

- Attributes of Computing and Information Programs Graduates
- Attributes of Computer Science Graduate.

The aims of our BSc Degree program in Computer Science are:

1. Provide a rigorous study of the theory and principles underlying modern computing applications.
2. Apply knowledge of basic and specialized computing sciences
3. Develop and design a high degree of expertise in application, integration and critical evaluation of a range of computing tools and facilities.
4. Develop an ability to use, compare and critically evaluate a range of formal and informal techniques, theories and methods applied to the development of applications of computing.
5. Encourage an understanding of the individual, social, organizational and economic applications of computing.
6. Provide graduates who exhibit an ability to carry out a program of work with minimal supervision.
7. Develop an ability to communicate effectively and carry out the work planes with minimal supervision.
8. Hold and promote the knowledge and skills required by computing industry.
9. Stimulate an interest in computing as an academic discipline, with a view to encouraging progression to postgraduate research.
10. Provide appropriate experience of working in the computing industry through a work placement.
11. Provide students with an opportunity to obtain an in-depth knowledge and understanding of selected areas of interest.
12. Demonstrate the ability to carry on future research and promotion.

Graduates Attributes:

The program adopted NARS graduate attributes 2010: the graduates of the computing and information programs should be able to:

1) Apply the fundamental theories and principles of computing and information applications.
2) Integrate and evaluate the computing tools and facilities.
3) Apply knowledge of mathematics and science.
4) Design a computing system, component and process to meet the required needs within realistic constraints.
5) Exploit the techniques, skills and up-to-date computing tools, necessary for computing and information practice.
6) Display professional responsibilities and ethical, societal and cultural concerns.
7) Use, compare and evaluate a range of formal and informal techniques, theories and methods to develop computing and information applications.
8) Consider and deal with the individual, social, environmental, organizational and economic implications of the application of computing and information.
9) Carry out a work plan with minimal supervision.
10) Communicate effectively.
11) Hold knowledge and skills required by the computing and information industry.
12) Engage in self and life-long learning and research in computing and information.
13) Fulfill requirements of potential employers.

In addition to General Graduate Attributes, of the computing and information programs, the attributes of computer science Graduate are:

14) Demonstrate knowledge and competence in fundamental areas of computer science such as: algorithms, design and analysis, computational theory, computer architecture and software based systems.
15) Apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design, implementation, evaluation and evolution of computer-based systems.
16) Apply knowledge of mathematics and science to real world problems; as well as to analyze and interpret data.
17) Demonstrate the analytic skills necessary to effectively evaluate the relative merits of software and computer systems, and algorithmic approaches.
18) Understand and apply a wide range of principles and tools of software engineering, such as design methodologies, choice of algorithm, language, software libraries and user interface technique.
19) Understand and apply a wide range of principles and tools of natural language processing and data mining
20) Have a solid understanding of the used concepts in computer science to be able to pursue further learning, whether as graduate students or on their own.
21) Demonstrate an understanding of algorithms and data structures, computer organization and architecture, programming language concepts, compilers, networks, artificial intelligence, graphics, human computer interfaces, and databases, and identify and define the computing requirements for its solution.
22) Design, implement, and evaluate a computer-based system, process, component or program.
23) Use knowledge and understanding in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoff involved in design choices.

2. Educational Program Intended Learning Outcomes (Program ILO's)
2- مخرجات التعلم المستهدفة من البرنامج - (Program ILOs)

The CS program provides students with opportunities to develop and demonstrate knowledge and understanding, intellectual, professional and practical and transferable skills as listed below. These outcomes have been developed with reference to the National Academic Reference Standards (NARS) for COMPUTER SCIENCE, 1st Edition, October 2010 benchmark statement.
Learning outcomes are statements on what successful students should achieve as the result of learning. They threshold statements of achievement and are linked to the knowledge, understanding and skills that a student will have gained on successfully completing a program.

Other References/Resources used in preparing Program ILOs

CS Program Specification from the following universities:

- Helwan University- Faculty of Computers and Information
- Assuit University- Faculty of Computers and Information
- Menoufia University- Faculty of Computers and Information
- Cairo University- Faculty of Computers and Information
- Fayom University- Faculty of Computers and Information
- Cairo University- Faculty of Computers and Information
- Higher Institute for Computers & Information Technology (El Shorouk Academy)

(A) Knowledge and understanding

On successful completion of this program, graduates should be able to:

A1. Understand the essential mathematics relevant to computer science.
A2. Use high-level programming languages.
A3. Requirements, practical constraints and computer-based systems
A4. Demonstrate basic knowledge and understanding of a core of analysis, algebra, applied mathematics and statistics
A5. Interpreting and analyzing data qualitatively and/or quantitatively
A6. Know and understand the principles and techniques of a number of application areas informed by the research directions of computer science.
A7. Show a critical understanding of the principles of artificial intelligence, image, and pattern recognition.
A8. Understanding of fundamental topics in computer systems, including hardware architectures and operating systems
A9. Understanding of fundamental topics in computer science, including software architectures, software engineering principles and methodologies, and software tools
A10. Selected advanced topics to provide a deeper understanding of some aspects of the hardware systems design, operating systems, computer security and compiler theory
A11. Selected advanced topics to provide a deeper understanding of some aspects of object-oriented analysis and design, and software engineering.

A12. Selected advanced topics to provide a deeper understanding of some aspects of the artificial intelligence, image processing, and computer graphics and animation
A13. Demonstrate strong knowledge of fundamentals of programming and the construction of computer-based systems.
A14. Demonstrate strong knowledge of fundamentals of data structures and algorithms.
A15. Show a critical understanding of the broad context within computing including issues such as quality, reliability, enterprise, employment law, and management, economics and accounting principles
A16. Provide a deeper understanding of legal, professional, ethical issues and moral aspects of the exploitation of computing.
A17. Knowledge of the tools, practices and methodologies used in the specification
A18. Knowledge of the methods used in defining and assessing criteria for measuring the extent to which a computer system is appropriate for its current deployment and future evolution
A19. Knowledge and understanding of the current and underlying technologies that support computer processing and inter-computer communication
A20. Knowledge and understanding of the principals of generating tests, which investigate the functionality of computer programs and computer systems, and evaluating their results.
A21. Modeling and design of computer-based systems bearing in mind the trade-offs
A22. Criteria and specifications appropriate to specific problems, and plan strategies for their solution

(B) Intellectual skills

On successful completion of this program, graduates should be able to:

B1. Define traditional and non-traditional problems, set goals towards solving them, and observe results.
B2. Perform comparisons between (algorithms, methods, techniques, etc.).
B3. Perform classifications of (data, results, methods, techniques, algorithms, etc.).
B4. Identify attributes, components, relationships, patterns, main ideas, and errors.
B5. Summarize the proposed solutions and their results.
B6. Restrict solution methodologies upon their results
B7. Establish criteria, and verify solutions.
B8. Identify a range of solutions and critically evaluate and justify proposed design solutions.
B9. Solve computer science problems with pressing commercial or industrial constraints
B10. Generate an innovative design to solve a problem containing a range of commercial and industrial constraints.
B11. Use investigative skills to research new and novel aspects of their work
B12. Create and/or justify designs to satisfy given requirements (synthesis, evaluation, application).
B13. Analyze and evaluate a range of options in producing a solution to an identified problem.
B14. Perform problem analysis from written descriptions; derive requirements specifications from an understanding of problems (analysis, synthesis).
B15. Apply the concepts, principles, theories and practices underpinning computing as an academic discipline.

B16. Define and assess criteria to measure the appropriateness of a computer system for its current deployment and future evolution, and to interpret the results thereof.
B17. Synthesize ideas, proposals and designs effectively using rational and reasoned arguments for presentation to a range of audiences.
B18. Evaluate the results of tests to investigate the functionality of computer systems.
B19. Address and apply professional, moral and ethical issues within the discipline.

(C) Professional / practical skills

On successful completion of the program the graduate should be able to:

C1. Use appropriate programming languages and design methodologies.
C2. Use appropriate web-based systems, tools and design methodologies.
C3. Use appropriate database systems.
C4. Perform independent information acquisition and management, using the scientific literature and Web sources.
C5. Specify, design, implement and manage computer-based systems.
C6. Evaluate systems in terms of general quality attributes and possible trade-offs presented within the given problem.
C7. Apply principles of effective information management, information organization, and information-retrieval skills to information of various kinds, including text, images, sound, video.
C8. Apply the principles of human-computer interaction to the evaluation and construction of a wide range of materials including user interfaces, web pages, and multimedia systems.
C9. Identify any risks or safety aspects that may be involved in the operation of computing equipment within a given context.
C10. Deploy effectively the tools used for the construction and documentation of software, with particular emphasis on understanding the whole process involved in using computers to solve practical problems.
C11. Make effective use of general computing facilities, plan and manage a project to complete within budget and schedule.
C12. Appreciate and manage the need for continuing professional development in recognition of the need for lifelong learning.
C13. Communicate effectively by oral, written and visual means
C14. Operate computing equipment efficiently with its logical and physical properties.
C15. Prepare technical reports, and a dissertation, to a professional standard; use IT skills and display mature computer literacy
C16. Apply tools and techniques for the design and development of applications.
C17. Develop a range of fundamental research skills, through the use of online resources, technical repositories and library-based material
C18. Handle a mass of diverse data, assess risk and draw conclusions
C19. Prepare and present seminars at a professional standard

(D) General and Transferable skills

On successful completion of the program the graduate should be able to:

D1. Communicate effectively by oral, written and visual means.
D2. Work effectively as an individual and as a member of a team.
D3. Collaborate effectively within multidisciplinary team.
D4. Work in stressful environment and within constraints.
D5. Demonstrate efficient IT capabilities.
D6. Lead and motivate individuals.
D7. Manage tasks and resources.
D8. Search for information and adopt life-long self-learning.
D9. Manage one's own learning and development.
D10. Communicate effectively with team members, managers and costumers.
D11. Exhibit appropriate numeracy skills in understanding and presenting cases involving a quantitative dimension.
D12. Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry or the academic community.

3. Program Academic Norms

3- المعايير الأكاديمية للبرنامج

The Academic Norms issued from The National Accreditation for Quality Assurance to the Computer Science Program have been accredited through the Board of Directors in its session dated 21/10/2009. It lists the following:

1- Knowledge & Understanding

The graduates of the program should acquire the knowledge and understanding of:

1. Essential facts, concepts, principles and theories relating to computing and information and computer applications as appropriate to the program of study.
2. Modeling and design of computer-based systems bearing in mind the trade-offs.
3. Tools, practices and methodologies used in the specification, design, implementation and evaluation of computer software systems.
4. Criteria and specifications appropriate to specific problems, and plan strategies for their solution.
5. The extent to which a computer-based system meets the criteria defined for its current use and future development.
6. The current and underlying technologies that support computer processing and inter-computer communication.
7. Principles of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results.
8. Management and economics principles relevant to computing and information disciplines.
9. Professional, moral and ethical issues involved in the exploitation of computer technology and be guided by the appropriate professional, ethical and legal practices relevant to the computing and information industry.
10. Current developments in computing and information research.
11. Requirements, practical constraints and computer-based systems

In addition to the above general requirements for the computing and information sector, the following are added as special requirements for computer science

12. Understand the essential mathematics relevant to computer science.
13. Use high-level programming languages.
14. Demonstrate basic knowledge and understanding of a core of analysis, algebra, applied mathematics and statistics.
15. Interpret and analyzing data qualitatively and/or quantitatively.
16. Know and understand the principles and techniques of a number of application areas informed by the research directions of the subject, such as artificial intelligence, natural language processing, data mining, databases and computer graphics.
17. Show a critical understanding of the principles of artificial intelligence, image, and pattern recognition.
18. Understand the fundamental topics in Computer Science, including hardware and software architectures, software engineering principles and methodologies, operating systems, compilers, parallel and distributed computing, systems and software tools.
19. Select advanced topics to provide a deeper understanding of some aspects of the subject, such as hardware systems design, object-oriented analysis and design, and artificial intelligence, and parallel and concurrent computing.

2- Intellectual Skills

The graduates of the program should be able to:

1. Analyze computing problems and provide solutions related to the design and construction of computing systems.
2. Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.
3. Identify criteria to measure and interpret the appropriateness of a computer system for its current deployment and future evolution.
4. Analyze, propose and evaluate alternative computer systems and processes taking into account limitations, and quality constraints.
5. Make ideas, proposals and designs using rational and reasoned arguments for presentation of computing systems.
6. Evaluate the results of tests to investigate the functionality of computer systems.
7. Achieve judgments considering balanced costs, benefits, safety, quality, reliability, and environmental impact
8. Familiar with the professional, legal, moral and ethical issues relevant to the computing industry.
9. Evaluate research papers in a range of knowledge areas

In addition to the above general requirements for the computing and information sector, the following are added as special requirements for computer science

10. Define traditional and nontraditional problems, set goals towards solving them, and. observes results.
11. Perform comparisons between (algorithms, methods, techniques...etc).
12. Perform classifications of (data, results, methods, techniques, algorithms…etc.).
13. Identify attributes, components, relationships, patterns, main ideas, and errors.
14. Summarize the proposed solutions and their results.
15. Restrict solution methodologies upon their results.
16. Establish criteria, and verify solutions.
17. Identify a range of solutions and critically evaluate and justify proposed design solutions.
18. Solve computer science problems with pressing commercial or industrial constraints.
19. Generate an innovative design to solve a problem containing a range of commercial and industrial constraints.

3- Professional / Practical Skills

The graduates of the program should be able to:

1. Operate computing equipment, recognizing its logical and physical properties, capabilities and limitations.
2. Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.
3. Deploy the equipment and tools used for the construction, maintenance and documentation of computer applications.
4. Apply computing information retrieval skills in computing community environment and industry.
5. Develop a range of fundamental research skills, through the use of online resources, technical repositories and library-based material
6. Design, implement, maintain, and manage software systems.
7. Assess the implications, risks or safety aspects involved in the operation of computing equipment within a specific context.
8. Handle a mass of diverse data, assess risk and draw conclusions.

In addition to the above general requirements for the computing and information sector, the following are added as special requirements for computer science

9. Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.
10. Communicate effectively by oral, written and visual means.
11. Perform independent information acquisition and management, using the scientific literature and Web sources.
12. Prepare and present seminars to a professional standard.
13. Prepare technical reports, and a dissertation, to a professional standard; use IT skills and display mature computer literacy.
14. Specify, design, and implement computer-based systems.
15. Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.
16. Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds, including text, images, sound, and video.
17. Apply the principles of human-computer interaction to the evaluation and construction of a wide range of materials including user interfaces, web pages, and multimedia systems.
18. Identify any risks or safety aspects that may be involved in the operation of computing equipment within a given context.
19. Deploy effectively the tools used for the construction and documentation of software, with particular emphasis on understanding the whole process involved in using computers to solve practical problems.

4- Transferable Skills

Graduates of the programs should be able:

1. Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.
2. Demonstrate skills in group working, team management, time management and organizational skills.
3. Show the use of information-retrieval.
4. Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry or the academic community.
5. Exhibit appropriate numeracy skills in understanding and presenting cases involving a quantitative dimension.
6. Reveal communication skills, public speaking and presentation skills, delegation, writing skills, oral delivery, and effectively using various media for a variety of audiences.
7. Show the use of general computing facilities.
8. Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for life-long learning.

4- Referential Marks

4- العلامات المرجعية

Does Not Apply

5- Program Structure and Contents

5- هيكل ومكونات البرنامج

A- Program Timeframe

- Four years divided into two semesters each.
- Students who fail in 3 subjects maximum have the right to join the summer semester to enhance their status.

B- Program Structure

Subject Area	NARS Requirements Tolerance	CS Program	
		No. of C	%
Humanities, ethical and social sciences (Univ. Req.)	8-10	4	9%
Mathematics and basic sciences	16-18	7	15%
Basic computing sciences (Institution req.)	26-28	10	22.72%
Applied computing Sciences(specialization)	28-30	17	38%
Projects	3-5	2	4%
Subtotal	**84-96**	40	90.9%
Optional (Institution character- identifying subjects)	4-16	4	9%
Total	**100**	44	100%

In addition to these indicated percentages that confirm that current bylaw achieves the referential percentages, some recent topics derived from the list of the recent labor market that mentioned previously are added to distinguish our CS graduate regarding to any graduate of other CS institutes and faculties.

Number of Hours and units

Theoretical	115	**Practical**	85	**Tutorial**	38	**Total**	238
Mandatory	103	**Transitional**	———			**Optional**	12

C- Program Levels & Contents

First Year - First Semester

№	Course Name	Course Code	Contact Hours			Credit hours	Marks Distribution					Exam Time (h)
			Lecture	Lab-Tutorial	Total		Participation	Tutorial	Written	Min.	Max.	
1	Introduction to Computers & Applications	CS 6111	3	4	7	4	10	20	70	50	100	2
2	Discrete Mathematical Structures	BAS 6112	3	2	5	3	--	20	80	50	100	2
3	Physics	BAS 6113	3	4	7	4		20	80	50	100	2
4	Mathematics (1)	BAS 6114	3	2	5	3		20	80	50	100	2
5	English Language (1)	HUM 6115	3	2	5	3		20	80	50	100	2

First Year - Second Semester

№	Course Name	Course Code	Contact Hours			Credit hours	Marks Distribution					Exam Time (h)
			Lecture	Lab-Tutorial	Total		Participation	Tutorial	Written	Min.	Max.	
1	Structure Programming	CS 6121	3	4	7	4	10	20	70	50	100	2
2	Program Packages	CS 6122	2	5	7	3	10	20	70	50	100	2
3	Electronics	BAS 6123	3	3	6	4		20	80	50	100	2
4	Mathematics (2)	BAS 6124	3	2	5	3		20	80	50	100	2
5	English Language (2)	HUM 6125	3	2	5	3		20	80	50	100	2

Second Year - First Semester

№	Course Name	Course Code	Contact Hours			Credit hours	Marks Distribution					Exam Time (h)
			Lecture	Lab-Tutorial	Total		Participation	Tutorial	Written	Min.	Max.	
1	Mathematics (3)	BAS 6211	3	2	5	3		20	80	50	100	**2**
2	Data Structures	CS 6212	3	4	7	4	10	20	70	50	100	**2**
3	Object oriented programming	CS 6213	3	4	7	4	10	20	70	50	100	**2**
4	Logic design	CS 6214	3	4	7	4		20	80	50	100	**2**
5	Humanities (1) (Cognitive Psychology)	HUM 6215	3	1	4	3		20	80	50	100	**2**

Second Year - Second Semester

№	Course Name	Course Code	Contact Hours			Credit hours	Marks Distribution					Exam Time (h)
			Lecture	Lab-Tutorial	Total		Participation	Tutorial	Written	Min.	Max.	
1	System analysis	CS 6221	3	3	6	4		20	80	50	100	2
2	File organization and processing	CS 6222	3	4	7	4	10	20	70	50	100	2
3	Statistics and Probability	BAS 6223	3	3	6	3		20	80	50	100	2
4	Computer organization and assembly language	CS 6224	3	4	7	4		20	80	50	100	2
5	Humanities (2) (law)	HUM 6225	3	-	3	3		20	80	50	100	2

Third Year - First Semester

№	Course Name	Course Code	Contact Hours			Credit hours	Marks Distribution					Exam Time (h)
			Lecture	Lab-Tutorial	Total		Participation	Tutorial	Written	Min.	Max.	
1	Database systems	CS 6311	3	3	6	4	10	20	70	50	100	2
2	Operating systems	CS 6312	3	3	6	4	10	20	70	50	100	2
3	System design	CS 6313	3	3	6	4		20	80	50	100	2
4	Computer interfaces	CS 6314	3	3	6	4		20	80	50	100	2
5	Selective subject (1) (Image Processing)	SC 6315	3	3	6	4		20	80	50	100	2
6	Human Rights	HUM 6316										

Third Year - Second Semester

№	Course Name	Course Code	Contact Hours			Credit hours	Marks Distribution					Exam Time (h)
			Lecture	Lab-Tutorial	Total		Participation	Tutorial	Written	Min.	Max.	
1	Computer networks	CS 6321	3	3	6	4	10	20	70	50	100	2
2	Computer graphics	CS 6322	3	3	6	4		20	80	50	100	2
3	Software Engineering (1)	CS 6323	3	3	6	4	10	20	70	50	100	2
4	Logic programming	CS 6324	3	3	6	4	10	20	70	50	100	2
5	Selective subject (2) (Distributed Database systems)	CS 6325	3	3	6	4		20	80	50	100	2

Fourth Year - First Semester

Nº	Course Name	Course Code	Contact Hours			Credit hours	Marks Distribution					Exam Time (h)
			Lecture	Lab-Tutorial	Total		Participation	Tutorial	Written	Min.	Max.	
1	Artificial intelligence	CS 6411	3	3	6	4	10	20	70	50	100	2
2	Network programming	CS 6412	3	3	6	4	10	20	70	50	100	2
3	Software engineering (2)	CS 6413	3	3	6	4	10	20	70	50	100	2
4	Selective subject (3) (Decision Support Systems)	CS 6414	3	3	6	4		20	80	50	100	2
5	Project *(Extendable)*	CS 6415	1	5	6	3						

Fourth Year - Second Semester

Nº	Course Name	Course Code	Contact Hours			Credit hours	Marks Distribution					Exam Time (h)
			Lecture	Lab-Tutorial	Total		Participation	Tutorial	Written	Min.	Max.	
1	Expert systems	CS 6421	3	3	6	4	10	20	70	50	100	2
2	Multimedia	CS 6422	3	3	6	4	10	20	70	50	100	2
3	Selective Subject (4) (Data and Network Security)	CS 6423	3	3	6	4		20	80	50	100	2
4	Selective Subject (5) (Pattern Recognition)	CS 6424	3	3	6	4		20	80	50	100	2
5	Project *(Extendable)*	CS 6415	1	5	6	3					200	

D- Course Contents

First Year - First Semester

Course Code: CS 6111	**Course Name:** Introduction to computers and applications
Course Contents	This course introduces the components of a computer system that includes hard ware for data storage, data manipulation, and data communication. System software that includes operating system, programming languages transistors, and others. First principles of writing algorithms, programming and software development are introduced. The concepts of computer science, information system, decision support system, and information technology are to be presented.

Course Code: BAS 6112	**Course Name:** Discrete Mathematical Structures
Course Contents	Sets, sequences, algorithms and pseudo code, induction and recursion. Relations and functions. Graphs, trees. Posits entices, and Boolean Algebra. Semi groups and groups.

Course Code: BAS 6113	**Course Name:** Physics
Course Contents	Electrostatics, Columbus law gauss low potential capacitors Electric current ,Resistors , Kerchiefs law ,magnetic field and forces , induction and inductors Basic circuit theory and circuit analysis Fundamentals of three phase circuits and trans formers.

Course Code: BAS 6114	**Course Name:** Mathematics (1)
Course Contents	Numbers systems , real and complex numbers, variables, binomial theorem, partial fraction, polynomials, algebraic equation, roots . Calculus: real variables, functions, limits, continuity, derivatives of algebraic, tri goniometric, inverse tri goniometric, exponential.

Course Code: HUM 6115	**Course Name:** English Language (1)
Course Contents	1- English vocabulary 2-Grammar 3-Exercises 4-Reading material 5- Writing techniques

First Year - Second Semester

Course Code: CS 6121	**Course Name:** Structure Programming
Course Contents	1- Identify the steps involved in creating C++ program. 2- Identify integer and character data types. 3- Use arrays and pointers in C++ 4- Deal with the if/else selection statement. 5- Identify loop types and switch statement. 6- Describe how C++ functions are constructed and implemented. 7- Know how to create and call a-user defined functions.

Course Code: CS 6122	**Course Name:** Program Packages
Course Contents	1-Microsoft office XP 2- Microsoft word and its applications 3- Microsoft excel and its applications 4- Microsoft power point its applications 5- Microsoft Access and its applications 6- Other Software Applications Packages and their usage in the PCS environment.

Course Code: BAS 6123	**Course Name:** Electronics
Course Contents	1- Fundamentals of semiconductor deices 2- P-N junction 3- bipolar junction and field effect transistors structures 4- semiconductor devices as circuit elements 5- fundamentals of filters 6- power supply and rectifications amplifiers 7- introduction to digital circuits

Course Code: BAS 6124	**Course Name:** Mathematics (2)
Course Contents	1- Plank glom: line ,circle conic Sections equations 2- Space Geometry: line, plane, sphere, cone, cylinder quadratic equations. 3- Advanced Calculus: calculus of several variables, gradient,Multiple interflows. 4- Vector algebra, vector fields functions and their derivatives, motion in space, vector fields, line and surface integrals, Green's theorem , divergence theorem, and stock's theorem .

Course Code: HUM 6125	**Course Name:** English Language (2)
Course Contents	1-expanding English vocabulary 2-revising points of grammar 3-drills and exercises 4-variety of reading material 5-training in academic essay writing techniques 6-Listening and speaking development 7-Report writing and communication skills.

Second Year - First Semester

Course Code: BAS 6211	**Course Name:** Mathematics (3)
Course Contents	Elementary course in matrix theory covering: 1- metrics, 2- linear transformation, 3- envelopes, 4- eigenvectors.

Course Code: CS 6212	**Course Name:** Data Structures
Course Contents	1- Built in data structures 2- Stacks, queues, linked lists, and binary search trees, 3- graphs 4- Introduction to data abstraction and basic of string processing, 5- recursion, 6- Sorting and searching algorithms 7- efficiency considerations.

Course Code: CS 6213	**Course Name:** Object oriented programming
Course Contents	Abstraction & Encapsulation: 1- Defining a class, 2- using a class, 3- private class members, 4- protested class members 5- public class members, 6- using data members, 7- references & pointer, 8- using member functions. 9- Constructors & destructors, 10- fined classes & functions, 11- class templates. Inheritance: 1- Reusability, 2- Single Inherence. 3- Seed classes, 4- scope resolution, 5- multiple Inheritance. Overloading: 1- function overloading, 2- overloaded non-member function, 3- overloaded member functions, 4- operators as member functions, 5- operator as member functions. - Polymorphism: 1- Early & late binding, 2- virtual functions, 3- function overloading abstract classes,

	4-scope resolution and polymorphism, 5- polymorphism with single Inheritance, 6-Polymorphism with multiple Inheritance. Exception Handling: 1- Old ways to handle exceptions, 2- an OOP approach to exceptions, 3- throwing an exception. 4- Catching an exception. 5- Streams: the C++ stream. 6- Standard stream i/o, manipulators, file i/o with streams, in memory formatting .

Course Code: CS 6214	**Course Name:** Logic design
Course Contents	1- Terminology and understanding of physical components used in computer hardware. 2- Number systems and codes: - logic gates. - Boolean algebra - Graphical simplification of Boolean expressions 3- Combinational circuits: - latches and flip-flops - analysis and design of synchronous sequential circuits - registers and counters,] - storage elements computer logic design.

Course Code: HUM 6215	**Course Name:** Humanities (1)
علم نفس معرفى	اختيارى علوم انسانية
Course Contents	أن يستوعب الطالب مفهوم علم النفس المعرفى ومراحل تقدمه وتطوره ويتعرف على طبيعة مفهوم تداول المعلومات وإتجاهاتها ويستخدم علم النفس المعرفى فى مجال تخصصه ويجتهد كلما أمكن ذلك فى تطبيق نتائج علم النفس المعرفى فى المجال المهنى .

Second Year - Second Semester

Course Code: CS 6221	**Course Name:** System analysis
Course Contents	1- Managerial and organizational fundamentals, 2- Systems planning, 3- Job description, roles, carry, skills ethics . . . etc of modern systems analyst 4- Information systems building blocks 5- Information system development 6- Using CASE tools Cross life cycle activities 7- Data modeling 8- Process modeling 9- Network modeling 10- Object modeling.

Course Code: CS 6222	**Course Name:** File organization and processing
Course Contents	1- Overview of files 2- File design 3- file manipulation blocking single buffering and double buffering. 4- Special file 5- relative file 6- indexed sequential file 7- multiple key file and 8- direct access file 9- Extremely Sort 10- Merge algorithms. 11- File systems disk scheduling and accessing modes.

Course Code: BAS 6223	**Course Name:** Statistics and Probability
Course Contents	1- Descriptive statistics 2- Tests of hypothesis 3- Correlation regression 4- Analysis of variance 5- Probability 6- Sampling and statistical distributions.

Course Code: CS 6224	**Course Name:** Computer organization and assembly language
Course Contents	1- Commuter basic units organization memory control arithmetic and logic unit 2- Computer Cycles: fetch indirect addressing execute and Commuter basic units organization memory control arithmetic and logic unit Computer Cycles: fetch indirect addressing execute and interrupt hardwired versus microprogramming control organization 3- Input/Output Devices and interrupt handing An Assembly Language is used in the lab To demonstrate most of the above concepts as well as develop students skills

	4- an Assembly language programming.

Course Code: HUM 6225	**Course Name:** Humanities (2) القانون
القانون	اختيارى علوم انسانية
Course Contents	1- قانون الإجراءات الجنائية 2- الجريمة الالكترونية 3- خصائص الجريمة المعلوماتية 4- الجرائم الالكترونية أثرها وسبل مواجهتها 5- التحديات التي تواجه التحقيقات في الجريمة المعلوماتية 6- ملاحق بقوانين ذات العلاقة

Third Year - First Semester

Course Code: CS 6311	**Course Name:** Database systems
Course Contents	1- Introduction, 2- file-systems Vs database systems , 3- database systems 4- Components and concepts, 5- functionality of DBMSs 6- Database Architecture 7- Database Models. 8- Relational database concepts : keys, integrity constraints, views, and catalogs. Relational algebra, query languages 9- Entity-Relationship models, normalization.

Course Code: CS 6312	**Course Name:** Operating systems
Course Contents	1- Basic concepts of computer systems hardware software and firmware process concepts and processor scheduling . 2- Memory organization and management for single user and muluuser system. 3- Virtual storage organizing and managemct. 4- Disk scheduling and its optimization. 5- Study and discussion of major operating system such as UNIX: 6- Laboratory work on many control programs as well as practice on a single and multiuse systems

Course Code: CS 6313	**Course Name:** System design
Course Contents	1- Systems design and construction. 2- Cross life cycle activities. 3- Application are lecture and prices design. 4- Database design. 5- Input design and prototyping. 6- Output design and prototyping. 7- Surer interfaces design and prototyping. 8- Software design. 9- Object oriented design 10- Systems implementation 11- Systems support.

Course Code: CS 6314	**Course Name:** Computer interfaces
Course Contents	1- The relationship between people and machine 2- the role of human factors and psychology. 3- Principles of interaction of interaction, 4- design issues. 5- Command Engages, 6- menus, 7- windows,

	8- icons, 9- error messages, 10- response time. 11- Physical interaction, 12- interaction, devises, 13- interaction styles and techniques. 14- The design process and user models. 15- Interface evaluation 16- Natural and vie interfaces.

Course Code: CS 6315	**Course Name:** Selective subject (1)
	إختياري (معالجة الصور الرقمية) اختيارى علوم تخصصية
Course Contents	Students learn the basic concept of image processing, image sampling and quantization, color, point operations, segmentation, morphological image processing, linear image filtering and correlation, image transforms, noise reduction and restoration, and feature extraction and recognition. Also, students learn the implementation of Matlab as a leading computing programming language. Upon completion of this course, students should be able to their knowledge and skills in handling real image processing problems.

Course Code: HUM 6316	**Course Name:** حقوق الإنسان- علوم
Course Contents	1- طبيعة حقوق الانسان 2- الشرعية الدولية لحقوق الانسان 3- حقوق الانسان في الاسلام 4- حقوق الانسان فى مصر 5- الحقوق السياسية والاقتصادية والاجتماعية والثقافية والتنموية والفئات الخاصة 6- التنمية البيئية

Third Year - Second Semester

Course Code: CS 6321	**Course Name:** Computer networks
Course Contents	1- Topology, treasure, and architecture of computer networks 2- Layered protocols in point-to-pony broadcasting and local area networks. 3- The structure of some notable and public networks. 4- Training on using LAN and WAN networks.

Course Code: CS 6322	**Course Name:** Computer graphics
Course Contents	1- Graphics Algorithms, 2- 2D and Introduction, 3- Graphics Hardware 4- Basic Raster 3D Transformations 5- Synthesized Camera Models: 6- Curve and surfer representation : 7- Lightening Models : 8- Shading Techniques: 9- Shadows: 10- Texture Mapping: 11- Transparency .

Course Code: CS 6323	**Course Name:** Software Engineering (1)
Course Contents	1- The software life cynic. 2- Requirements analysis, specification, and validation. 3- Software design methodologies : 4- data-dtructure 5- oriented design, 6- object oriented design and soft ware reusability . 7- Design quality and design description languages. 8- Rapid prototyping and iterative refinements.

Course Code: CS 6324	**Course Name:** Logic programming
Course Contents	1- Introduction: Facts, objects, and predicates. 2- Polo: Using variables, bound and ree variables, anonymous variables compound foals, backtracking, variable rules. 3- Using rules: Rules, variables in rules prolog exaction rules using the trace unification execution control the built-in predice. 4- Simple input and exclusion using the fail predicate recursion and the cut. Arithmetic operations. 5- Compound objects. 6- Dynamic database; lists. 7- String operations.

Course Code: CS 6325	Course Name: Selective subject (2) إختياري (نظم قواعد البيانات الموزعة)
	اختيارى علوم تخصصية
Course Contents	This course focuses on the understanding of designing and implementing a distributed database…This course focuses on the advances and trends in distributed database technology from both theory and practical aspects. This course will familiarize the student with the latest advances in distributed database systems and will also equip the student with skills and capability to analyze, design and develop real-world distributed database applications using the latest in distributed database technology

Fourth Year - First Semester

Course Code: CS 6411	**Course Name:** Artificial intelligence
Course Contents	1- Heuristic approaches to problem solving , 2- different searching methods and heuristic search , 3- logic and theorem proving , 4- knowledge representation , 5- some application of al such as theorem proving , game playing , and natural language processing .

Course Code: CS 6412	**Course Name:** Network programming
Course Contents	1- Overview of internet protocols (HTTP , FTP , SMTP , POP3). 2- using HTML to construct web pages (fonts , colors , lists , hyperlinks , tables , images , crating animated GIFS , clickable image maps , sound , video , farms) . 3- Using JAVASCRIPT language to add dynamic environment and interactivity to web pages, active server pages (ASP) .

Course Code: CS 6413	**Course Name:** Software engineering (2)
Course Contents	1- Software Quality assurance 2- software metrics , 3- software measurements 4- software reliability models 5- software Quality assurance standards 6- software testing techniques 7- white – box testing . 8- basic path testing , 9- black – box testing . 10- until testing integration testing , 11- validation testing , 12- system testing , 13- software maintenance ; 14- main tenability ; 15- maintenance tasks ; 16- software configuration management .

CS 6414	**إختيارى (نظم دعم القرار)**
Course Contents	Management support systems – decision making systems, modelling, and support – optimization via mathematical programming – simulation – heuristic programming – decision support system and group DSS– DSS H / W and S / W – Classification Of DSS- Constructing a DSS approaches to DSS Construction. The DSS development tools: programming languages, graphics, DBMS, Quantitative models, Distributed DSS, Selection of DSS generators – IFPS Interactive financial planning system – case studies – Illustrative DSS applications.

Fourth Year - Second Semester

Course Code: CS 6421	**Course Name:** Expert systems
Course Contents	1- Expert system components : 2- knowledge base , 3- inference engine , 4- user interface . 5- knowledge acquisition methods . 6- knowledge representation : rules , frames ,… cct . 7- inference engine . 8- hands on experience by developing a prototype system using expert system shell .

Course Code: CS 6422	**Course Name:** Multimedia
Course Contents	1- Multimedia components 2- predictive and transform coding technique 3- vector quantization 4- dictionary based text coding 5- entropy encoding 6- arithmetic coding . 7- JPEG standards . 8- motion estimation techniques 9- multimedia databases. 10- image retrieval by contents . 11- networking aspects of multimedia transmission .

Course Code: CS 6423	**إختيارى(سرية المعلومات وأمن الشبكات)**
Course Contents	The objective of the course is to provide an introduction to the basic concepts of computer security for graduate level students. The course contents include: security concepts, such as confidentiality, integrity, authenticity, availability etc. Symmetric and asymmetric cryptography and their uses; key distribution and digital signatures; discretionary and mandatory access control policies for confidentiality and integrity. Communication protocols for authentication, confidentiality and message integrity. Network security; system security, intrusion detection and malicious code. Security models and security evaluation. Administration of security. Legal aspects of computer security.

Course Code: CS 6424	**إختيارى (التعرف على الأنماط) Pattern Recognition**
Course Contents	1- Introduction 2- Bayesian Decision Theory 3- Bayesian Networks 4- Maximum Likelihood Estimation 5- Dimensionality Reduction 6- Feature Selection 7- Bayesian Estimation 8- Linear Discriminant Functions 9- Support Vector Machines (SVMs)

6- Program Admission Requirements

6- متطلبات الإلتحاق بالبرنامج:

Students are nominated to the Institute according to the conditions and admission rules determined by the admission Coordination Office of Egyptian universities and institutes, and the program accepts students with high school degree (mathematics department), and equivalent Arabic and foreign certificates.

7- Regulations for Progression & Program Completion

7- القواعد المنظمة لإستكمال البرنامج:

- Study in the program is based on a system of two semesters and a summer semester. The student is considered successful and transferred as long as the number of failed subjects is less than three subjects. If the student fails in only three subjects, the student has the right to take the summer semester exam. If the student succeeds in any of the three failing courses, he becomes transferred. Otherwise, it is considered failed.
- The number of student absences in any course should not exceed 25% of the number of theoretical or practical hours during the semester. In case of exceeding, the student is considered to have failed this course, unless this absence is with an excuse acceptable to the course professor or/and the dean of the institute.
- If a student fails to take the final exam for a course without a compelling excuse acceptable to the Board of Directors, he is considered to have failed, and in the event of repeating the course, the student receives his grade in this course, provided that it does not exceed the highest grade for an acceptable grade.
- Students may be transferred to the Institute from university colleges or similar institutes within the Republic in accordance with the controls decided by the Board of Directors of the Institute and in a manner that does not conflict with the controls and decisions regulating this.
- A student who is regular in one of the institute's departments can transfer his enrollment to another department, provided that he fulfills the admission conditions for the department to which he is transferred. A student who has been expelled from the institute due to exhausting failure times in one of the departments, and after the approval of the Institute's Board of Directors, can re-enroll him in another department, provided that the admission conditions for the department he is transferred to are met.
- The student may submit a request to suspend his enrollment for an academic year, provided that he presents reasons accepted by the Institute's Board of Directors, provided that the

matter is submitted to the central administration of private higher institutes to approve the Board of Directors' decision. In this case, the student is exempted from paying tuition fees and retains his right to obtain the highest grade he obtains in the academic year. Courses in which his enrollment was suspended.

- The student is considered expelled if he receives a failing grade twice in a row or twice with a suspension of registration between them.
- If the student fails twice in a row in the first year, he will be permanently expelled.
- If the student fails the second year in the second year twice in a row, he has the right to take the exam once from abroad. If he fails it, he becomes expelled.
- If the student fails the third year in a row twice in a row, he has the right to take the exam twice from abroad. If he fails both, he becomes expelled.
- If the student fails twice in a row in the fourth year, he has the right to take the exam twice from abroad, followed by a final semester, unless the student is successful in the largest number of subjects prescribed in the fourth year.

Grade	Percentage
Excellent	Greater or Equal 85%
Very Good	Greater or Equal 75% and less than 85 %
Good	Greater or Equal 65% and less than 75 %
Pass	Greater or Equal 50% and less than 65 %
fail	Less than 50 %

8- Teaching and Learning Methods & Rules for Evaluating Program Participants
8-طرق التدريس والتعليم، و قواعد تقييم الملتحقين بالبرنامج:

8.1 - Teaching and Learning Methods

Teaching and Learning Methods
Lectures
Interactive learning
Online Lectures
Laboratory Sessions
Discussion
Case Study
Field Visits
Problem Solving
Role Play
Workshops
Cooperation With the institutes surrounding communities
Projects
Summer Training

8.1 - Rules for Evaluating Program Participants

Evaluation Methods	Intended Learning Outcomes			
	Knowledge & understanding	**Intellectual skills**	**Professional / practical skills**	**Transferable skills**
Assignments	✓	✓	✓	
Practical Exam	✓	✓	✓	✓
Quizzes, periodical exams	✓	✓		
Written Exam	✓	✓	✓	
Oral Evaluation Through Projects	✓	✓	✓	✓

9- Evaluation of the program

9- طرق تقويم البرنامج:

	The Evaluator	Tool	Sample	% contribution in total marks of evaluation
1	**Senior Students**	Questionnaires, Periodic meetings	Questionnaire	20%
2	**Alumni**	Questionnaire	Questionnaire	15%
3	**Stakeholders**	Questionnaire	Meeting/ Year	15%
4	**External evaluators for program and courses**	Site visit, document examination	External evaluator comments	20%
5	**Internal evaluators for courses**	document examination	Internal evaluator comments	20%
6	**Other Methods**	Questionnaire in event	Comments and feedback of the meetings	10%

10- Program Matrices (*)

(1) Program Aims Vs. Program ILOs

(2) Program ILOs Vs. Courses

(3) Program ILOs Vs. NARS

(*) All matrices are attached in a separate excel sheet

مشرف على القسم	أ.م.د. أحمد سعيد جادالله
التوقيع	
التاريخ	9/2018

10) مصفوفة مطابقة أهداف البرنامج لمخرجات التعلم المستهدفه

Knowledge & Understanding

Program Aims	a1	a2	a3	a4	a5	a6	a7	a8	a9	a10	a11	a12	a13	a14	a15	a16	a17	a18	a19	a20	a21	a22
1								√	√	√	√		√	√								
2	√			√	√																	
3																		√		√		
4		√							√								√					
5			√			√	√	√	√			√							√		√	√
6																						
7																						
8															√							
9															√	√						
10																						
11																						

Intellectual skills

Program Aims	b1	b2	b3	b4	b5	b6	b7	b8	b9	b10	b11	b12	b13	b14	b15	b16	b17	b18	b19
1								√	√			√			√	√		√	
2	√	√	√	√															
3							√	√				√				√		√	
4		√	√			√													
5	√			√															
6								√		√			√	√			√		
7								√		√			√	√			√		
8	√																		
9																			√
10					√														
11											√								

Professional skills

Program Aims	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13	c14	c15	c16	c17	c18	c19
1						√			√					√				√	
2									√									√	
3						√			√									√	
4	√	√	√					√		√									
5											√			√					
6	√	√	√		√			√		√						√			
7	√	√	√		√			√											
8					√						√								
9																			
10													√		√				√
11				√			√					√					√		

Transferable Skills

Program Aims	d1	d2	d3	d4	d5	d6	d7	d8	d9	d10	d11	d12
1					√						√	√
2											√	
3											√	
4					√							√
5					√						√	
6					√							
7					√							
8		√	√	√	√	√	√				√	
9												
10	√									√	√	√
11					√			√	√			

11) مصفوفة مطابقة تحقيق المقررات لمخرجات التعلم المستهدفه (ILO)

Year	Course Code	Course Name	Knowledge & Understanding																						Intellectual skills																			Professional skills																			Transferable Skills											
			a1	a2	a3	a4	a5	a6	a7	a8	a9	a10	a11	a12	a13	a14	a15	a16	a17	a18	a19	a20	a21	a22	b1	b2	b3	b4	b5	b6	b7	b8	b9	b10	b11	b12	b13	b14	b15	b16	b17	b18	b19	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13	c14	c15	c16	c17	c18	c19	d1	d2	d3	d4	d5	d6	d7	d8	d9	d10	d11	d12
First	CS 6111	Introduction to Computers & Applications								√	√				√	√												√											√								√													√								√			√				
	BAS 6112	Discrete Mathematical Structures	√			√																			√						√	√																											√														√	
	BAS 6113	Physics				√	√																		√			√			√																		√																									
	BAS 6114	Mathematics (1)	√			√																			√						√	√																											√															
	HUM 6115	English Language (1)																√										√										√									√							√	√		√				√	√							√	√	√		
	CS 6121	Structure Programming		√											√															√			√	√			√							√				√																											
	CS 6122	Program Packages																	√						√					√								√															√					√				√					√						√
	BAS 6123	Electronics								√															√			√			√	√																	√			√																				√			
	BAS 6124	Mathematics (2)	√			√																			√						√	√																											√															
	HUM 6125	English Language (2)																√										√										√									√							√	√		√				√	√							√	√	√		
Second	BAS 6211	Mathematics (3)	√			√																			√						√	√																											√															
	CS 6212	Data Structures		√											√	√							√		√	√	√																	√				√	√										√								√							
	CS 6213	Object oriented programming		√									√		√							√					√	√																√				√					√						√								√							
	CS 6214	Logic design								√																√		√			√	√																√	√			√																			√			
	HUM 6215	Humanities (1)(Cognitive Psychology)						√																									√			√										√			√																									
	CS 6221	System analysis			√								√		√		√		√				√	√	√			√		√	√							√			√							√	√			√				√		√				√	√	√			√				√	√		√
	CS 6222	File organization and processing		√											√							√				√	√	√				√												√				√		√		√	√								√						√							
	BAS 6223	Statistics and Probability	√			√																			√				√		√	√																											√											√		√	
	CS 6224	Computer organization and assembly language								√		√					√			√	√							√			√	√								√				√				√	√								√																	
	HUM 6225	Humanities (2) (law)																																																																							
Third	CS 6311	Database systems					√				√											√	√	√			√	√			√	√		√		√								√		√		√		√			√							√	√					√							√
	CS 6312	Operating systems								√		√								√	√					√		√												√									√			√	√	√			√																	
	CS 6313	System design									√		√		√		√						√			√		√	√	√		√				√					√							√	√			√				√		√				√	√	√			√				√	√		√
	CS 6314	Computer interfaces		√											√							√	√				√	√																√				√			√		√					√									√							
	CS 6315	Selective subject (1) (Image Processing)	√	√		√		√	√	√	√	√		√	√										√			√				√	√	√										√							√		√		√										√	√	√			√	√			
	HUM 6316	Human Rights																√																																																									
	CS 6321	Computer networks																		√	√		√		√	√		√	√								√			√									√			√	√				√										√							
	CS 6322	Computer graphics												√									√			√	√	√																√						√			√														√							
	CS 6323	Software Engineering (1)			√						√		√				√	√	√	√			√	√	√	√		√	√	√	√	√	√		√	√		√	√			√	√		√	√	√	√	√			√	√	√		√		√		√	√	√	√	√	√			√	√	√	√	√		√
	CS 6324	Logic programming	√												√							√					√	√														√		√				√					√						√															
	CS 6325	Selective subject (2) (Distributed Database systems)	√	√		√		√	√	√	√			√	√										√			√				√	√	√										√							√		√		√										√	√	√	√		√	√			
Fourth	CS 6411	Artificial intelligence							√					√									√		√	√	√	√	√					√										√				√	√				√													√							
	CS 6412	Network programming		√				√							√	√						√					√	√														√		√	√			√		√	√		√						√								√							
	CS 6413	Software engineering (2)									√		√				√	√		√		√	√			√		√	√	√	√	√			√	√		√	√			√	√		√	√	√	√	√			√	√	√		√		√		√	√	√	√	√	√	√		√	√	√	√	√		√
	CS 6414	Selective subject (3) (Decision Support Systems)	√	√		√		√	√	√	√		√	√											√			√					√											√							√		√		√										√	√	√	√		√	√			
	CS 6415	Project																							√	√	√	√	√	√	√	√	√	√	√	√	√	√			√	√	√	√		√	√	√	√	√	√	√	√	√	√	√		√		√		√	√	√	√	√		√	√	√	√	√		
	CS 6421	Expert systems							√					√									√		√		√	√	√					√										√				√	√																	√					√	√
	CS 6422	Multimedia														√							√		√		√	√				√																		√	√		√													√					√	√
	CS 6423	Selective Subject (4) (Data and Network Security)											√							√	√				√	√														√									√			√																					
	CS 6424	Selective Subject (5) (Pattern Recognition)						√	√					√		√							√			√	√	√																								√						√								√					√	

12) مصفوفة مطابقة تحقيق مخرجات التعلم المستهدفة ILOs لمعايير برنامج علوم الحاسب

General ILOs	NARS	Knowledge & Understanding																						Intellectual skills																			Professional skills																			Transferable Skills											
		a1	a2	a3	a4	a5	a6	a7	a8	a9	a10	a11	a12	a13	a14	a15	a16	a17	a18	a19	a20	a21	a22	b1	b2	b3	b4	b5	b6	b7	b8	b9	b10	b11	b12	b13	b14	b15	b16	b17	b18	b19	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13	c14	c15	c16	c17	c18	c19	d1	d2	d3	d4	d5	d6	d7	d8	d9	d10	d11	d12
Knowledge & Understanding	3.4.1.1	√																																																																														
	3.4.1.2		√																																																																															
	3.4.1.3				√																																																																											
	3.4.1.4					√																																																																									
	3.4.1.5						√																																																																								
	3.4.1.6							√																																																																							
	3.4.1.7								√	√																																																																					
	3.4.1.8										√	√	√																																																																			
Intellectual skills	3.4.2.1																							√																																																										
	3.4.2.2																								√																																																								
	3.4.2.3																									√																																																							
	3.4.2.4																										√																																																						
	3.4.2.5																											√																																																					
	3.4.2.6																												√																																																				
	3.4.2.7																													√																																																			
	3.4.2.8																														√																																																		
	3.4.2.9																															√																																																	
	3.4.2.10																																√																																																
Professional skills	3.4.3.1																																										√	√	√																																					
	3.4.3.1																																													√																																							
	3.4.3.2																																														√																																						
	3.4.3.3																																																																																	
	3.4.3.4																																														√																																						
	3.4.3.5																																																																																
	3.4.3.6																																																																																
	3.4.3.7																																																																																
	3.4.3.8																																																																																
	3.4.3.9																																																																																
	3.4.3.10																																																																															
	3.4.3.11																																																																															
	3.4.3.12																																																																															
Transferable Skills	3.4.4.1																																																																															
	3.4.4.2																																																																															
	3.4.4.3																																																																															
	3.4.4.4																																																																															
	3.4.4.5																																																																															
	3.4.4.6																																																																															
	3.4.4.7																																																																															
	3.4.4.8																																																																															