

المعايير الأكاديمية للبرنامج

Academic Reference Standards for Computer Science Program (ARS)

أولا : المواصفات العامة لخريج كلية العلوم

1. General Attributes of the graduates of basic sciences programs:

The graduate of any program in basic sciences should be able to:

- 1- Recognize the role of basic sciences in the development of society.
- 2- Develop scientific approaches that meet community needs considering economic, environmental, social, ethical, and safety requirements.
- 3- Utilize scientific facts and theories to analyze and interpret data of various sources.
- 4- Collect, analyze, and present data using appropriate formats and techniques and use information technology relevant to the field efficiently.
- 5- Participate effectively as a member in a team, recognize and respect the views and opinions of the other members, and be flexible for adaptation to work conditions.
- 6- Develop the skills and attitude necessary for lifelong and independent learning and participate effectively in research activities.
- 7- Deal with scientific data and communicate about specific subjects appropriately in Arabic, English or other languages.

ثانياً: المواصفات العامة لخريج برنامج علوم الحاسب **Computer Science Program**

In addition to the general attributes of the graduate of faculties of Science, the program of computer science aims to provide a student with both breadth and depth of knowledge in the concepts and techniques related to the design, programming, testing, and applications of computer science. Specifically, based on the constitutions of the Computing Curricula (ACM/IEEE IS2010 and IS2002), thus the graduate of the computer science (CS) program should be able to:

- 1- Improving organizational processes
- 2- Exploiting opportunities created by technology innovations
- 3- Using communication and computer networks in life
- 4- Understanding and designing biometric systems and image processing techniques.
- 5- Developing a virtual reality and artificial intelligence applications
- 6- Using data structure and database for representation the information
- 7- Understanding and addressing information requirements
- 8- Designing and managing enterprise architecture
- 9- Identifying and evaluating solutions and sourcing alternatives
- 10- Securing data and infrastructure as well as computer networks
- 11- Understanding, managing, and controlling information technology risks
- 12- Ability to work independently and as a member of a team as well as ability to problem-solve, make decisions, and manage conflict.

Knowledge and Understanding

On successful completion of the of Computer Science program, the graduates must acquire knowledge and understanding of:

- 1- The relevant theories and their applications.
- 2- Using high-level programming languages
- 3- The processes and mechanisms supporting the structure and function of the specific topics.
- 4- The theories and methods applied for interpreting and analyzing data related to discipline.
- 5- Using of the principles of artificial intelligence, image, and pattern recognition.

- 6- Understanding the fundamental topics in computer systems, including hardware architectures and operating systems as well as software architectures, software engineering principles and methodologies, and software tools.
- 7- The developmental progress of the program-related knowledge.
- 8- Deep understanding of some aspects of object-oriented analysis and design, software engineering, artificial intelligence, image processing, and computer graphics and animation.
- 9- The relation between the studied topics of computer science and the environment.
- 10-Use computer knowledge in solving different problems.
- 11-Recognize how the hardware and software are integrated to create computer systems and distinguish between selected forms of computer hardware architecture, and operating system technology.
- 12-Deploy appropriate theory, practices, and tools for the specification, design, implementation, and evaluation of a computer-based system.
- 13-Construct and explain the meaning of complicated statements using mathematical notation and language.

Intellectual Skills

- 1- Analyze, synthesize, assess and interpret qualitatively and quantitatively science relevant data.
- 2- Develop lines of argument and appropriate judgments in accordance with scientific theories and concepts.
- 3- Perform comparisons between (algorithms, methods, techniques...etc).
- 4- Perform classifications of (data, results, methods, techniques, algorithms.. etc.) as well as summarize the proposed solutions and their results.
- 5- Solve computer science problems with pressing commercial or industrial constraints.
- 6- Construct and solve abstract and mathematical models of computer and communication systems.
- 7- Apply appropriate mathematical techniques to the development of software solutions.
- 8- Apply the principles of effective information management, information organization, and information-retrieval skills to various information systems.

Practical and Professional Skills

- 1- Plan, design, process and report on the investigated data, using appropriate techniques and considering scientific guidance.
- 2- Apply techniques and tools considering scientific ethics.
- 3- Solve problems using a range of formats and approaches.
- 4- Use appropriate programming languages and design methodologies beside appropriate web-based systems, tools and design methodologies.
- 5- Use appropriate database systems and specify, design, and implement computer-based systems
- 6- Identify and criticize the different methods used in addressing subject related issues.
- 7- Choose and apply essential concepts, principles, and practices of computer science in the context of well-defined scenarios, showing judgment in the selection and application of tools and techniques.
- 8- Apply the concepts and methods of computer science, to the solution of the real problems in professional practice.
- 9- Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds including text, images, sound, and video.
- 10-Identify any risks or safety aspects of computer networks and aspects that may be involved in the operation of computing equipment within a given context.
- 11-Apply the approximation of sources of numerical errors and usage of symbolic and numerical software as a part of practical computation.
- 12-Specify, design, implement and upgrade computer-based systems.
- 13-Recognize and be guided by the social, professional, and ethical issues involved in the use of computer technology.

General Skills

The graduates must be able to

- 1- Communicate effectively with team members, managers and customers.
- 2- Use information and communication technology effectively.
- 3- Identify roles and responsibilities, and their performing manner.
- 4- Think independently, set tasks and solve problems on scientific basis.
- 5- Work in groups effectively; manage time, collaborate and communicate with others positively.
- 6- Consider community linked problems, ethics and traditions.
- 7- Acquire self- and long life-learning.
- 8- Apply scientific models, systems, and tools effectively.
- 9- Deal with scientific patents considering property right.
- 10-Develop a range of fundamental research skills, through the use of online resources, technical repositories and library-based material.