

## **National Authority for Quality Assurance and Accreditation of Education**

### **6- National Academic Reference Standards (NARS) for Computing and Information Disciplines**

#### **6.1 Attributes of Computing and Information Programs Graduates**

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.

#### **6.2 National Academic Reference Standards (NARS) for Computing and Information Programs.**

Graduates are expected to develop a wide range of abilities and skills. These may be divided into four broad categories:

- Knowledge and Understanding
- Computing and Information -related cognitive abilities and skills, i.e. abilities and skills relating to intellectual tasks;
- Computing and Information -related practical skills;
- Additional transferable skills that may be developed in the context of computing and information but which are of a general nature and applicable in many other contexts

Knowledge and Understanding, cognitive, practical and generic skills need to be placed in the context of the program of study as designed by the institution and/or the possible pathways selected by the individual student.

## **1- Knowledge and Understanding**

The graduates of the computing and information programs 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. Principals 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.

## **2- Intellectual Skills**

The graduates of the computing and Information programs 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. 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

### **3- Professional / Practical**

The graduates of the computing and information programs 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.

### **4- Transferable skills**

Graduates of the computing and information 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, and 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.