ـالمعايير الأكاديمية القومية المرجعية

National Academic Reference Standards (NARS)

هى مجموعة من المعايير التى وضعتها لجان متخصصة، و هى الحد الأدنى من المعارف و المهارات المطلوب تحقيقها من خلال البرنامج التعليمى من اجل اعتماده من الهيئة القومية لضمان جودة التعليم و الاعتماد، و يتم الرجوع اليها فى صياغة اهداف و نواتج التعلم المستهدفة عن توصيف البرنامج التعليمى.

- مواصفات الخريج:

مجموعة من الخصائص و السمات المتوقعة من الخريجين لهذا البرنامج التعليمى.

- مخرجات التعلم المستهدفة

Intended Learning Outcomes

و هى المعرفة و الفهم و المهارات الضرورية للعمل التى تعتزم الكلية تقديمها فى برنامجها التعليمي و التى تعكس رؤية و رسالة الكلية.

1- Attributes of graduates
After successfully completing the information systems and Decision Support program, the graduate should be able to:

i. Understand the problems that are required to computer information systems.
ii. Knowledge of the tools necessary for solving and managing problems related to information systems.
iii. Recognize the fundamentals of systems design life cycle, information networks, information security, data mining, Bioinformatics, e-commerce, medical IS, geographical information systems, decision support systems and human computer interaction.
iv. Apply solutions, using the appropriate programming languages, web-based systems and tools, design methodologies, and database systems.
v. Design, and implement computer-based information systems, and evaluate them in terms of general quality attributes.
vi. Apply solutions to business inter-organizational, operational, managerial and executive problems and opportunities.
vii. Understand characteristics of various components of information systems, use the appropriate tools and techniques to analyze and design information systems.
viii. Compare between the fundamental models of operational research and their computational methods.
ix. Design, implement, evaluate, and create a range of solutions of the algorithmic techniques for the combinatorial optimization problems.
x. Demonstrate strong skills in the mathematical foundation of the decision-making methods.
xi. Demonstrate knowledge of theoretical foundation of intelligent systems.
xii. Understand the Mathematical foundation of the analytical and methods used in artificial intelligence tools.
xiii. Demonstrate sufficient knowledge about the methods of production control of computer or industrial systems.
xiv. Exhibit the fundamentals of decision support based on computer technology.

xv. Communicate effectively by oral, written and visual means.

xvi. Work effectively as an individual and as a member of a team using time management and be aware of key ethical issues affecting information systems.

2- Intended learning outcomes (ILOs)

A. Knowledge and understanding:

On completion of this program the successful student will be able to:

A1- Define basic knowledge of a core analysis, algebra, applied mathematics and statistics

A2- Recall a strong knowledge of information systems and operation research.

A3- Outline some aspects of the subjects, such e-commerce technologies, and Decision support systems.

A4- State the principles and techniques of a number of application areas informed by the research directions of the subject, such as data mining, information engineering, bioinformatics, biomedical and geographical information systems.

A5- Recognize the basic skills in the subject of their degree and of a range of more specialized topics about databases, database management systems, artificial intelligence, and artificial intelligence applications and bioinformatics.

A6- Define the computational requirements appropriate to its solution.

A7- Outline the professional, ethical, legal, security and social issues and responsibilities.

B. Intellectual skills

On completion of this program the successful student will be able to:

B1- Discuss traditional and non-traditional information systems problems, set goals towards solving them, and observe results.

B2- Explain the local and global impact of Information Systems on individuals, organizations, and society.

B3- Express the logical thinking of ideas clearly, in writing.

B4- Illustrate skill in mathematical reasoning, manipulation and calculation.

B5- Compare between (methods, techniques...etc).

B6- Explain DSS attributes components, relationships, patterns, main ideas, and errors.

B7- Justify a goals towards solving problems containing a range of commercial and industrial constraints and the proposed design solutions and results.

B8- Explain solution methodologies upon their results.

B9- Design model, criteria, and verify solutions.

B10- Create a range of solutions and critically evaluate and justify proposed design solutions.

C. Professional and practical skills

On completion of this program the successful student will be able to:

C1- Use appropriate programming languages, web-based systems and tools, design methodologies, and database systems.

C2- Analyze the principles of effective information management, information organization, and information-retrieval skills to information of various kinds, including text, images, sound, and video.

C3- Show 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.

C4- Demonstrate independent information acquisition and management, using the scientific literature and Web sources.

C5- Use the ethical issues affecting information systems and their responsibilities as information science professionals.

C6-Choose the 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.

C7-Appraise alternative models of systems analysis and design, and apply practical, theoretical techniques to select appropriate solutions.

C8-Modify database systems and use data communication systems.

D. General and transferable skills

On completion of this program the successful student will able to:

D1- Work effectively as an individual and as a member of a team in small-medium sized projects with resources and time constraints to enhance skills.

D2- Prepare and present seminars to a professional standard.

D3- Communicate effectively by oral, written and visual means.

D4- Perform independent and efficient time management.

D5- Organize and manage their schedule tasks and meet deadlines.

D6- Assess their own progress, strengths and weaknesses and maintain the information systems existence.

D7- Discover complex ideas and concepts through the application of appropriate techniques.

D8- Develop ethical behavior during laboratory assignments and projects.

D9- Transfer knowledge into unfamiliar situations in a spirit of critical enquiry.

3- Academic standards

The National Academic Reference Standards (NARS) for the Information Systems program set forth by the National Authority for Quality Assurance and Accreditation of Education were adopted as academic standards.

Consistency of NARS by Program ILOs

(NARS)	Program ILOS Covered by No.
1- Knowledge and Understanding	
By the end of Information Systems program the graduate should acquire the knowledge and understanding of:	
1.1- A core of analysis, algebra, applied mathematics and statistics.	A1- Define basic knowledge of a core analysis, algebra, applied mathematics and statistics. A4 State the principles and techniques of a number of application areas informed by the research directions of the subject, such as data mining, information engineering, bioinformatics, biomedical and geographical information systems
1.2- Information systems, data and Information Management, enterprise architecture, IS project management, IT infrastructure, systems analysis and design, and IS strategies.	A2 Recall a strong knowledge of information systems and operation research. A4 State the principles and techniques of a number of application areas informed by the research directions of the subject, such as data mining, information engineering, bioinformatics, biomedical and geographical information systems A1- Define basic knowledge of a core analysis, algebra, applied mathematics and statistics.
1.3- Principles and techniques of database management systems, management, data mining, geographical information systems, multimedia, application development, business process management, enterprise systems, human computer interaction, object-oriented analysis and design, e-technologies, multimedia, image processing, information and infrastructures security and computer graphics techniques..	A2 Recall a strong knowledge of information systems and operation research. A3-Outline some aspects of the subjects, such e-commerce technologies, and Decision support systems. A5-Recognize the basic skills in the subject of their degree and of a range of more specialized topics about databases, database management systems, artificial intelligence, and artificial intelligence applications and bioinformatics.
1.4- Issues such as quality, reliability, enterprise, employment	A7-Outline the professional, ethical, legal, security and social issues and

law, accounting and health.	responsibilities
1.5- Awareness of organizational, human and economic sides of modern organizations.	A7-Outline the professional, ethical, legal, security and social issues and responsibilities A2-Recall a strong knowledge of information systems and operation research.
1.6-Principles of Information communication and information security	A2-Recall a strong knowledge of information systems and operation research. A3-Outline some aspects of the subjects, such e-commerce technologies, and Decision support systems. A5-Recognize the basic skills in the subject of their degree and of a range of more specialized topics about databases, database management systems, artificial intelligence, and artificial intelligence applications and bioinformatics.
1.7- Specification, analysis, design, implementation and operation and maintenance of IS solutions.	A6-Define the computational requirements appropriate to its solution.
1.8- Modeling organizational processes and data, defining and implementing technical and process solutions, managing projects, and integrating systems	A2-Recall a strong knowledge of information systems and operation research. A4-State the principles and techniques of a number of application areas informed by the research directions of the subject, such as data mining, information engineering, bioinformatics, biomedical and geographical information systems
1.9- Types and alternatives of global information systems architectures, and their differences in terms of service and cost consequences, and their implications for the organizational support needed	A2-Recall a strong knowledge of information systems and operation research.
2- Intellectual Skills	
By the end of computer science program the graduate should be able to:	
2.1- Discuss traditional and nontraditional problems, set goals towards solving them, and. observe results.	B1-Discuss traditional and non-traditional information systems problems, set goals towards solving them, and observe results.
2.2- Perform comparisons between (methods, techniques...etc).	B5- Compare between (methods, techniques...etc).
2.3- Identify attributes, components, relationships, patterns, main ideas, and errors.	B6- Explain DSS attributes components, relationships, patterns, main ideas, and errors.
2.4- Restrict solution methodologies upon their results.	B8- Explain solution methodologies upon their results.
2.5- Select the suitable tools, methods and techniques for modeling, analyzing IS, establishing criteria, and verify solutions.	B8- Explain solution methodologies upon their results.

2.6- Identify a range of solutions and critically evaluate and justify proposed design solutions.	B10- Create a range of solutions and critically evaluate and justify proposed design solutions.
2.7-Solve IS problems with pressing commercial, time, and industrial constraints.	B7- Justify goals towards solving problems containing a range of commercial and industrial constraints and the proposed design solutions and results.
2.8- Suggest an innovative design to solve a problem containing a range of commercial and industrial constraints.	B7- Justify goals towards solving problems containing a range of commercial and industrial constraints and the proposed design solutions and results.
2.9- Perform problem analysis from written descriptions; derive requirements specifications from an understanding of problems (analysis, synthesis).	B3- Express the logical thinking of ideas clearly, in writing.

3- Professional and Practical Skills

By the end of computer science program the graduate should be able to:

3.1- Use appropriate programming languages, web-based systems and tools, design methodologies, and database systems.	C1- Use appropriate programming languages, web-based systems and tools, design methodologies, and database systems. D1- Work effectively as an individual and as a member of a team in small-medium sized projects with resources and time constraints to enhance skills. D5- Demonstrate management their schedule tasks and meet deadlines.
3.2-Use quantitative analysis techniques appropriately.	C1- Use appropriate programming languages, web-based systems and tools, design methodologies, and database systems. C2- Analyze the principles of effective information management, information organization, and information-retrieval skills to information of various kinds, including text, images, sound, and video. C3- Show 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. D1- Work effectively as an individual and as a member of a team in small-medium sized projects with resources and time constraints to enhance skills. D4- Perform independent and efficient time management. D5- Demonstrate management their schedule tasks and meet deadlines.
3.3- Justify technological, methodological and management choices for an information system project for a given organization.	C1- Use appropriate programming languages, web-based systems and tools, design methodologies, and database systems. C2- Analyze the principles of effective information management, information organization, and information-retrieval skills to information of various kinds, including text, images, sound, and video. C3- Show 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. C4- Demonstrate independent information acquisition and management, using the scientific literature and Web sources. D4- Perform independent and efficient time management.
3.4- Plan and manage an information systems project from inception to final implementation and cut-over.	C4- Demonstrate independent information acquisition and management, using the scientific literature and Web sources. C5- Use the ethical issues affecting information systems and their responsibilities as information science professionals. D6- Assess their own progress, strengths and weaknesses and maintain the information systems existence.

3.5- Produce acceptable reports and technical and user system documentation.	C6-Choose the 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. D2- Prepare and present seminars to a professional standard. D3- Illustrate the communication skills effectively by oral, written and visual means. D8- Perform the ethical behavior during laboratory assignments and projects.
3.6- Perform information acquisition and management, using the scientific literature and Web sources.	C4- Demonstrate independent information acquisition and management, using the scientific literature and Web sources. C7-Appraise alternative models of systems analysis and design, and apply practical, theoretical techniques to select appropriate solutions. D3- Illustrate the communication skills effectively by oral, written and visual means. D7- Employ complex ideas and concepts through the application of appropriate techniques. D8- Perform the ethical behavior during laboratory assignments and projects.
3.7- Apply the principles of effective information acquisition, information management, organization, and information-retrieval to text, images, sound, and video.	C3- Show 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. C7-Appraise alternative models of systems analysis and design, and apply practical, theoretical techniques to select appropriate solutions. C8-Modify database systems and use data communication systems. D9- Reconstruct the knowledge into unfamiliar situations in a spirit of critical enquiry.
3.8- 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	C3- Show 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. D6- Assess their own progress, strengths and weaknesses and maintain the information systems existence.
3.9- Using tools to automate IS development phases.	C6-Choose the 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. C7-Appraise alternative models of systems analysis and design, and apply practical, theoretical techniques to select appropriate solutions. C8-Modify database systems and use data communication systems.
3.10- Analyze and documenting the feasibility of various options and comparing solution options.	C6-Choose the 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. C7-Appraise alternative models of systems analysis and design, and apply practical, theoretical techniques to select appropriate solutions.
3.11- Maintaining existing information systems	C6-Choose the 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. D6- Assess their own progress, strengths and weaknesses and maintain the information systems existence.