ILO'S for ==Computer Science== with National Stander Academy:

Faculty of computers and information	NARS
FCI Knowledge and understanding	**K&U**
A1 Identify quality criteria that enable future development of computer-based systems.	1. Understand the essential mathematics relevant to computer science. (A3, A7,A8)
A2 List the Fundamental topics in Computer Science related to software engineering principles, computer organization and architecture.	2. Use high-level programming languages.(A1,A9,A11)
A3 Demonstrate the essential mathematics and physics relevant to computer science	3. Demonstrate basic knowledge and understanding of a core of analysis, algebra, applied mathematics and statistics.(A8,A7)
A4 Explain essential concepts, principles, and theories related to computer science such as operating system.	4. Interpreting and analyzing data qualitatively and/or quantitatively.(A6, A15)
A5 Explain essential concepts, principles, and theories related to computer science such as computer graphics and image processing.	5. 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, databases and computer graphics.(A5,A6)
A6 Explain essential concepts, principles, and theories related to computer-application development such as: databases, information systems development.	6. Show a critical understanding of the principles of artificial intelligence, image, and pattern recognition. (A5, A7)
A7 Demonstrate essential facts, concepts, principles and theories relating to computing **and information** and computer applications as appropriate to the program of study	7. Understanding 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.(A2, A4, A10, A13)
A8 Express the main concepts of statistics, probability theory, algebra and numerical analysis and their role in the computing and information discipline.	8. Selects 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 (A12, A14, A16).

A9 Identify programming fundamentals and languages, algorithms analysis, and data structures.	
A10 Identify and explain the fundamental concepts, principles, and techniques needed for the analysis, development, validation, verification, deployment, and operations of computer-based systems.	
A11 Describe main concept of operating systems, information system and databases.	
A12 Selects advanced topics to provide a deeper understanding of some aspects of the subject	
A13 Define the mapping of real-world problems to algorithmic solutions	
A14 List the 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.	
A15 Demonstrate the extent to which a computer-based system meets the criteria defined for its current use and future development.	
A16 Demonstrate the life cycle principles of the information systems applications	

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FCI: Intellectual Skills	**Intellectual Skills**
B1 Analyze real problems, and appropriate problem solving methods that satisfy commercial or industrial constraints and analyze results	1. Define traditional and nontraditional problems, set goals towards solving them, and. observe results. (B1,B4, B7)
B2 Determine different computer- system application attributes, components, relationships, patterns, architecture, and source of errors.	2. Perform comparisons between (algorithms, methods, techniques...etc).(B2, B9, B13)
B3 Generate a range of innovative design patterns and solutions to solve a computer science problem containing a range of commercial and industrial constraints.	3. Perform classifications of (data, results, methods, techniques, algorithms.. etc.). (B5, B9, B13)
B4 Apply solutions to a computer science problem, follow-up on solution to verify it, and if necessary restrict the solution methodologies upon the results.	4. Identify attributes, components, relationships, patterns, main ideas, and errors. (B2, B9)
B5 Discuss factors other than computational efficiency that influence the choice of algorithms, such as programming time, maintainability, and the use of application-specific patterns in the input data.	5. Summarize the proposed solutions and their results.(B3,B4)
B6 Analyze the extent to which a computer-based system meets the criteria defined for its current use and future development.	6. Restrict solution methodologies upon their results. (B4,B8, B15)
B7 Determine goals for problem solving and test the result of the solution of the problems	7. Establish criteria, and verify solutions. (B3,B4,B6,B8)
B8 Identify criteria to measure and interpret the appropriateness of a computer system for its current deployment and future evolution.	8. Identify a range of solutions and critically evaluate and justify proposed design solutions. (B3, B4, B10, B11,B12)
B9 Compare between the classifications of (data, results, methods, techniques, algorithms... etc.).	9. Solve computer science problems with pressing commercial or industrial constraints. (B1, B3, B14)
B10 Generate innovative designs to solve a problem containing a range of commercial and industrial constraints.	10. Generate an innovative design to solve a problem containing a range of commercial and industrial constraints.(B3,B10, B12, B15)

B11. Evaluate a range of innovative design patterns and solutions to solve a computer science problem containing a range of commercial and industrial constraints.	
B12. Define the standard methodologies for solving computer-based and information systems problems	
B13. Define the main differences between computer-based and information systems concepts such as : mechanisms, methods and technologies	
B.14 Identify the substituted solutions for the commercial, time, and industrial problems that faces computer-based and information systems applications	
B.15 Define the required tools and techniques to deliver the intended solutions for computer-based and information systems problems	

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FCI: Professional and Practical Skills	**Professional and Practical Skills**
C1 Analyze and improve organizational processes from an ICT perspective.	1. Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems. (C1,C4)
C2 Negotiate effectively with clients, other stakeholders and peers.	2. Communicate effectively by oral, written and visual means.(C2)
C3 Investigate the professional, economic, social, environmental, moral and ethical issues involved in the sustainable exploitation of computer technology and be guided by the adoption of appropriate professional, ethical and legal practices.	3. Perform independent information acquisition and management, using the scientific literature and Web sources. (C3)
C4 Outline basic designs for data storage conceptual schemes.	4. Prepare and present seminars to a professional standard. (C2)
C5 Analyze simple and complicated electrical circuits and using electrical laws in solving problems and/or formal electrical analysis methods	5. Prepare technical reports, and a dissertation, to a professional standard; use IT skills and display mature computer literacy (C11, C14).
C6 Employ the statistical, probabilistic and mathematical techniques in analyzing data and interpreting experimental results.	6. Specify, design, and implement computer-based systems. (C7,C8,C11,C12)
C7 Plan, schedule, control, and lead ICT projects.	7. Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem. (C1,C10)
C8 Deploy appropriate tools for the construction and documentation of computer-based systems that are used to solve practical problems	8. Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds, including text, images, sound, and video. (C3,C6,C14)
C9 Deploy different modeling techniques to model and analyze real life computing problems.	9. 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. (C5,C8,C14)

C10	Evaluate computer-based systems from various perspectives.	10.	Identify any risks or safety aspects that may be involved in the operation of computing equipment within a given context. (C12, C13)
C11	Develop a range of fundamental research skills that enable the graduate to continuously increase his knowledge, advance his career and pursue graduate studies.	11.	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. (C8,C9)
C12	Design, implement, maintain, and manage software systems. Assess the implications, risks or safety aspects involved in the operation of computing equipment within a specific context.		
C13	Handle a mass of diverse data, assess risk and draw conclusions.		
C14	Write concise, comprehensible and cognitively efficient business communications' media.		

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FCI: Transferable skills	**Transferable skills**
D1. Edit and review a professional report or document and design its storage, distribution and retention standards.	1. Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.(D4,D5)
D2. Use effective information-retrieval skills (including the use of browsers, search engines and catalogues) and general IT facilities.	2. Demonstrate skills in group working, team management, time management and organizational skills.(D6, D7)
D3. Work as a member of a development team, recognizing the different roles within a team and different ways of organizing teams.	3. Show the use of information-retrieval. (D2, D4,D7)
D4. Demonstrate independent critical thinking and problem solving skills.	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. (D1,D3)
D5. Communicate effectively through oral, written, and visual means.	5. Exhibit appropriate numeracy skills in understanding and presenting cases involving a quantitative dimension.(D2,D4)
D6. Demonstrate skills in team work, team management, time management and organizational skills.	
D7. Prepare technical reports to a professional standard	