



وثيقة جدارات برنامج هندسة الميكاترونيات

1- General Engineering NARS2018- Competencies

Level A (NARS)	A.1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
	A.2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.
	A.3	Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.
	A.4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.
	A.5	Practice research techniques and methods of investigation as an inherent part of learning.
	A.6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.
	A.7	Function efficiently as an individual and as a member of multi-disciplinary and multi- cultural teams.
	A.8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
	A.9	Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.
	A.10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.



Faculty of Engineering Mechatronics Engineering Program



2- Mechanical NARS2018- Competencies

Level B (NARS)	B.1	Model, analyze and design physical systems applicable to the specific discipline by applying the concepts of: Thermodynamics, Heat Transfer, Fluid Mechanics, solid Mechanics, Material Processing, Material Properties, Measurements, Instrumentation, Control Theory and Systems, Mechanical Design and Analysis, Dynamics, and Vibrations.
	B.2	Plan, manage and carry out designs of mechanical systems and machine elements using appropriate materials both traditional means and computer-aided tools and software contemporary to the mechanical engineering field.
	B.3	Select conventional mechanical equipment according to the required performance.
	B.4	Adopt suitable national and international standards and codes; and integrate legal, economic and financial aspects to design, build, operate, inspect and maintain mechanical equipment and systems.

3- Mechatronics engineering ARS Competencies

Level C (ARS)	C.1	Conduct experiments, interpret and extrapolate the results and other numerical input/output using hardware and software towards the development of a product or mechatronic engineering process to solve the clients' needs.
	C.2	Design, build and implement innovative mechatronic products, process, or system to meet desired needs within realistic constraints such as economical, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
	C.3	Use mechatronic engineering tools such as modelling, simulation and information systems for the analysis of the mechatronic models. Propose and validate the model based-on investigations and perform patent research
	C.4	Develop the ability to analyse the global and local impacts of mechatronic engineering on individuals, organizations, and society to provide their professional services in an ethical and responsible manner.
	C.5	Apply and create solutions to mechatronics systems related to manufacturing, maintenance, and interfacing problems in a creative way, taking account of industrial and commercial constraints.