



جامعة بنها
كلية الهندسة بشبرا
برنامج هندسة الطاقة و الطاقة المستدامة



Program Competencies

According to the National Academic Reference Standard, the EEC program must satisfy the following Competencies:

1- General Engineering NARS Competencies in 2018

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.

2- Sustainable Energy NARS Competencies in 2018

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 support to energy and sustainable energy
	B.3	Select, model and analyze electrical power systems applicable to the specific discipline by applying the concepts of: generation, transmission and distribution of electrical power systems

3- - Sustainable Energy ARS (The University of Edinburgh Benchmark)

Level D (ARS)	D.1	Model, Analyze, design and operate internal combustion engines, pumps, turbines, and compressors according to current developments and technologies
	D.2	Apply quantitative methods and computer software relevant to energy and sustainable energy engineering, in order to solve engineering problems.
	D.3	Carry out preliminary designs of sustainable energy sources including solar, wind, and geothermal energy, and biotechnology and solve their operational problems.
	D.4	Work in a variety of energy systems operations, maintenance and overhaul