Academic Reference (NARS 2018)

for Communications and Networks Engineering Program

1) Competencies of Engineering Graduate (Level A)

The Engineering Graduate must be able to:

A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.

A2. 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.

A3. 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.

A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.

A5. Practice research techniques and methods of investigation as an inherent part of learning.

A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.

A7. Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams.

A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.

A9. Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.

A10. Acquire and apply new knowledge, and practice self, lifelong and other learning strategies.

2) Competencies of Electrical Engineering Graduate (Level B)

In addition to the competencies for all Engineering programs the basic Electrical Engineering graduate must be able to:

B1. 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.

B2. Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.

B3. Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional tools.

B4. Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation and evaluate its suitability for a specific application.

B5. Adopt suitable national and international standards and codes to design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.

3) Competencies of Communications and Networks Engineering Program Graduate (Level C)

In addition to the competences for all engineering programs (A-Level) and the competencies for the electrical engineering discipline (B-Level), the communications and networks engineering program graduate must be able to (C-Level):

C1. Design, and analyze the performance of wireless networks, mobile systems, LAN systems, wireless sensor networks, network security protocols, digital communications systems, hardware and software, with identifying the software tools and mathematical methods required to optimize their performance.

C2. Use modern engineering techniques, skills, simulators and computing tools to develop innovative solutions to practical industrial problems in communications and network engineering applications.

C3. Demonstrate the knowledge about state-of-the-art in network designs and communication systems and understand the underlying physical phenomena and performance limitations of various communications and network systems.

C4. Design, implement and integrate different network routing, switching systems, and measure their performance using the appropriate lab equipment with analyzing the obtained results using mathematical methods.