



MASTER OF SCIENCE IN ENGINEERING (M.Sc.)

General Education - A.A. (2y)

B.Sc. Electrical Engineering (2y)

M.Sc. Electrical Engineering (1.5-2y)

B.Sc. Electronics & Communications (2y)

M.Sc. Electronics & Communications (1.5-2y)

Program Objectives:

The Master of Science in Engineering degree (M.Sc. Eng) research and education go hand-in-hand and the program offers specialized advanced knowledge and tools to our graduates in order to cope successfully in a technologically challenging environment. Our students may opt to graduate their M.Sc. degree with a concentration in [Electrical Engineering](#) or in [Electronics & Communications Engineering](#).

Both program concentrations share the same core courses which establish an in-depth understanding in "Advanced Engineering Mathematics" and "Numerical Methods". The second part the program constitutes the courses within the concentration area of the program. The learners complete the program by selecting and performing a final project within the area of their selected concentration.

The M.Sc. Eng. program with either concentration is designed to allow our learners to develop indepth knowledge and insight in a variety of technological and engineering concepts and thereby to prepare for taking on the challenges of a constantly growing, highly demanding and competitive technological world. The program do not only focus on transferring knowledge and skills in the engineering field, but also aims at developing the ability of performing research in advanced engineering fields, cultivating analytical skills and critical thinking, writing technical reports and scientific papers and developing skills of communication and presentation.

M.Sc. Eng. in Electrical Engineering:

This Master of Science program provides students with the knowledge and an advanced set of tools necessary to cope successfully in the technologically challenging environments of power utilities, electricity utilization industries, electrical product manufacturing industries, contracting and consulting companies. Students learn computational skills necessary for the solution of both theoretical and practical engineering problems. Program participants study the conversion, use and transmission of electric energy, the control of electric systems and develop the technological knowledge and skills to design, assess and improve electrical and electronic systems. Throughout the M.Sc. program, learner completes a rigorous curriculum consisting of a prescribed number of core courses, and an appropriate number of electives in the field of electrical engineering. The final master's project integrates the obtained academic knowledge with practical electrical engineering applications.

Learning Outcomes:

Upon successful completion of the Master of Science in Electrical Engineering program, students will be able:

1. to demonstrate knowledge in areas of electrical engineering that are directly linked to industry and contemporary technology;
2. to access practical and experimental experience which is directly linked to fundamental knowledge and theory;
3. to design and implement systems and processes for solving engineering problems and to apply a systems approach to plan, undertake and evaluate a self-managed major project in the electrical engineering discipline;
4. to demonstrate research skills and fundamental knowledge to support a successful career in research and development;
5. to demonstrate ability to learn independently as required for continuing professional development;
6. to clearly communicate complex academic and professional issues to specialist and non-specialist audiences.
7. to work alone or in groups in order to provide engineering solutions;
8. to understand and willing to commit to upholding ethics and moral practices in the engineering profession and environment.

M.Sc. in Electronics & Communications Engineering:

The Master of Science in Electronics & Communications Engineering is designed to allow learners to develop profound knowledge and advanced skills in systems of processing and information-transmission and the design of devices and electronic systems. In order to introduce the necessary tools for resolving complex information engineering problems, the program provides methodologies of advanced mathematical calculus. Students develop the skills and methodological tools needed for design and development of systems for signal and image processing, antenna design, microwave systems and devices, analog and digital electronic design with applications in the fields of electronics and communications. Throughout the M.Sc. program, learner completes a rigorous curriculum consisting of a prescribed number of core courses, and an appropriate number of electives in the field of electronics and communications engineering. The final master's project at the end of the program allows the students to apply their knowledge and to integrate it with a practical topic in the field of their study.

1. to demonstrate mathematical skills which meet the demands of research in electronics and communication engineering;
2. to understand techniques and methodologies relevant to specific areas of electronic and communications engineering;
3. to understand how established techniques of research and enquiry are used to create and interpret knowledge in electronic or communications engineering and to make argued conclusions on the basis of incomplete and/or contested data;
4. to act autonomously in planning and implementing tasks at a professional level and to ethically deal with complex and unpredictable situations;
5. to demonstrate the ability to learn independently, as required for continuing professional development;
6. to communicate complex academic or professional issues clearly to specialist and non-specialist audience;

Admission Prerequisites:

To enter into the Master of Science in Engineering program, students must have an earned bachelor's degree in engineering or a related field.

Program Requirements:

The M.Sc. Eng. program requires fifty-five (55) quarter units beyond the bachelor's degree level. The student must complete a minimum 45 credits while enrolled at Newharbor International University and complete their respective degree programs with a grade point average of B (3.0) or better.

The Master of Science in Engineering Curriculum:

Core Courses:

GEE 501: Advanced Engineering Mathematics I (5)
 GEE 502: Advanced Engineering Mathematics II (5)
 GEE 510: Numerical Methods (5)



Concentration Area (Select a minimum of 30 credits):

ELECTRICAL ENGINEERING

EE 524: Network Analysis (5)
 EE 525: Electrical Design (5)
 EE 526: Utilization of Electrical Power (5)
 EE 527: Advanced Electrical Machines (5)
 EE 528: Power Plant System Design (5)
 EE 529: High Voltage Engineering (5)
 EE 530: Instrumentation (5)

ELECTRONICS & COMMUNICATIONS ENGINEERING

EC 564: Circuit Theory (5)
 EC 565: Electronic Devices & Circuits (5)
 EC 566: Broadcast & Television Engineering (5)
 EC 567: Microwave Engineering (5)
 EC 568: Computer Engineering (5)
 EC 569: Industrial Electronics (5)
 EC 570: Technology of Electronic Devices (5)

Graduation Assignment:

GEE 511: Project (10)

Additional electives, if needed or so desired, may be selected from Master electives in the Business Administration, Human Behavior or Computer Science programs, but not previously taken, and as permitted by faculty advisor.