



BACHELOR OF SCIENCE IN ENGINEERING (B.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 Bachelor of Science in Engineering degree has been designed to provide a structured scientific and engineering education for learners who wish to practice engineering. The students may opt to graduate their B.Sc. degree with a concentration in [Electronics & Communications Engineering](#) or [Electrical Engineering](#). The program affords the engineering student the opportunity obtain the fundamental knowledge and principles common to all engineering programs: science, mathematics, physics, electrical engineering, computing and drafting, etc. The participants equally learn how to communicate effectively and are acquainted with general principles of engineering. During the course of the program, the learner will complete a preselected number of subjects within the same subject field, which constitute the concentration of the degree program.

B.Sc. in Electrical Engineering:

Electrical engineering plays an important role in modern society and is found and applied in monitoring systems, electronic measuring instruments, communications and IT, power supply systems, electronic control systems, but it also plays a vital role in the development of green energy technologies and systems. Within the B.Sc. in Electrical Engineering program, students receive a thorough introduction to the subject matters of mathematics and physics. Additionally, the participants take a number of modules which are at the basis of any engineering undergraduate program, and study mechanics, thermodynamics, programming, engineering drawing, etc. The students will concentrate the program by completing a number of highly specialized courses in the field of electrical engineering during which they develop a firm understanding of the relationship between hardware and software. This enables them to keep up with the rapid developments in areas of computer technology, medical electronics, mobile communication, wind power, robots, wireless networks and satellite communication. At the end of the program, the learner will complete a senior project to demonstrate their competency within a specific area of the electrical engineering concentration.

Learning Outcomes:

Upon successful completion of this program, students will be able:

1. to demonstrate a solid foundation in fundamental areas of mathematics and knowledge of probability and statistics applicable to electrical engineering. Ability to apply this knowledge to solve engineering problems;
2. to possess knowledge in basic areas of Electrical Engineering including electric circuits, digital and analogue electronics, numerical methods, signals and systems, digital signal processing, microprocessors, electromagnetics, electric machines, digital integrated circuits, digital signal processing, control systems, and principles of communications;
3. to demonstrate the ability to identify, formulate and solve engineering problems using techniques, skills, creative thinking and modern engineering tools necessary for engineering practice;
4. to have knowledge of basic electrical and electronic components and their use in analogue and digital circuits and ability to design a system, component, or process to meet desired needs;
5. to possess competency in computer fundamentals and in applying computers to solve engineering problems;
6. to communicate ideas effectively both in written form as well as verbally;

B.Sc. in Electronics & Communications Engineering:

Electronics and communication systems usually deal with devices which require or use smaller amounts of electrical power such as micro-processors, fiber optics, etc. The basis of this B.Sc. program is identical to the B.Sc. in Electrical Engineering and the students equally complete the introduction subjects in the field of mathematics, physics, mechanics, thermodynamics, programming, engineering drawing, etc. During the course of the program, the learners will concentrate their study in the field of electronics and communications, during which the participants will learn to analyze and design electronics, communications and IT systems as well as control systems, navigation aids. Special focus is placed on the development of industrial electronics which include but are not limited to phones, tv, radio, satellite-, LAN and other digital transmission systems. By the end of the program, the learner will complete a thesis or final project with a topic within the same concentration.

Learning Outcomes:

Upon successful completion of this program, students will be able to:

1. to apply knowledge of mathematics, science, and engineering;
2. to design and conduct experiments, as well as to analyze and interpret data.

4. to identify, formulate, and solve engineering problems;
5. to demonstrate understanding of professional and ethical responsibility;
6. to communicate ideas effectively both in written form as well as verbally;
7. to use techniques, skills, and modern engineering tools necessary for engineering practice;

Admission Prerequisites:

In order to be admitted into the B.B.A. program a candidate must have achieved one of the following formal educational credentials:

1. High School diploma or G.E.D.;
2. Completion of an Associate in Arts or Associate in Science Degree (or equivalent) consisting of 90 quarter units, including the prescribed number of credits in the areas of English (15 quarter credits), Natural Science (5 quarter credits), Mathematics (10 quarter credits), Humanities (10 quarter credits), and Social Science (15 quarter credits). This degree program includes at least 60 quarter credits of study applicable to the General Education Requirement.

If candidates do not possess an Associate's degree or equivalent, they will have to meet or complete the schools requirements for the Associate in Arts degree before starting the Bachelor degree program.

Program Requirements:

One hundred and twenty (180) quarter units are required for graduation. The first part (90 units) of the Bachelor's program is the Associate Degree Program. The student must complete a minimum of 60 units while enrolled at our University. Comprehensive evaluation and counseling are most important at this degree level. Undergraduate students must complete their respective degree is with a grade point average of C (2.0) or better.

The Bachelor of Science in Engineering (B.Sc.Eng.) Curriculum:

Core Courses:

GEE 102: Mathematics I Calculus I (Differentiation) (5)
 GEE 103: Mathematics II Calculus II (Integration) (5)
 GEE 104: Mathematics III Calculus III (Series) (5)
 GEE 105: Physics I with Calculus (Mechanics of Motion) (5)
 GEE 106: Physics II with Calculus (Electricity & Magnetism) (5)
 GEE 107: Physics III with Calculus (Heat, Light & Nuclear Physics) (5)
 GEE 108: Mechanics I - Statics (5)
 GEE 109: Mechanics II - Dynamics (5)
 GEE 110: FORTRAN & Structured Programming (5)
 GEE 203: Engineering Mechanics & Strength of Materials (5)
 GEE 205: Applied Thermodynamics (5)
 GEE 206: Elements of Electrical Engineering & Electronics (5)
 GEE 207: Engineering Drawing (5)
 GEE 208: Material Science & Processes (5)
 GEE 209: Engineering Economics (5)

Concentration Area: (Select a minimum of 15 credits)

ELECTRICAL ENGINEERING

EE 321: Electromagnetic Theory (5)
 EE 322: Electrical Measurements (5)
 EE 323: Electrical Machines (5)
 GEE 494: Directed Study (5)
 GEE 495: Independent Research & Presentation (5)

ELECTRONICS & COMMUNICATIONS ENGINEERING

EC 361: Pulse and Digital Circuits (5)
 EC 362: Communication Engineering (5)
 EC 363: Electrical and Electronic Measurement (5)
 GEE 494: Directed Study (5)
 GEE 495: Independent Research & Presentation (5)

Graduation Assignment:

GEE 499: Senior Paper/Project (10)

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