

ENG 101 (English Communication):	English Communication is a first-semester ESP course designed for students who have successfully completed the Foundation Program and are now enrolled in the Associate Degree programs in the Royal Commission at Yanbu's colleges and institutes division. The course solely focuses on communication for the workplace. Students are exposed to the elements of business letters and to the basics of oral communication in professional settings. Students will write claim, and adjustment letters, and actively take part in group discussions, debates, and deliver effective oral presentations.
GSMA 101 (Calculus I):	Calculus I deals with the concept of differential calculus needed in mathematics, science and technology. Topics include: limits and continuity, differentiation of algebraic and transcendental functions, and partial differentiation. Emphasis is given to the applications of continuity, derivatives, and partial derivatives. Application problems will be solved during problem solving sessions.
General Physics (GSPH 101):	General Physics is an algebra-based course. The aim of this course is to provide the students with basic principles of general physics for supporting in applied fields. It deals with measurements, motion in 1-D and 2-D, dynamics, work and energy, fluids, heat, electrostatics, electricity, magnetism, and light. Laboratory activities reinforce the theoretical aspects of the course.
Physical Education (GSPE 101):	Physical Education includes activities designed to improve students' physical health, well-being, and fitness levels, helping them achieve the fitness standards expected of college students. This involves various physical exercises and activities to promote fitness and health.
Electric Circuits I (ELET 101):	Electric Circuit I provides the student with an understanding of the concepts and techniques in the characterization of electrical circuits and their components. This course introduces the student to the basic concepts of current, voltage, power, electromagnetism, basic laws and theorems for the analysis of electric circuits. Students are familiarized with ohm's law, KVL, KCL and other basic

	theorems. Theory classes are supported by laboratory experiments to study, test and verify the characteristics of these basic electrical concepts.
Computer Programming (ELET 104):	Computer Programming introduces techniques to solve problems through computer programming using high level computer language 'C'. The students will learn problem solving techniques, basic programming concepts such as input/output statements and control statements, use of subprograms and structured data types such as arrays, pointers and structures. The course is supported by exercises in the laboratory.
General Chemistry (GSCH 101):	General Chemistry is intended to provide students with the knowledge and skills for understanding the basic principles of chemistry. The course covers topics on atomic structure, chemical bonding, gases, thermochemistry, solutions, kinetics, chemical equilibrium, acids and bases, electrochemistry and modern materials. The course is supported by digital media, both on CDs and online. It is also supported by experiments in the laboratory and in virtual chemlab using chemlab software.
Calculus II (GSMA 102):	Calculus II deals with the concepts of integral calculus needed in mathematics, basic science and technology. Topics include: integration, techniques of integration, definite integrals and their applications, numerical integration, and differential equations.
English Composition (ENG 102):	Composition is a second-semester ESP course designed for students pursuing their undergraduate studies in Mechanical, Electrical, Chemical or Electronic Engineering at Yanbu Industrial College, a part of the Colleges and Institutes of the Royal Commission at Yanbu, where the medium of instruction is English. Successful completion of ENG 101 - Communication is prerequisite for this course. This course is part of the Associate Degree Program and focuses on written technical communication for the workplace. Students are exposed to the fundamentals of technical writing. Students will produce graphs and charts, write applications to illustrate information, and will write technical

definitions and technical descriptions, actively take part in group work, and deliver effective oral presentations.

Electrical Circuits II (ELET 102):

Electrical Circuits II provides the student with an understanding of concepts of alternating current fundamentals and AC Circuits. The course includes topics related to three-phase systems, filters, two-port networks, and resonance. Practical circuits are analyzed using fundamental electrical laws and theorems to promote and strengthen the mathematical and analytical capabilities of the students and to help them understand and apply the concepts in the implementation of these electrical circuits. Theory classes are supported by laboratory exercises to model, simulate, and test electrical circuits.

Electrical Machines I (ELET 103):

Electrical Machines I deals with the fundamentals of magnetism, electromagnetism, magnetic circuits, DC electrical machines, and single-phase transformers. This course covers the principles of magnetism, magnetic fields, and the study of magnetic behavior of ferromagnetic material, B-H curves, and hysteresis. It includes the study of construction, operation, and characteristics of DC machines (generators and motors) and the starting speed control and applications of DC motors in industries. The course also covers the theory, construction, and operation of ideal and practical transformers and autotransformers, supported by laboratory exercises.

Electronics I (ELET 105):

Electronics I provides the student with an understanding of the physical properties and principles of operation of some common solid-state devices. It introduces the student to bipolar devices such as semiconductors, diodes, transistors, and unipolar devices such as junction field-effect transistors. Concepts of ideal op-amp characteristics and basic applications are also included. The course also deals with basic electronics circuits such as amplifiers, oscillators, and regulated power supplies, supported by laboratory experiments to study, test, troubleshoot, and verify the characteristics of these devices in typical electronic circuits.

Applied Statistics (GSST 201):	Applied Statistics deals with statistical concepts and techniques commonly used in data analyses, particularly in science and technology. Topics include data collection and sampling techniques; frequency distributions and graphs; basic statistical measures of central tendency and variability; probability and counting rules; normal distribution; hypothesis testing; correlation and regression; reliability and failure data analysis; and quality control charts. Application problems will be solved during problem-solving sessions.
Industrial Safety (ENGT 201):	Industrial Safety provides students insight into safer workplace practices, hazard recognition, minimization of hazards, and risk management. The course covers industrial safety principles and practices in the workplace and environments in mechanical, electrical, chemical, and industrial sectors. Topics include flash points, fire extinguishers, radioactive substances, pressurized containers, confined spaces, symbols, tags, and signs, along with personal protective equipment (PPE) and safety practices for handling chemicals in laboratories.
ENG 202 (Industrial Supervision):	Industrial Supervision provides students with knowledge and understanding of what industry is and the role of supervision in it. First it discusses the evolution, the meaning and types, the impact of technology, and the factors that influence the location and development of industries in Saudi Arabia. Secondly, it deals with the nature and skills of supervision and functions and responsibilities of supervisors in industries
Basic Industrial Electronics (ELET 201):	Basic Industrial Electronics introduces the student with applications of power electronic devices typically used in industry, including thyristors, DIACs, TRIACs, SCRs, and UJT and PUTs. The course deals with fundamentals and applications of rectifiers, controllers, converters, and inverters and high power products including heat controls, light controls and power supplies. And also its include the troubleshooting of power supplies.
Digital Electronics 1(ELET 202):	Digital Electronics 1 introduces the basic understanding and application of digital Electronics. It covers logicgates, TTL, number systems, Codes

	and adder, subtractor circuits, Boolean algebra laws and Rules, analyzing the operation of combinational logic circuits and DeMorgan's theorem and K-map method. This course also includes flip flops, construction of flip flops using NAND/ NOR gates. Conversion of flip flops. Also includes shift registers, counters and introduction to basic microprocessor (8085). Laboratory exercises support and clarify class room discussion
Control System Components(ELET 203):	Control System Components covers the basics of process control systems. It provides fundamentals of process control in theory and practical work. It covers various types of control systems, their comparison and applications and includes the study of control system components and auxiliaries used in the industries. Application of control system theory to analyse the control system is given with the help of Simulink software. Description and programming of PLC are also part of this course.
PCB Fabrication (ELET230):	PCB Fabrication provides the students with skills in designing and fabricating a PCB. It deals with the fundamentals of PCB design, layout and fabrication and utilizes computer software and soldering techniques.
Electronics II (ELET 2319):	Electronics II This course introduces students to the basics of linear integrated circuits and applications of op-amp covering integrator, differentiator and comparator. This further includes topics on differential and instrumentation amplifiers, VCO, and generation of non-sinusoidal waveforms. Troubleshooting of Opamp circuits is carried out. The course also covers timers and their applications such as clock and pulse generation, different types of voltage and power amplifiers using FETs. This is a comprehensive electronic course. Emphasis is placed on the principles of operations and applications of these circuits. Laboratory experiments are used to give practical reinforcement of theories dealt with this course.
Technical Report Writing (ENG 201):	Technical Report Writing is a third-semester ESP course designed for students in the final year of the Associate Degree Program. This course solely focuses on writing reports. It aims at developing and enhancing students' ability to plan, draft and produce

	a wide range of reports used in the professional world, and to improve their effectiveness by incorporating graphics, visuals and other elements.
Microcontroller (ELET 212):	The Microcontroller course acquaints students with basic concepts and functions of microcontroller and its applications. Starting from the basic architecture of microcontroller, various types of hardware blocks and their interconnectivity, serial, parallel and interrupt operations and basic assembly language instructions set are covered in this course. Additionally, design and interfacing examples are also included in the course. Laboratory exercises support and reinforce class instructions.
Digital Electronics II (ELET232):	Digital Electronics II introduces advanced digital circuits and systems to the students. It deals with different digital logic families and their characteristics. Data control devices like encoder, decoder, MUX, DEMUX, comparator, different types of ADCs and DACs, memory devices along with PLDs and digital simulations are also included. Combinational and Synchronous logic systems are analyzed and designed. Laboratory and practical experiments are part of this course.
Analog & digital Communications (ELET 233):	Analog & digital Communications provides the student with an understanding of analog and digital communications signals and systems. The course introduces the transmission and reception of analog signals in amplitude and angle modulations. For digital signals, the modulation schemes include pulse modulation and digital transmission. Laboratory experiments supplement the theory.
Troubleshooting and Maintenance (ELET 234):	Troubleshooting and Maintenance provides the student, theoretical knowledge and practical skills to perform board level and component level troubleshooting using various electronic circuits and systems. The student will be able to apply troubleshooting techniques and step by step procedures to identify, locate the causes of trouble by the logical process of eliminating various alternatives, recognize trouble symptoms in electronic circuits and systems and correct the troubles. The student will be able to identify electronic components, their specifications (data sheet) and test them. The student can test and troubleshoot power supply circuits with a list of troubles expected from each specifying trouble

symptoms and suspected faults. The student will be able to test and troubleshoot analog electronics and communication circuits. The course lab is being done using troubleshooting trainers with fault insertion facility through external toggle switch and by software using computer including Computer Based Laboratory (CBL) system with WinFACET software from LabVolt and Power and Control Electronics System-T7018 with FaultPro Troubleshooting Management Software from Amatrol.

**Telecommunication Systems
(ELET235):**

Telecommunication Systems includes four topics; The first topic covers comprehensive understanding of the fundamental concepts of the telephone communication systems, their different parts and operation principles. The course analyzes the various switching systems and explains the basic concepts of telephone traffic measurement and also telephone network troubleshooting. The second topic introduces the student to network systems, which includes the fundamentals of protocol architecture & Internet applications and Wide Area Network (WAN). The students will acquire knowledge and skill of network design, troubleshooting and application. The third topic gives the opportunity to the student to deal with RF circuits, Antennas and microwave devices. The students will acquire information and skill of the performance and characteristics of different antennas and how to measure their radiation patterns, beamwidth, gain and directivity. The last topic is an introduction to fiber optics: Analysis, operation, application, and measurements of both characteristics of optic fiber components and signal transmission.

Co-op Training (ELET 320):

Coop Training The coop training program provides an opportunity to practice the acquired knowledge and improve hands on skills. During training, student will perform variety of tasks as directed by the supervisor from company in a real working environment. At the end, the student will prepare a technical report and give a presentation regarding all activities performed during his stay in the industry before the examiners appointed by the college.
