

Course Description

Electrical Power & Energy Engineering Program

11100	Computer Skills (Remedial)
	Credit Hours:0
	This course aims to develop learners’ ability to use computers in various aspects of their lives. The course introduces the primary concepts of computers, and the basics of using a GUI-based desktop operating system and office productivity tools including word processing, spreadsheets, and presentation applications, in addition to basics of using emails and navigating through the world wide web. At the end of this course, the students are expected to be able to use desktop computer for everyday tasks.
31021	Arabic Language Communication Skills (Remedial)
	Credit Hours:0
	This course aims to develop the student’s cognitive abilities in the basics of the Arabic language, through a variety of chosen literary texts, followed by a variety of topics including some simplified grammatical issues. In addition, it focuses on the skill of writing such as spelling, punctuation and the use of the Arabic dictionary, which prepare the student to possess the necessary knowledge, reading, writing, listening and conversation, on which the Arabic language communication skills course is based.
31019	Arabic Language (Remedial)
	Credit Hours:0
	This course focuses on the applications that develop the four skills through a set of various tools. The aim is to give students trainings so that they can read loudly and silently, comprehend what they listen to, deepen their abilities to write creatively and functionally, and develop ‘speaking’ skills
31022	English Language Communication Skills (Remedial)
	Credit Hours:0
	This course aims at developing the four skills (listening, reading, writing and speaking) and at enabling students to read the different texts and summarize them in their own language as well as guessing the meaning of the word from the context and make predictions before

	reading for main ideas. Since this course is intended for students who are less proficient in the English language, the focus is on giving students the structure of different sentences through the grammar lessons, which in turn enables the student to write correct sentences and thus speak without errors by constructing correct sentences when speaking. Regarding vocabulary, the students will be able to find and use synonyms as well as use context clues to find meaning.
31029	English Language (Remedial)
	Credit Hours:0
	This course is offered to students at the intermediate level to develop the students’ ability in the four basic skills: reading, writing, speaking and listening. The materials and activities included in the course are designed in such a way to provide practice in these four skills. Therefore, the practice will improve the students’ use of English for academic purposes and communication
31112	Arabic Language Communication Skills
	Credit Hours:3
	This course addresses communication skills in Arabic (Reading, writing, listening and speaking). It focuses on the applications that develop these skills through a set of various basics and tools. The aim is to give students trainings so that they can read loudly and silently, comprehend what they listen to, deepen their abilities to write creatively and functionally, and develop ‘speaking’ skills through, debate, discussions and critical thinking.
31111	Arabic Language
	Credit Hours:3
	This course addresses the communication skills in Arabic (Reading, writing, listening and speaking). It focuses on the applications that develop these skills through a set of various basics and tools. The aim is to give students trainings so that they can read loudly and silently, comprehend what they listen to, deepen their abilities to write creatively and functionally, and develop ‘speaking’ skills through, debate, discussions and critical thinking.
31122	English Language Communication Skills
	Credit Hours:3

	This course aims at developing students’ ability in the four basic skills: (reading, writing, speaking and listening). Practice will improve the students’ use of English for academic purposes and communication. The speaking is intended to enable students practice the oral skills and to improve students’ pronunciation. Thus, different speaking techniques are undertaken during classes throughout the semester.
31121	English Language
	Credit Hours:3
	This course aims at developing students’ ability in the four basic skills: (reading, writing, speaking and listening). Practice will improve the students’ use of English for academic purposes and communication. The speaking is intended to enable students practice the oral skills and to improve students’ pronunciation. Thus, different speaking techniques are undertaken during classes throughout the semester.
31151	National Education
	Credit Hours:3
	This course discusses Jordan: the land, people and homeland, the Arab nation, history of Jordan, political system, Jordanian society, major national institutions, internal and external challenges facing Jordan as well as the role of local institutions in achieving development in national awareness and the family and its role in society.
31160	Leadership & Societal Responsibility
	Credit Hours:0
	This course covers different theoretical and frameworks of leadership, moral leadership, and the philosophical foundations of socially responsible leadership. Further, this course explores the manner in which leaders personally and professionally deal with ethical and social issues as they guide their organizations in such a way to instill and optimize positive social impact.
31162	Leadership & Societal Responsibility
	Credit Hours:1
	This course covers different theoretical and frameworks of leadership, moral leadership, and the philosophical foundations of socially responsible leadership. Further, this course explores

	the manner in which leaders personally and professionally deal with ethical and social issues as they guide their organizations in such a way to instill and optimize positive social impact.
31153	Introduction to Society, Technology and Environmental Protection
	Credit Hours:0
	This course aims to inform the student on the issues that are of most concern to him during his university career, and links them to his community and the surrounding environment. These issues include university life and numerous general cultural topics which help to strengthen the student's sense of loyalty and belonging to his university and local community.
31251	Military Science
	Credit Hours:3
	This course is intended to present the history of the Jordanian army, Jordanian peace forces, preparing the nation for defense and liberation, as well as genesis and development of the Hashemite Kingdom of Jordan
31254	Entrepreneurship and Innovation
	Credit Hours:3
	This course focuses on the behaviour and attributes of entrepreneurs who operate in a competitive environment. It elaborates on the role of entrepreneurs in a competitive market and that of government in the creation of a business environment conducive to entrepreneurship. The course also highlights the relevance of attitudes, values and beliefs to entrepreneurial activity; the management of risks; the process of new product development; and the reasons for the high failure rate of new businesses. Students are expected to prepare a business plan for a new business as their main objective by the end of the semester. The course will develop students' skills and understanding of the risks and rewards of entrepreneurial activities. There will be a special focus on SMEs and entrepreneurship in Jordan.
31256	Entrepreneurship and Innovation
	Credit Hours:1
	This course focuses on the behaviour and attributes of entrepreneurs who operate in a competitive environment. It elaborates on the role of entrepreneurs in a competitive market

	and that of government in the creation of a business environment conducive to entrepreneurship. The course also highlights the relevance of attitudes, values and beliefs to entrepreneurial activity; the management of risks; the process of new product development; and the reasons for the high failure rate of new businesses. Students are expected to prepare a business plan for a new business as their main objective by the end of the semester. The course will develop students' skills and understanding of the risks and rewards of entrepreneurial activities. There will be a special focus on SMEs and entrepreneurship in Jordan.
31255	Entrepreneurship for Business
	Credit Hours:3
	This course focuses on the behaviour and attributes of entrepreneurs who operate in a competitive environment. It elaborates on the role of entrepreneurs in a competitive market and that of government in the creation of a business environment conducive to entrepreneurship. The course also highlights the relevance of attitudes, values and beliefs to entrepreneurial activity; the management of risks; the process of new product development; and the reasons for the high failure rate of new businesses. Students are expected to prepare a business plan for a new business as their main objective by the end of the semester. The course will develop students' skills and understanding of the risks and rewards of entrepreneurial activities. There will be a special focus on SMEs and entrepreneurship in Jordan.
31371	Health Education
	Credit Hours:3
	This course is an attempt to understand the responsibility we have for our own health, learn skills for dealing with emergency cases, and have personal safety and accident prevention as well as discussing mental health, mental illness and stress.
31372	Business Skills
	Credit Hours:3

	Business Skills Subject, Maharat Training for Employability/Maharat Training for Entrepreneurship is implemented over 10-12 weeks that gives Jordanian youth the ideal tools and equips them with the skills required to become productive members of society capable of obtaining jobs as well as becoming successful entrepreneurs. The course is taught using the Maharat methodology, “Learning by Doing” and is conducted within an interactive business-like environment, providing the practical skills necessary for fresh graduates to land successful careers.
31373	21st Century Skills
	Credit Hours:3
	This course aims to teach the students the essential skills of the 21 st Century Which includes Learning skills, Literacy skills, and Life skills
31374	Life Skills
	Credit Hours:3
	This course aims to help students explore and develop the essential skills on a personal and professional level in the age of the Internet, by educating them on how to improve their decision-making process and apply critical/creative thinking to reach ultimate solutions for different situations/problems that they can experience within a business environment. The module is broken into three main categories: Learning Skills, Literacy Skills, and Life Skills. All of which intend to support students in keeping up with the lightning-pace of today’s modern marketplace and to better prepare them for the competitive job market they are about to enter.
31375	Life Skills
	Credit Hours:1
	This course aims to help students explore and develop the essential skills on a personal and professional level in the age of the Internet, by educating them on how to improve their decision-making process and apply critical/creative thinking to reach ultimate solutions for different situations/problems that they can experience within a business environment. The module is broken into three main categories: Learning Skills, Literacy Skills, and Life Skills. All of which intend to support students in keeping up with the lightning-pace of today’s modern marketplace and to better prepare them for the competitive job market they are about to enter

20251	History of Science
	Credit Hours:3
	Classification of the Sciences, The Importance of the History of Science, Historical Periodization of Natural Science in the Mediterranean Basin, Epistemological Periodization of Natural Science, Natural Philosophy, Aristotle’s Cosmology and Physics, Greek Astronomy, Arabic Astronomy, The Scientific Revolution: Copernicus, Tycho, Gilbert, Kepler, Galileo, Descartes, Newton.
31100	Health & Sport
	Credit Hours:3
	This course deals with the concept of physical education and how it relates to our general concept of education, as well as its objectives and historical development. Also examined are the different fields and types of contemporary sports education. While studying human anatomy in detail, the course explains the effect of sports activity on different parts of the body, as well as discussing the various elements that contribute to physical fitness. The student also learns about a number of tests designed to measure different aspects of physical fitness. The course deals with nutrition in terms of basic food groups and the roles they play in the human body, in addition to looking at the most common sports injuries and their symptoms. The course also examines a number of today’s diseases such as obesity, anorexia, diabetes and heart disease, concentrating on their causes and how to prevent them. The course discusses some contemporary issues regarding demand for sports activities
31130	Foreign Language
	Credit Hours:3
	PSUT offers some foreign languages such as Mandarin (Chinese) course, Spanish, French and other languages to catch up with language skills trend. In each of the languages offered, Students will learn the pronunciation, Common words and some basic but practical grummer, such as introduction of oneself, greeting, hoppy, shopping, etc. The Course also covers some basic theoretical principles in the art of translation, qualities of translator, problems involved in translation and analysis of translated texts. The course aims at equipping students with the skills of practical translation from Arabic into English and vice versa. The Course will be mainly

	applied offering practice in translating a variety of texts from various fields of knowledge: Economy, Politics, Literary texts, Administrations, fashion, Media, Sports etc.
31152	Arab Islamic Civilization
	Credit Hours:3
	Arab-Islamic civilization is considered an extension of Arabs heritage and their history through the successive historical stages and a linked series of Arab history and civilization’s rings. It is derived from faith, social cultural and intellectual assets of Islamic Arab society. (Arab Islamic civilization) course stems from Arab and Islamic constant stopped by tolerant Islamic faith, Arab heritage and Arab history and their civilization.
31211	Arabic literature
	Credit Hours:3
	The aim of this course is to developing students’ taste of Arabic literature through reading of literature essays, analysis, introducing some literature aspects from different eras, introducing some preliminary concepts such as: literature, text, taste, criticism, realizing the basic steps in processing the literary text, recognizing the literary texts of different genres, such as: poetry, Thoughts, story, Essay, and authors of her book and studying models of literary texts which belong to different periods of time, and analysis and interpretation
31252	Governance and Development
	Credit Hours:3
	The course covers the basic concepts of governance and development, the nature of the impact associated with the mechanisms of good governance and its indicators on the levels of development in the country. The course highlights the conceptual framework of the concept of good governance and its origins, along with its political, economic, administrative and cultural dimensions; as well as various standards and indicators. The course also covers the concept of development and its theories, types and dimensions, with a focus on indicators of sustainable development. The course deals with the nature of the environment created by different forms of government, and the impact on economic growth rates in the long term, and the role of good governance as a link to transforming economic growth into sustainable development by creating an enabling environment for development. It also addresses the role

	of the system of values and principles associated with good governance, and the complementary roles of its three components (the State, the private sector and civil society), in addition to the pivotal role of the effectiveness of governance in influencing development policies by attracting financial aid, solving the issue of poverty and achieving stability, in a comparative study of the reality of these concepts in developing countries and developed countries.
31257	Media and Digital Literacy
	Credit Hours:3
	This course aims to provide students with the knowledge necessary to understand and analyze media messages in their various forms. This course aims to provide students with the knowledge necessary to understand and analyze media messages in their various forms. In addition, it equips them with digital and media skills that enhance critical thinking in evaluating and creating media content. Moreover, it enables them to use media and information sources in a conscious and responsible manner, particularly digital communication tools and social media networks. The course strengthens students’ ability to identify and confront unprofessional media messages and practices and harmful and inappropriate media content such as misinformation, disinformation, rumors, and hate speech.
31260	Human Rights
	Credit Hours:3
	The course includes the definition of human rights, their importance, characteristics, intellectual and philosophical roots. It focuses on the historical development of human rights, their sources, types, and criteria for differentiating them, including civil and political rights, economic, social and cultural rights. in addition, the course addresses human rights that are guaranteed through charters, conventions, international declarations, national legislation and mechanisms for protecting these rights. The course also sheds light on humanitarian intervention and attitudes towards it, especially in the post-Cold War period. It, further, deals with the impact of globalization mechanisms on human rights, with a focus on discussing applied cases at the international level

31261	Introduction to Politics and Economic Science
	Credit Hours:3
	The course addresses the nature of political economy, the issues of political economy, and the importance of the market. Market effects and political economy, three ideologies of political economy, the dynamics of the international political economy, the political economy of structural changes, long-term variations of economic growth and the effect of political hegemonic, the politics of international trade, the political economy of international finance.
31262	Introduction to Educational Science
	Credit Hours:3
	This course discusses education principles and philosophy, education and individuals, education and learning, education and society, education and development, educational courses and methods, educational institutions and educational assessments and education in the Arab and Islamic worlds
31264	Introduction to Psychology
	Credit Hours:3
	The course deals with the concept of psychology, its history, schools, main fields, and research methods. It also deals with the concept of growth, its principles, factors affecting it, and its various stages. The course shows the nature of motivation, the development of its concept, and the classification of motivations. The course focuses on the nature and theories of learning. The course also deals with the concept of intelligence, factors affecting it, and methods of measuring it. It also focuses on personality, its theories, and its measurements. The course also deals with some aspects of stress, defense mechanisms, treatment methods and methods of psychological counseling.
31271	Environmental Science
	Credit Hours:3
	This course focuses on the basic concepts in ecology; organization, structure and function of ecosystem and ecosystem properties; cycling of matter and flow of energy in ecosystems and their equilibrium; factors involved in the regulation, growth, and general dynamics of populations; data needed to describe populations, population growth, population models, and

	regulatory mechanisms; spatial and temporal variation and properties of populations; community structure and interactions; succession patterns in aquatic and terrestrial communities.
31272	Development and Environment
	Credit Hours:3
	This course has five different components; introducing learner to the relationship between the environment (natural resources, ecosystem services) and development, the link between environment and development process along with the multiple dimensions of sustainability, analyzing the sustainable development and the approach to achieve the development, environmental quality, and social equity, presenting theoretical perspectives of development and environment and how to achieve its sustainability. The course also gives a comprehensive introduction to all major issues, ways of saving the earth from ecological collapse, as well as defining the roles of sustainable development on the future of humanity.
31311	Scientific Research Methods
	Credit Hours: 3
	This course outlines the concept of scientific research including its nature, categories, elements, and procedures. This course also presents a comprehensive introduction to data collection tools, the use of statistical methods in analysis and interpretation, SPSS, the generation of findings and recommendations, in addition to the use of libraries, references, and online documentation in preparing academic reports.
31351	Contemporary Issues in the Arab World
	Credit Hours: 3
	This course focuses on social and national fragmentation in the Arab east: Features and roots, the Arab-Israeli conflict, democracy and civil society in the Arab world, pan- Arabism and Islam, the self and the other, secularism, the Arabs and globalization and human security in the Arab world.
31352	Jerusalem: History and facts
	Credit Hours: 3

	The aim of the course is to address the following topics: the geographic borders of Al-Quds through history, a glance at the historical discoveries in Al-Quds, al-Quds and the British occupation, the establishment of Israel, the Israeli plans to jadeite Al-Quds, importance of Al-Quds from religion point of view, the infringements of Al-Aqsa mosque since 1967 by Israel.
31161	Introductions to Library Science
	Credit Hours: 3
	This course discusses how to get to information sources, the types of cataloging, the types of catalogs, types of classification, information and knowledge, information society, information services. Information technology, information storage, information retrieval and dissemination, information and Internet.
31361	Introduction to Philosophy
	Credit Hours: 3
	The course tackles the definition of philosophy, the relation between philosophy and science, the science-based and religion-based thoughts, a historical review of philosophy and science, a discussion of the most important fields in philosophy.
31362	Philosophy and Critical Thinking
	Credit Hours: 3
	This course aims to build the theoretical mind and philosophical understanding, and to provide the student with thinking skills, including critical thinking. It presents the student with the foundations of philosophical thinking and methods of investigation and logical reasoning. In addition, it introduces to the rules of organized thinking and its procedural, and what it contains of the foundations of the theory of knowledge and access to the formation of mental bases. Furthermore, it equips students with the learning the skills of critiquing scientific texts and evaluating different situations in life to reach correct conclusions and solutions based on the facts and existing data.
20252	The Arabic-Islamic Scientific Heritage
	Credit Hours: 3
	Arabs and Muslims as Builders of a Civilization; Ancient Civilizations: Mesopotamia, Egypt, the Greek, the Hindu and Chinese; Transmission of Foreign Literature, Learning, Schools and

	Learning Resources, Experimenting and Observations; Mathematics and Geometry, Astronomy, Astronomical Instrumentation, Timekeeping and Calendars, Mechanics, Chemistry, Medicine and Pharmacy, Hospitals, Industry, Geography, Aviation, Posting and Communications, Irrigation and Care of Rivers.
11103	Structured Programming
	Credit Hours:3
	This course aims to introduce the fundamentals of structured programming using a high-level programming language. Topics include concepts of structured programming, program design, development. Syntax and semantics of the presently adopted language so that students will develop the ability to program in the language. Basic elements of the language: variables, constants, and data types. Basic input/output functions. Conditional and iterative control structures. Functions (or methods) and parameter passing. Recursive functions (or methods). References and dynamic variables. Basic data structures: one and two-dimensional arrays, string manipulation and structure. At the end of this course, students are expected to be able to analyze a computing problem, design, and implement a solution using a high-level programming language.
11151	Structured Programming Lab
	Credit Hours:1
	This course aims to build practical skills for structured programming using a high-level programming language. At the end of this course, students are expected to be able to analyze a computing problem, design, and implement a solution using a high-level programming language.
20132	Calculus (1)
	Credit Hours: 3
	Functions and Their Graphs, Combining Functions, Shifting and Scaling, Trigonometric Functions, Exponential Functions, Inverse Functions and Logarithms, Inverse Trigonometric Functions, Tangents to Curves, Limits of a Function and Limit Laws, Continuity, The Intermediate Value Theorem, Limits Involving Infinity, Asymptotes, Tangents and Derivatives at a Point, The Derivative as a Function, Differentiation Rules, Derivatives of Trigonometric



	Functions, The Chain Rule, Implicit Differentiation, Derivatives of Inverse Functions and Logarithms, Derivatives of Inverse Trigonometric Functions, Extreme Values of Functions, Rolle's Theorem, The Mean Value Theorem, Monotonic Functions and The First Derivative, Concavity and Inflection Points, Curve Sketching, Indeterminate Forms and L'Hopital's Rule, Antiderivatives, Definite Integrals, The Fundamental Theorem of Calculus, Indefinite Integrals and the Substitution Method, Applications of Definite Integrals: Area Between Curves, Volumes of solids: Slicing Method, Disc Method, Washer Method, and Cylindrical Shell Method.
20133	Calculus (2)
	Credit Hours: 3
	Hyperbolic Functions, Integration of Transcendental Functions, Techniques of Integration: Integration by Substitution (Review), Integration by Parts, Integration Including Powers of Trigonometric Functions, Integration by Trigonometric Substitution, Partial Fractions, Other Techniques, Improper Integrals, Sequences, Limit of Sequence; Series: Convergent and Divergent Series; Series Tests for Convergence: Partial Sums, Telescoping Series, Geometric Series, Base Divergence Test, Integral Test, P-series Test, Ratio Test, Root Test, Absolute Convergence Test, Alternating Series Test, Conditional Convergence; Power Series and Taylor series, Interval and Radius of Convergence, Parametric Equations of Curves in Plane, Polar Coordinates, Graphs in Polar Coordinates.
20140	Basic Concepts in Chemistry
	Credit Hours: 1
	Matter and Measurements; Atoms, Molecules, and Ions; The Periodic Table; Ions and Ionic Compounds; Stoichiometry: Calculations with Chemical Formula and Equations; Avogadro's Number and the Mole; Basic Concepts of Chemical Bonding; Gases: Pressure, The Gas Laws, and the Ideal-Gas Equation.
20141	Physics (1)
	Credit Hours: 3

	Physics and Measurement, Motion in One Dimension, Vectors, Motion in Two and Three Dimensions, Newton's Laws of Motion, Circular Motion and Other Applications of Newton's Laws, Work and Energy, Conservation of Energy, Conservation of Linear Momentum and Collisions, Rotational Motion.
20142	Physics (2)
	Credit Hours: 3
	Electric Fields, Gauss's Law, Electric Potential, Capacitance and Dielectrics, Current and Resistance, Direct-Current Circuits, Magnetic Fields, Sources of Magnetic Fields, Faraday's Law, Inductance.
20150	Physics Lab
	Credit Hours: 1
	Basic Measurements and Introduction to Errors and Graphs, Static Equilibrium, The Laws of Motion, Ohm's Law, Resistance and Resistivity, Power Transfer, Wheatstone Bridge, Kirchhoff's Rules, RC-circuits, AC Circuits: RC- and RL-Circuits.
20148	Physics (1) Lab
	Credit Hours: 1
	Introduction to Errors and Graphs, Basic Measurements, Static Equilibrium, The Laws of Motion, Simple Harmonic Motion, Moment of Inertia, Viscosity.
20149	Physics (2) Lab
	Credit Hours: 1
	Ohm's Law, Resistance and Resistivity, Power Transfer, Wheatstone Bridge, Kirchhoff's Rules, RC-circuits; AC Circuits: AC-Waveforms, RC- and RL-Circuits, RLC Series Resonance Circuit.
20200	Technical Writing & Communication Skills
	Credit Hours: 3
	Engineering and Writing: Controlling the Writing System. Letters, Email, and Other Media for Engineers. Writing Style for Business Correspondence, Communication Strategies for Tricky Situations, Business Letters, Email, New Internet Media. Writing Common Engineering Documents: Research, Laboratory, and Field Reports, Specifications, Proposals, Progress

	Reports, Instructions, Recommendation Reports. Writing Research Paper and Design Reports. Constructing Engineering Tables and Graphics: Tables, Charts and Graphs, Illustrations, Graphics and Tables (Guidelines). Engineering Your Speaking: Preparing The Presentation, Delivering the Presentation. Writing to Get an Engineering Job: Engineering Resume, Application Letter, Follow-Up Letter. Engineering Your Online Reputation: Introduction to Social Media Management.
20231	Calculus (3)
	Credit Hours: 3
	Three Dimensional Coordinate System, Vectors, Dot and Cross Products, Lines and Planes in Space, Cylindrical and Quadric Surfaces, Curves in Space and Their Tangents, Integral of Vector Functions, Arc Length in Space, Curvature and Normal vectors of A Curve, Tangential and Normal Components of Acceleration, Velocity and Acceleration in Polar Coordinates, Functions of Several Variables, Limits and Continuity in Higher Dimensions, Partial and Directional Derivatives, Chain Rule, Gradient Vector, Tangent planes and Normal lines of Surfaces in Space, Differentials, Extreme values and Saddle Points, Lagrange Multipliers, Double Integrals in Cartesian and Polar Coordinates, Triple integrals in Cartesian, Cylindrical and Spherical Coordinates.
21218	Engineering Drawing Lab
	Credit Hours: 1
	Introduction to engineering drawing and AutoCAD software. Setting up drawing parameters. Coordinates entry. Object snap. Basic editing techniques. Blocks. Multi-lines. Polylines. Spline. Layers. Dimensions. Orthographic projection. Auxiliary views. Sections. Three-dimensional pictorials. Editing solids and 3-D operations. Boolean Operations.
21219	Engineering Workshop
	Credit Hours: 1
	Industrial and personal safety at site, basic electrical components and instruments. Electrical wiring and printed circuit boards. Covers the design thinking methodology to identify and address engineering problems. Includes solid modeling, rapid prototyping, understanding end users, their unarticulated needs, and creating alternative solutions. Focus on creativity, identify

	potential solutions, and innovation of new products and work processes.
24411	Engineering Ethics
	Credit Hours: 1
	Safety and responsibility. Professional responsibility to customers and to employers. Blowing the whistle. Codes of ethics and honor. Professional choices. Legal obligations. Standard ethics theories. Case studies. Responsible AI development. Social Impact of AI technologies. National Code of Ethics for Artificial Intelligence: Principles and Guidelines.
32431 23411 27411	Engineering Economics
	Credit Hours: 3
	Cost concepts, Decision making process, Concepts of time value of money, Simple and compound interest, Interest formulas, rate of return, cash flow, project evaluation methods, break-even analysis, evaluating a single project, comparison and selection among alternatives and Depreciation calculations.
21318	Computer-Aided Engineering Design Workshop
	Credit Hours: 1
	This laboratory course provides hands-on experience in the design, fabrication, assembly, and testing of printed circuit boards (PCBs). Students will learn to use modern EDA tools to design schematics and layouts, generate manufacturing files (Gerber), and fabricate PCBs using CNC milling, photolithography, and toner transfer techniques. The course also covers through-hole (THT) and surface-mount (SMD) soldering, rework techniques, and circuit debugging using standard laboratory instruments. By the end of the course, students will be able to develop complete PCB-based systems from concept to working prototype, following Design for Manufacturing (DFM) and safety practices.
27401	Industry Apprenticeship Practicum
	Credit Hours: 3
	The industry apprenticeship practicum course aims to prepare students to acquire the essential skills and knowledge required to succeed in engineering workplace environments and field training. The course covers topics related to effective communication, teamwork, professional ethics, understanding labor market requirements, and career pathway planning through

	resume preparation, readiness for job interviews, and dealing with workplace expectations. It also introduces students to the impact of modern digital technologies on engineering practice. It further focuses on strengthening practical and discipline-specific skills related to the engineering workplace through applied activities and real-life case studies, in collaboration with industry experts, in order to provide a learning experience aligned with current market needs. The course aims to build students' professional readiness and help them understand their roles and responsibilities in the workplace, thereby enhancing their ability to perform efficiently and confidently in diverse professional environments.
27412	Engineering Economics and Digital Applications
	Credit Hours: 3
	This course offers a comprehensive study of the principles and fundamental concepts of engineering economics, with a focus on the applications of modern digital technologies in the engineering field. It covers cost concepts, engineering decision-making processes, the time value of money, methods for evaluating engineering projects, and depreciation calculations. The course also emphasizes how digital technologies, such as automation, cloud computing, and the Internet of Things (IoT), can be used to enhance the economic analysis of engineering projects, reduce costs, increase efficiency, and improve investment decision-making. Furthermore, it examines the impact of digital transformation on economic feasibility assessment, risk management, and improved financial performance of engineering projects, while maintaining a balance between the economic and practical aspects of digital technologies.
20232	Engineering Mathematics (1)
	Credit Hours: 3
	Basic Concepts and Ideas of ODEs, First-order Differential Equations, Separable Equations, Exact Equations, Linear and Bernoulli Equations, Second-order and higher order ODEs, Homogeneous Equations with Constant Coefficients, Complex Roots, Euler-Cauchy Equation, Wronskian, Non-homogeneous Equations, Undetermined Coefficients, Variation of Parameters, Power Series Method, Theory of Power Series, Frobenius Method, Laplace Transforms and Tables, Applying Laplace Transforms to Solve ODEs, Convolution, Vectors and

	Matrices, Homogeneous Systems of ODEs, Nonhomogeneous Systems of ODEs, Solving Systems Using Eigenvalues and Laplace Transform.
20234	Linear Algebra
	Credit Hours: 3
	System of Linear Equations: Row-echelon Form, Gaussian Elimination, Gauss-Jordan Method; Matrix: Operations, Properties of Matrix Arithmetic, Matrix Transpose, Special Matrices; Determinants: Properties of Determinants, The Method of Cofactors, Adjoint Matrix and Inverse of a Matrix, Cramer's Rule; Euclidean n-space: Vectors, Dot Product, Cross Product, Euclidean n-space, Linear Transformations; Vector Spaces: Vector Spaces, Subspaces, Span, Basis and Dimensions, Fundamental Subspaces, Inner Product Spaces, Orthogonal and Orthonormal Basis, Least Squares, QR- decomposition, Orthogonal Matrices; Eigenvalues and Eigenvectors: Eigenvalues and Eigenvectors, Diagonalization. Linear Transformations: General Linear Transformations, Kernel and Range.
20331	Engineering Mathematics (2)
	Credit Hours: 3
	Vector Fields, Divergence of a Vector Field, Curl of a Vector Field, Line integrals, Path Independence of Line Integral, Green's Theorem in The Plane, Surface Integrals, Divergence Theorem for Gauss, Stoke's Theorem, Fourier Series, Functions of Any Period, Even and Odd Extensions, Fourier Integral, Fourier Transforms; PDEs: Basic Concepts; Modeling: Vibrating String, Wave Equation, Separation of Variables, One-dimensional Heat Equation; Heat Equation: Solution by Fourier Transforms, Laplacian in Polar Coordinates, Laplace's Equation in Cylindrical and Spherical Coordinates, Solution by Laplace Transform.
20333	Numerical Analysis
	Credit Hours: 3
	Error Analysis, Iterative Methods for Solving Linear and Nonlinear Equations of One Variable, System of Linear Algebraic Equations, Direct Methods for Solving Linear Systems, Iterative Methods for Solving Linear and Nonlinear Systems of Equations, Interpolation and Approximation, Introduction to Numerical Differentiation and Integration, Numerical Methods for Solving Initial Value Problem.

20335	Applied Probability and Statistics
	Credit Hours: 3
	Introduction to Descriptive Statistics: Measures of Central Tendency, Measures of Dispersion, Measures of Position, and Graphical and Tabular Displays; Introduction to Inferential Statistics: Point Estimate, Confidence Interval and Hypothesis Testing; Basic Probability and Set Theory, Conditional Probability and Independence, Random Variables and Moments, Special Probability Distributions (Discrete and Continuous Distributions), Multiple Random Variables, Covariance and Correlation Coefficient, Functions of Random Variables, Transforms and Moment Generating Function, Practical Applications.
20334	Applied Probability
	Credit Hours: 3
	Probability principles and set theory. Random variables. Operations on random variables. Various distribution functions. Introduction to random processes. Weak stationary. Correlation functions, linear processing, and estimation. Poisson processes and Markov chains. Queuing analysis.
21221	Electric Circuits (1)
	Credit Hours: 3
	Types of circuits and circuit elements. Revision of Ohm's and Kirchhoff's Laws. Circuit analysis techniques: voltage and current division, nodal and mesh analysis, source transformation, superposition, Thevenin's and Norton's theorems. Inductance and capacitance. Source-free RL and RC circuits. Applications of the step forcing function. The RLC circuit: source-free parallel and series RLC and complete response. Sinusoidal forcing function. Phasor concept.
21222	Electric Circuits (2)
	Credit Hours: 3
	The sinusoidal steady state response: application of phasor concept and circuit analysis techniques AC circuits. Average power and RMS values. Types of Electrical Machines. Poly-phase circuits: three phase (Y) and (Δ) connection. Complex frequency. Frequency response and Bode plot. Magnetically coupled circuits. Two-port networks.

21229	Electric Circuits Lab
	Credit Hours: 1
	DC circuit: Kirchhoff's laws and mesh analysis. Thevenin's and Norton's theorems. Superposition theorem. Wheatstone bridge. Transient response: RL, RC, and RLC circuits. AC circuits: impedance concept, frequency response, three-phase circuits. Y- Δ transformation. Maximum power transfer. Two-port networks.
21231	Electronics (1)
	Credit Hours: 3
	Basic semiconductor concepts. Diodes: DC and AC analysis, special type diodes. Theory of Bipolar Junction Transistors (BJT): biasing techniques, BJT amplifier analysis. Field Effect Transistors (FET): biasing techniques, FET amplifier. Simple applications of BJT's and FET's.
21331	Electronics (2)
	Credit Hours: 3
	Operational amplifiers: basic theory, characteristics and applications. MOSFET current mirrors. Differential and multistage amplifiers. Frequency response of single and multistage CMOS amplifiers. Negative feedback analysis: feedback topology, properties and stability analysis. Operational amplifier design and simulation project.
21338	Electronics Lab
	Credit Hours: 1
	Diode characteristics and applications. BJT characteristics and DC biasing. FET characteristics and DC biasing. BJT amplifiers. Operational amplifiers. Multistage amplifiers. Differential amplifiers. Frequency response. Feedback techniques.
22210	Programming Applications Lab
	Credit Hours: 1
	The course provides an introduction to the MATLAB computing environment and gives students a basic understanding of MATLAB programming and popular Simulink toolboxes. It covers basic commands in MatLab, such as arithmetic operations, arrays, loops, logic control, and data types and format. It also covers various applications in engineering including control,

	signal processing, and others using Simulink toolboxes. The course is offered in the form of laboratory sessions (theory and experiments).
23352	Programming Applications in Signals and Systems
	Credit Hours: 1
	Introduction to MATLAB. Using MATLAB in signals and systems. Signal generation and the convolution process. Fourier series. Laplace and Fourier transforms. Transient and steady state response. Filter design. Discrete signals: Z- transform and frequency domain analysis.
23356	Programming Applications in Signals and Systems Lab
	Credit Hours: 1
	Introduction to MATLAB. The MATLAB based experiments cover the following topics: Linear time invariant systems (LTI), frequency domain representation of signals and systems, and design and analysis of Filters. Practical applications will be given along with the lab experiments.
22241	Digital Logic Design
	Credit Hours: 3
	Number systems. Basic gates and logic functions. Boolean algebra, Boolean expressions. Logic minimization techniques. Combinational logic building blocks: decoders, encoders, multiplexers, demultiplexers and magnitude comparators. Digital arithmetic: adders and subtractors. Basics of sequential circuits: latches and flip-flops. Timing diagrams. Counters and shift registers. Basic PLDs, CPLDs and FPGAs. State machines. System design with state machines using HDL. Memory devices and systems: RAM, ROM, FIFO, LIFO and DRAM.
22271	Artificial Intelligence & Data Analytics in Engineering
	Credit Hours: 3
	This course provides a comprehensive introduction to the fundamental principles, methodologies, and tools driving data science and Artificial Intelligence (AI). It introduces a core programming language and its principal libraries for data manipulation and AI applications, while guiding students through the main stages of the data pipeline, including data preprocessing, sampling, exploratory data analysis, feature engineering, and visualization

	techniques. Building on this analytical foundation, the course explores core machine learning concepts and provides students with a solid understanding of supervised and unsupervised learning algorithms.
22348	Digital Logic Lab
	Credit Hours: 1
	This lab introduces students to the fundamentals of designing and building digital circuits using hardware ICs as well as HDL. The lab includes an introduction HDL, and focuses on building combinational circuits such as parallel adder, multiplexers and decoders using HDL and hardware components. While the second part of the lab deals with building sequential circuits in hardware and describing them in HDL using behavioral modeling.
22340	Microprocessors and Embedded Systems
	Credit Hours: 3
	Microprocessor basic system: CPU, memory, I/O and buses. Computer basic operation: the fetch and execute cycle. Bus timing. Microprocessors and microcontrollers. Microcontroller architecture and instruction set. On-chip peripheral devices. Interrupt system. Internal and external interrupts. I/O interfacing: keypad, seven-segment LED display, LCD display, ADC and DAC and I/O port expansion. System development tools.
22346	Logic and Embedded Systems Lab
	Credit Hours: 1
	Combinational logic circuits. Decoders and Multiplexers. ROM and RAM. Registers and Counters. Assembly language programming. Input/Output interfacing. Keyboard and 7-Segment display interfacing.
22442	Embedded Systems
	Credit Hours: 3
	Embedded systems characteristics. Microprocessors versus microcontrollers. Microcontrollers characteristics. General-purpose microcontrollers. Examples of microcontroller architectures. Interrupts. Counters/timers. Input/output ports. Microcontroller programming. Instruction set. Program development and use of assemblers. Memory maps and addressing modes.

	Digital to analogue and analogue to digital conversion in microcontrollers. Data acquisition and distribution. Serial and parallel communications. Real-time systems and its constraints. Interfacing to external devices. Power consumption consideration. Applications.
24301	Modeling & Simulation in Engineering Applications
	Credit Hours: 3
	This course introduces fundamental modeling and simulation methodologies. It equips students with the practical skills and techniques required to represent, analyze, and evaluate the behavior of various systems. Topics include mathematical modeling of dynamic systems using differential equations and state-space representations, and frequency-domain analysis. The course also covers the development of physics-based simulation models, fuzzy system modeling as well as numerical modeling techniques for solving complex problems. Through simulation-based studies and practical applications, students gain experience in predicting system behavior, validating designs, and evaluating solutions under realistic operating conditions using engineering simulation tools.
24311	Thermodynamics
	Credit Hours: 3
	Thermodynamics concepts and definitions. States. Properties. Systems. Control volume. Processes. Cycles and units. Pure substances. Equation of states. Table of properties. Work and heat. The first law. Internal energy and enthalpy. Conservation of mass. SSSF and USUF processes. The second law. Heat engines and refrigerators. Reversible processes. Carnot cycle. Entropy. Clausius inequality. Principle of the increase of entropy. Efficiencies. Vapor, air power and refrigeration cycles. Mixtures of real gases and vapors. Psychrometry. Combustion. Elementary chemical kinetics.
24322	Instrumentation & Measurements
	Credit Hours: 3
	Measurements & error. Systems of units. Standards of measurements. Potentiometers. DC & AC bridges. DC & AC indicating instruments. Galvanometers. Electrodynamometers. Ammeters. Voltmeters. Wattmeters. Watthourmeters. Power factor meters. Basics of Digital

	Instruments. Loading effects. Ohmmeters. Meggers. Frequency counters. Oscilloscopes. Spectrum analyzers
24329	Instrumentation & Measurements Lab
	Credit Hours: 1
	Construction and use of potentiometers in DC & AC bridges. DC & AC indicating instruments. Shunts. Transformers & error measurements. Multimeters. Power measurements. Frequency meters & power supplies. Oscilloscopes.
24361	Electric Machines (1)
	Credit Hours: 3
	Basic elements of Power Systems. Magnetic Circuits: Parameters, relationships, equivalent circuit's representation, hysteresis and eddy current losses. Power Transformers: construction, principles and operation, ideal and practical transformer, determination of equivalent circuit parameters, voltage regulation, efficiency, all-day efficiency, three-phase power transformers, autotransformers, and per-unit system. Electromechanical energy conversion: Field energy, mechanical force in electromagnetic systems, rotating machines, cylindrical machines. DC machines: construction, classifications, DC generators, DC motors, Analysis of DC machines, speed control of DC motors, an introduction to AC machines.
24461	Electric Machines (1)
	Credit Hours: 3
	Transformers: construction, principles and operation, ideal and practical, performance characteristics, three-phase, auto transformers. DC machines: construction, classifications, performance equations of generators and motors, Synchronous machines: construction, generator and motor operations. Three-phase induction motors: construction, operation, performance calculations, starting and speed control.
24401	Engineering Innovation & Tech Entrepreneurship
	Credit Hours: 3
	This course aims to develop students' knowledge, competencies, and practical skills in engineering innovation and technology entrepreneurship. The course covers a range of key topics, including the foundations of innovation and technology entrepreneurship, idea

	generation and development, multidisciplinary teamwork, market and customer analysis, business model design, business planning, intellectual property fundamentals, startup financing, prototype development, and the marketing and professional pitching of technology-based projects to relevant stakeholders.
24462	Electric Machines (2)
	Credit Hours: 3
	Induction Machines: Construction, rotating magnetic field, three modes of operation, equivalent circuit model, no load test, blocked rotor test and equivalent circuit parameters, performance characteristics, power flow, effect of rotor resistance, speed control, starting of induction motor. Synchronous Machines: Construction, synchronous generators, synchronous motors, equivalent circuit model, power and torque characteristics, capability curves, power factor control, salient pole synchronous machines, speed control of synchronous motors, applications. Single Phase Motors: Single-phase induction motors, starting winding design, equivalent circuit of single- phase induction motor, single-phase synchronous motors, speed control. Special Machines: Servomotors, stepper Motors.
24463	Power Systems Analysis
	Credit Hours: 3
	Current and Voltage relations on a power transmission line. Power system modeling. Network calculations using Ybus and Zbus matrices. Symmetrical three phase faults. Symmetrical components and sequence networks. Unsymmetrical faults
24467	Power Electronics
	Credit Hours: 3
	This course provides the students with foundation for the knowledge of the power semiconductor devices, their characteristics and operation. It also gives a deep understanding of power electronic circuits such as rectifiers, converters and inverters. Their analysis and some design aspects are also investigated.
24561	Power Electronics
	Credit Hours: 3

	Principles and methods of Electric power conversion (including waveform components, phase control and pulse width modulation), semiconductor power switches, supplementary components and systems (drivers, overcurrent protection schemes, snubbers and filters), AC-to- DC converters, AC-to- AC converters (including PWM AC voltage converters, cycloconverters and matrix converters), DC-to-DC converters, DC-to-AC converters (Inverters), switching power supplies, power Electronics for clean Energy (PV , Wind, Fuel cell and Electric and Hybrid cars).
24468	Electric Machinery Lab
	Credit Hours: 1
	Single and three phase transforms, DC machines (motors and generators), Synchronous machines (motors and generators), Three phase induction motors, Synchronous reluctance motor, Single phase capacitor start capacitor run induction motor, computer aided tools for operating and controlling of rotating machinery.
24469	Power Systems lab
	Credit Hours: 1
	Transmission line. Simulation of power systems. Earthing of power systems. Symmetrical components and sequence filters. Balanced and unbalanced faults.
24470	Power Systems Planning, Operation and Control
	Credit Hours: 3
	Load forecasting. Load flow solutions. (Gauss-Siedel & Newton-Raphson) Power system stability. Active and reactive power control in power system. (Control of power and frequency, control of reactive power and voltage)
24563	Power Systems Planning, Operation and Control
	Credit Hours: 3
	Symmetrical components and sequence networks. Unsymmetrical faults: unsymmetrical faults on an unloaded generator, unsymmetrical faults on a power system, Zbus matrices (positive, negative and zero sequence) in symmetrical fault calculations. Load flow solutions. Control of power flow. Power system stability.
24471	Automatic Control

	Credit Hours: 3
	Transfer Functions: block diagrams and signal flow graphs. Mathematical modeling of physical systems. State space representations. Control systems characteristics. Time response of systems and closed loop performance of second order systems. Stability and Routh-Hurwitz stability criterion. Root locus analysis. Nyquist stability criterion. Bode plots. Frequency domain analysis. Design of control systems.
24478	Industrial Automation and Measurements Lab
	Credit Hours: 1
	This course provides students with practical, hands-on experience with basic concepts in measurement systems and industrial automation. Experiments include temperature sensors, LVDT, strain gauges, and the necessary signal-conditioning circuits. The lab introduces PLC programming using ladder diagrams and robotic applications in modern industrial systems.
24479	Automatic Control Lab
	Credit Hours: 1
	A set of experiments that cover the following: analog simulation, first and second order systems, transient and steady state for step, ramp, and parabolic inputs. Time and frequency response of second order systems. DC motor control. Application of PID controller, phase-lead, and phase-lag controllers. Level control. Applications using simulation software.
24490	Practical Training
	Credit Hours: 3
	Grade: Pass/Fail
	Students undertake suitable and supervised internships for a period of 8 consecutive weeks in Jordan, or 6 consecutive weeks outside.
24538	Energy Systems Lab
	Credit Hours: 1
	This laboratory course provides practical experience in electrical and renewable energy systems through hands-on experiments and simulation activities. Topics include photovoltaic and wind energy systems, energy storage, power measurements, and the analysis of energy

	system performance under various operating conditions. The course emphasizes experimental techniques, data analysis, safe laboratory practices, and technical report preparation.
24562	Power Systems Protection
	Credit Hours: 3
	Protection System Paradigms, Types of Relays (Electromechanical, solid state, and digital (numerical) relays), Instruments Transformers (CTs & VTs), Over-current Protection, Directional Over-current Protection, Distance Protection, Pilot Protection, Transformer Protection, Busbar Protection, Generator Protection, Motor Protection, Numerical Relaying Fundamentals.
24568	Power Electronics Lab
	Credit Hours: 1
	Simulation: MATLAB Simulink and PSIM; Rectification: Controlled and uncontrolled single-phase half and full wave rectification; Three phase rectification; DC-DC conversion: buck and boost converters; Inversion: single phase and three phase inverters, Electric Drives.
24569	Power Systems Protection Lab
	Credit Hours: 1
	Instrument transformers, Overvoltage and Undervoltage relay, Overcurrent relay, Differential relay, Transformer protection, Transmission line Protection, Electrical Insulation, Air and Oil Insulation, Grounding
24574	Energy Efficiency & Auditing
	Credit Hours: 3
	"Energy efficiency definition. Concepts and benefits. Common barriers for enhancement of energy efficiency. Energy management and conservation . Energy efficiency in generation Side: Energy efficiency in power plants (gas turbines, cogeneration cycle, combined cycle power plants, supercritical power plants, fluidized bed combustion). Methods of Control for Improving Energy Efficiency, boiler efficiency calculation. Energy efficiency in demand side: Power factor improvements, Energy efficiency of electric machines, efficiency curves, demand side management, energy auditing of buildings, calculations of normalized performance indicators (NPI) for buildings, energy efficient building."

24575	Power Systems Economics & Reliability
	Credit Hours: 3
	Economic structure of power systems. Mathematical problem formulation. Mathematical optimization. Economic dispatch of thermal units. Simulation tools for economic analysis of power system operation and planning. Unit commitment. Interchange of power. Fundamentals of electricity markets and participation in electricity markets. Power system security and ancillary services. Factors that affect investments in generation and transmission. Economics of Renewable Energy Systems. Main concepts in power system reliability. Distribution System Reliability Indices.
24465	Electric Power Systems Economics
	Credit Hours: 3
	Economic structure of power systems. Problem formulation, optimization methods and programming for economic analysis of power system operation and planning. Economic dispatch, load forecasting, unit commitment, interchange, planning and reliability analysis. Factors that affect investments in generation and transmission.
24576	Renewable Energy Systems (1)
	Credit Hours: 3
	Electric Power Fundamentals, Introduction to Renewable Energy Types and Resources, Solar Energy, Photovoltaic material and Characteristics, Photovoltaic Systems, Wind Power Systems, Introduction to Smart Grids, Energy Storage.
24571	Renewable Energy Systems
	Credit Hours: 3
	Electric Power Fundamentals, Introduction to Renewable Energy Types and Resources, Solar Energy, Photovoltaic material and Characteristics, Photovoltaic Systems, Wind Power Systems, Introduction to Smart Grids
24591	Senior Design Project (1)
	Credit Hours: 1
	Grade: Pass/Fail

	Projects are aimed at developing independent engineering problem solving skills. A project should be performed by two or more students under the supervision of a faculty member.
24592	Senior Design Project (2)
	Credit Hours: 2
	Continuation of Senior Design Project (1). Students are required to fulfill the project objectives, perform a formal presentation and submit a final report.
23321 27321	Electromagnetics (1)
	Credit Hours: 3
	Review of coordinate systems and vector calculus. Electrostatic fields. Electric fields in material space. Magnetostatic fields. Magnetic fields in material space. Maxwell's equations.
24321	Applied Electromagnetics
	Credit Hours: 3
	Gauss' law. Divergence Theorem. Ampere's law. Biot-Savart law. Maxwell's equations and boundary conditions. Electromagnetic waves. Wave equations. Solutions in Cartesian coordinates. Solutions for partially conducting, good conducting and perfect dielectric mediums. Standing waves. Power and Poynting vector. Transmission lines, parameters, equations, input impedance, Standing Wave Ratio (SWR), power and Smith chart.
27353 23351	Signals and Systems
	Credit Hours: 3
	Classification of signals and systems. System modeling and time domain analysis. The Fourier series, the Fourier transform, and Laplace transform and applications. Frequency response and filter concepts. Signal transmission. Spectral analysis. Discrete-time signals and systems: classification of signals and systems. The Z-Transform and applications.
27356 23357	Communications (1)
	Credit Hours: 3
	Spectral densities. Correlation function. Power-bandwidth product. Distortion and distortionless channels. Analog modulation: DSB-SC, DSB-AM, SSB, Vestigial AM, modulator, demodulator: coherent, non-coherent. Angle modulation: FM, PM, modulator, demodulator.

	Base-band modulation: sampling theorem, PAM, PWM, PPM. Noise in analog communications: noise types, signal to noise ratio, the additive white Gaussian noise, signal interference.
27355	Communication Principles
	Credit Hours: 3
	Transmission through a Linear System. Amplitude, Frequency and Phase Modulation and Demodulation. Sampling Theorem, A/D conversion, Line Coding and M-ary. Baseband Transmission: PAM, PPM, PWM, PCM. Multiplexing Techniques: TDM, FDM and CDM. Digital Modulation and Demodulation Techniques: QAM, ASK, PSK and FSK.
11206	Object Oriented Programming
	Credit Hours: 3
	The course aims to introduce object-oriented programming concepts and paradigms. Topics include: Data abstraction, encapsulation and information hiding, classes attribute and methods, inheritance, polymorphism, and operator overloading. At the end of the course, students expected to be able to solve computing problems using object-oriented principles including information hiding, inheritance, and polymorphism.
20242	Materials Physics and Chemistry for Engineers
	Credit Hours: 3
	The Crystal Structure of Solids and Crystal Defects, Bonding in Solids, Polymers, Electronic Theory of Solids, Superconductivity, Magnetism in Matter, Optical Properties of Materials and Optical Devices, Basic Concepts in Nano Structures and Thin Films.
21471	Robotic Systems
	Credit Hours: 3
	This course introduces the fundamental principles of modern robotics, focusing on the mathematical, mechanical, and computational foundations required to analyze and control robotic systems. Students explore manipulator anatomy, spatial transformations, Denavit–Hartenberg and product of exponential (POE) modeling, and forward and inverse kinematics. The course progresses to differential kinematics, Jacobians, robot dynamics, classical and advanced control methods, mobile robot models, path planning, and trajectory generation.

	Throughout the semester, students connect theory to real-world applications and basic robot programming, forming a solid foundation for more advanced robotics courses.
21581	Special Topics in Electronics Engineering
	Credit Hours: 3
	The objective of this course is to introduce advanced and new topics in one of the areas of electronics engineering. The topics can be changed from one year to another depending on the instructor's area of specialty.
22582	Special Topics in Computer Engineering (1)
	Credit Hours: 3
	The objective of this course is to introduce advanced and new topics in one of the areas of computer engineering. The topics can be changed from one year to another depending on the instructor's area of specialty.
22581	Special Topics in Computer Engineering
	Credit Hours: 3
	The objective of this course is to introduce advanced and new topics in one of the areas of computer engineering. The topics can be changed from one year to another depending on the instructor's area of specialty.
24472	Energy Conversion
	Credit Hours: 3
	Energy classifications, sources and utilization. Energy growth and economics. Fossil-fuel systems and combustion in steam power plants. Steam generators. Boiler rating and performance. Environmental aspects of thermal power plants. Overview of renewable energy sources with emphasis on solar and wind energy systems. Introduction to direct energy conversion systems; Thermoelectric, photovoltaic and thermionic converters. Concentrated Solar Power (CSP).
24564	Transmission & Distribution Systems
	Credit Hours: 3

	Components of Transmission and Distribution systems (TD). Planning of TD. Overhead lines. Cables. Bulk power transmission. TD Grid. Losses. HVDC. FACTS. Substation. Distribution networks: radial, interconnected.
24565	High Voltage Engineering
	Credit Hours: 3
	Insulating materials and their application. Breakdown of insulating materials: gases, liquid and solid dielectrics. Generation and measurement of high voltages and currents. Insulation coordination in electrical power systems. High voltage testing of electrical equipment.
24566	Reliability of Power Systems
	Credit Hours: 3
	Basic concepts of reliability engineering. Reliability of generating capacity and transmission systems. Composite systems reliability evaluation. Reliability of distribution systems. Reliability cost-worth analysis. Ancillary services in electricity markets.
24567	Power Systems Design
	Credit Hours: 3
	Design of: three-phase synchronous generators, power station, transmission lines, substation. Industrial and commercial electrical systems.
24572	Electric Drives Systems
	Credit Hours: 3
	Introduction to electrical drive systems. Stepper motor control. DC-motor control methods. Induction motors control methods. Synchronous motors control methods. Design of microprocessors-based drive systems.
24581	Special Topics in Power Engineering
	Credit Hours: 3
	The objective of this course is to introduce advanced and new topics in one of the areas of Power engineering. The topics can be changed from one year to another depending on the instructor's area of specialty.
24582	Special Topics in Energy Engineering

	Credit Hours: 3
	The objective of this course is to introduce advanced and new topics in one of the areas of Electrical Energy engineering. The topics can be changed from one year to another depending on the instructor's area of specialty.
24588	Renewable Energy System (2)
	Credit Hours: 3 Fuel Cells: Types and Applications, Biomass: The composition of biomass, Biomass as fuel, Energy Storage Systems: Electrochemical Storage (Batteries) and Capacitive Storage, Grid Integration of Renewable Energy Sources, Introduction to Phasor Measurement Units and Smart Grids
25593	Special Topics in Network Security Engineering (1)
	Credit Hours: 3 The objective of this course is to introduce advanced and new topics in one of the areas of Network Security Engineering. The topics can be changed from one year to another depending on the instructor's area of specialty.
23582	Special Topics in Communications Engineering (1)
	Credit Hours: 3 The objective of this course is to introduce advanced and new topics in one of the areas of Communications engineering. The topics can be changed from one year to another depending on the instructor's area of specialty.
27582	Special Topics in Communications Engineering
	Credit Hours: 3 The objective of this course is to introduce advanced and new topics in one of the areas of Communications engineering. The topics can be changed from one year to another depending on the instructor's area of specialty.
23581	Special Topics in Communications Engineering
	Credit Hours: 3



The objective of this course is to introduce advanced and new topics in one of the areas of Communications engineering. The topics can be changed from one year to another depending on the instructor's area of specialty.