رؤية VISION 2030
المملكة العربية السعودية
KINGDOM OF SAUDI ARABIA

جامعة الحدود الشمالية
NORTHERN BORDER UNIVERSITY
كلية الهندسة

Industrial Engineering Program

Study Plan New Curriculum

1444/1445 - 2023/2024

PROGRAM CURRICULUM

CURRICULAR REQUIREMENTS FOR STUDENTS ADMITTED IN 2024/2025 AND ONWARD

GRADUATION REQUIREMENTS

Below is the table outlining the graduation requirements for the Bachelor of Science in Industrial Engineering:

Requirements	Type	Credit Hours	Number of Courses
University Requirements	Required	10	5
	Elective	4	2
College Requirements	Required	37	11
	Elective	-	-
Program Requirements	Required	87	28
	Elective	9	3
Capstone Courses	Required	4	2
Field Training	Required	0	1
Free Courses	Elective	4	2
	Total	**155**	**54**

CURRICULAR COMPONENTS

1. UNIVERSITY REQUIREMENTS

a. Obligatory University Courses

To meet the university requirements, students must successfully complete a total of seven courses. Five of these courses are compulsory; three have predefined content, and the other two are selected from a range of eight courses centered around Islamic culture. To fulfill the remaining two course requirements, students have the option to choose from a set of five elective courses.

- **Predefined Courses (3 courses)**

No.	Course Number	Course Title	Prerequisites	C.H.
1	IT100	Digital Culture	-	2
2	GNCR100	University Skills	-	2
3	HR100	Entrepreneurship	-	2
			Total Credit Hours	6

- **Islamic Culture Courses (2 courses with 4 Credit Hours among a set of 8 courses)**

No.	Course Number	Course Title	Prerequisites	C.H.
1	ISLS100	The Origins of Islamic Culture	-	2
2	ISLS102	Studies in the Prophet's Biography	-	2
3	ISLS109	Medical Jurisprudence	-	2
4	ISLS104	The Family in Islam	-	2
5	ISLS107	Economic System	-	2
6	ISLS105	Professional Ethics	-	2
7	ISLS106	Women and their Developmental Role	-	2
8	ISLS108	Contemporary Issues	-	2
			Total Credit Hours	4

b. Elective University Courses (2 courses with 4 Credit Hours among a set of 5 courses)

No.	Course Number	Course Title	Prerequisites	C.H.
1	GNCR103	Kingdom & Its Pioneering Role	-	2
2	ARAB-103	Academic Writing Skills	-	2
3	GNCR104	Fitness and Sport Science	-	2
4	BIO-104	Sustainable Development	-	2
5	CUET-101	Lifelong learning skills	-	2
			Total Credit Hours	4

2. COLLEGE REQUIREMENTS

a. Obligatory College Courses

No.	Course Number	Course Title	Prerequisites	C.H.
1	LNGT101	English 1	4	-
2	LNGT102	English 2	4	LNGT101
3	LNGT103	English for Scientific and Engineering Purposes	2	-
4	MATH101	Calculus 1	4	-
5	MATH202	Calculus 2	4	MATH101
6	MATH222	Linear Algebra	3	MATH101
7	MATH241	Differential Equations 1	3	MATH202
8	PHYS101	General Physics 1	4	-
9	CHEM101	General Chemistry 1	4	-
10	CE201	Computer Aided Drawing	2	-
11	EE200	Introduction to Computer Programming	3	-
			Total Credit Hours	**37**

3. PROGRAM REQUIREMENTS

a. Obligatory Program Courses (From IE Department)

No.	Course Number	Course Title	Prerequisites	C.H.
1	IE211	Introduction to Industrial Engineering	None	2
2	IE221	Engineering Economy	MATH101 (Calculus 1)	2
3	IE251	Probability and Statistics for Engineers	MATH202 (Calculus 2)	3
4	IE351	Applied Engineering Statistics	IE251 (Probability and Statistics for Engineers)	3
5	IE222	Engineering Management	None	3
6	IE212	Computer Application in Industrial Engineering	EE200 (Introduction to Computer Programming)	3
7	IE331	Production Planning and Control	IE222 (Engineering Management)	3
8	IE332	Manufacturing Systems	IE331 (Production Planning and Control)	3
9	IE361	Safety Engineering	None	3
10	IE362	Work Systems Analysis and Design	IE351 (Applied Engineering Statistics)	3
11	IE333	Service Operations Analysis	IE222 (Engineering Management)	2
12	IE371	Industrial Information Systems Design	IE212 (Computer Application in Industrial Engineering)	3
13	IE341	Operations Research I	MATH222 (Linear Algebra)	3
14	IE431	Lean Manufacturing and Services	IE332 (Manufacturing Systems) & IE362 (Service Operations Analysis)	3
15	IE441	Operations Research II	IE341 (Operations Research I) & IE251 (Probability and Statistics for Engineers)	3
16	IE451	Design of Experiments	IE351 (Applied Engineering Statistics) & MATH203 (Calculus 3)	3
17	IE461	Human Factors Engineering	IE362 (Work Systems Analysis and Design) & IE361 (Safety Engineering)	3
18	IE421	Engineering Cost Analysis	IE221 (Engineering Economy)	3
19	IE432	Supply Chain Engineering	IE331 (Production Planning and Control)	3
20	IE471	Industrial Automation and Robotics	MATH241 (Differential Equations 1), MATH222 (Linear Algebra), EE207 (Basic Electrical Engineering)	3
21	IE452	Industrial Quality Control	IE351 (Applied Engineering Statistics)	3
22	IE422	Engineering Project Management	IE222 (Engineering Management)	3
23	IE433	Facilities Planning and Design	IE351 (Applied Engineering Statistics)	3
24	IE551	Maintenance and Reliability Engineering	IE351 (Applied Engineering Statistics) & IE222 (Engineering Management)	3
25	IE541	Industrial Systems Simulation	IE441 (Operations Research II)	3
26	IE571	Product Design and Development	IE451 (Design of Experiments)	3
27	IE591	Capstone Project I	120 Credit Hours & Department Approval	2
28	IE522	Engineering Professionalism and Ethics	None	2
29	IE572	Sustainability Engineering	IE571 (Product Design and Development)	3
30	IE592	Capstone Project II	IE591 (Capstone Project I)	2
			Total Credit Hours	84

b. Obligatory Program Courses (Outside IE Department)

No.	Course Number	Course Title	Prerequisites	C.H.
1	EE207	Basic Electrical Engineering	PHYS101 (General Physics 1)	3
2	MATH203	Calculus III	MATH202 (Calculus 2)	4
			Total Credit Hours	**3**

c. Elective Program Courses (3 courses with 9 Credit Hours among a set of 15 courses)

No.	Course Number	Course Title	Prerequisites	C.H.
1	IE512	Feasibility Study	IE421 (Engineering Cost Analysis)	3
2	IE552	Computational Methods in Industrial Engineering	IE441 (Operations Research II)	3
3	IE542	Decision Analysis	IE441 (Operations Research II)	3
4	IE543	Network Optimization	IE441 (Operations Research II)	3
5	IE544	Queuing Systems	IE441 (Operations Research II)	3
6	IE573	Additive Manufacturing	IE332 (Manufacturing Systems)	3
7	IE574	Computer Aided Manufacturing and Design	IE332 (Manufacturing Systems)	3
8	IE531	Enterprise Resource Planning	IE331 (Production Planning and Control)	3
9	IE575	Healthcare Systems Engineering	IE333 (Service Operations Analysis)	3
10	IE553	Quality Management Systems	IE452 (Industrial Quality Control)	3
11	IE554	Introduction to Applied Data Analytics	IE351 (Applied Engineering Statistics) & IE371 (Industrial Information Systems Design)	3
12	IE561	Occupational Health and Safety	IE361 (Safety Engineering)	3
13	IE532	Material Handling and Logistics	IE433 (Facilities Planning and Design)	3
14	IE523	Introduction to Finance and Asset Management	IE222 (Engineering Management) & IE221 (Engineering Economy)	3
			Total Credit Hours	9

d. Field Training

The student spending 8 weeks at the training on-site in a manufacturing or service industry, 5 days a week and 6 hours per day with a total number of hours 240 hours.

No.	Course Number	Course Title	Prerequisites	C.H.
1	IE491	Field Training	Department Approval & 110 Credit Hour	0
			Total Credit Hours	**0**

1. Free Courses

No.	Course Number	Course Title	Prerequisites	C.H.
1	XXXXXX	Free Course 1	---	2
2	XXXXXX	Free Course 2	---	2
			Total Credit Hours	**4**

The list of free courses available to students in the Industrial Engineering program at Northern Border University includes the following:

No.	Course Number	Course Title	Prerequisites	C.H.
1	IS101	Digital transformation	-	2
2	ELP102	Leadership and change management	-	2
3	GNCR105	Volunteering and social responsibility	-	2
4	PSY115	Skills to deal with people with disabilities	-	2

TYPICAL STUDY PLAN

Year 1/ Term 1

Course Number	Course Title	Prerequisites	C.H.
MATH101	Calculus 1	None	4
ISLSxxx	Elective Islamic Culture 1	None	2
LNGT101	English 1	None	4
IT100	Digital Culture	None	2
		Total Credit Hours	**12**

Year 1/ Term 2

Course Number	Course Title	Prerequisites	C.H.
LNGT102	English 2	LNGT101	4
GNCR100	University Skills	None	2
MATH202	Calculus 2	MATH101	4
LNGT103	English for Scientific and Engineering Purposes	None	2
		Total Credit Hours	**12**

Year 2/ Term 3

Course Number	Course Title	Prerequisites	C.H.
MATH203	Calculus 3	MATH202	4
EE200	Introduction to Computer Programming	None	3
PHYS101	General Physics 1	None	4
IE211	Introduction to Industrial Engineering	None	2
IE221	Engineering Economy	MATH101	2
XXXXXX	University Elective 1	None	2
		Total Credit Hours	**17**

Year 2/ Term 4

Course Number	Course Title	Prerequisites	C.H.
MATH222	Linear Algebra	MATH101	3
IE251	Probability and Statistics for Engineers	MATH202	3
IE222	Engineering Management	None	3
IE212	Computer Application in Industrial Engineering	EE200	3
CHEM101	General Chemistry 1	None	4
ISLSxxx	Islamic Culture 2	None	2
		Total Credit Hours	**18**

Year 3/ Term 5

Course Number	Course Title	Prerequisites	C.H.
MATH241	Differential Equations 1	MATH202	3
IE351	Applied Engineering Statistics	IE251	3
IE341	Operations Research I	MATH222	3
IE331	Production Planning and Control	IE222	3
CE201	Computer Aided Drawing	None	2
EE207	Basic Electrical Engineering	PHYS101	3
		Total Credit Hours	**17**

Year 3/ Term 6

Course Number	Course Title	Prerequisites	C.H.
IE332	Manufacturing Systems	IE331	3
IE361	Safety Engineering	None	3
IE362	Work Systems Analysis and Design	IE351	3
IE333	Service Operations Analysis	IE222	2
IE371	Industrial Information Systems Design	IE212	3
HR100	Entrepreneurship	None	2
XXXXXX	University Elective 2	None	2
		Total Credit Hours	**18**

Year 4/ Term 7

Course Number	Course Title	Prerequisites	C.H.
IE441	Operations Research II	IE341 & IE251	3
IE451	Design of Experiments	IE351 & MATH203	3
IE431	Lean Manufacturing and Services	IE332 & IE362	3
IE461	Human Factors Engineering	IE362 & IE361	3
IE421	Engineering Cost Analysis	IE221	3
XXXXXX	Free Course 1	None	2
		Total Credit Hours	**17**

Year 4/ Term 8

Course Number	Course Title	Prerequisites	C.H.
IE432	Supply Chain Engineering	IE331	3
IE471	Industrial Automation and Robotics	MATH241, MATH222 & EE207	3
IE452	Industrial Quality Control	IE351	3
IE422	Engineering Project Management	IE222	3
IE433	Facilities Planning and Design	IE351	3
XXXXXX	Free Course 2	None	2
		Total Credit Hours	**17**

Summer Term

Course Number	Course Title	Prerequisites	C.H.
IE491	Field Training	Department Approval & 110 Credit Hours	0

Year 5/ Term 9

Course Number	Course Title	Prerequisites	C.H.
IE551	Maintenance and Reliability Engineering	IE351 & IE222	3
IE541	Industrial Systems Simulation	IE441	3
IE571	Product Design and Development	IE451	3
IE5XX	IE Elective (1)	Department Approval*	3
IE591	Capstone Project I	120 Credit Hours & Department Approval	2
		Total Credit Hours	**14**

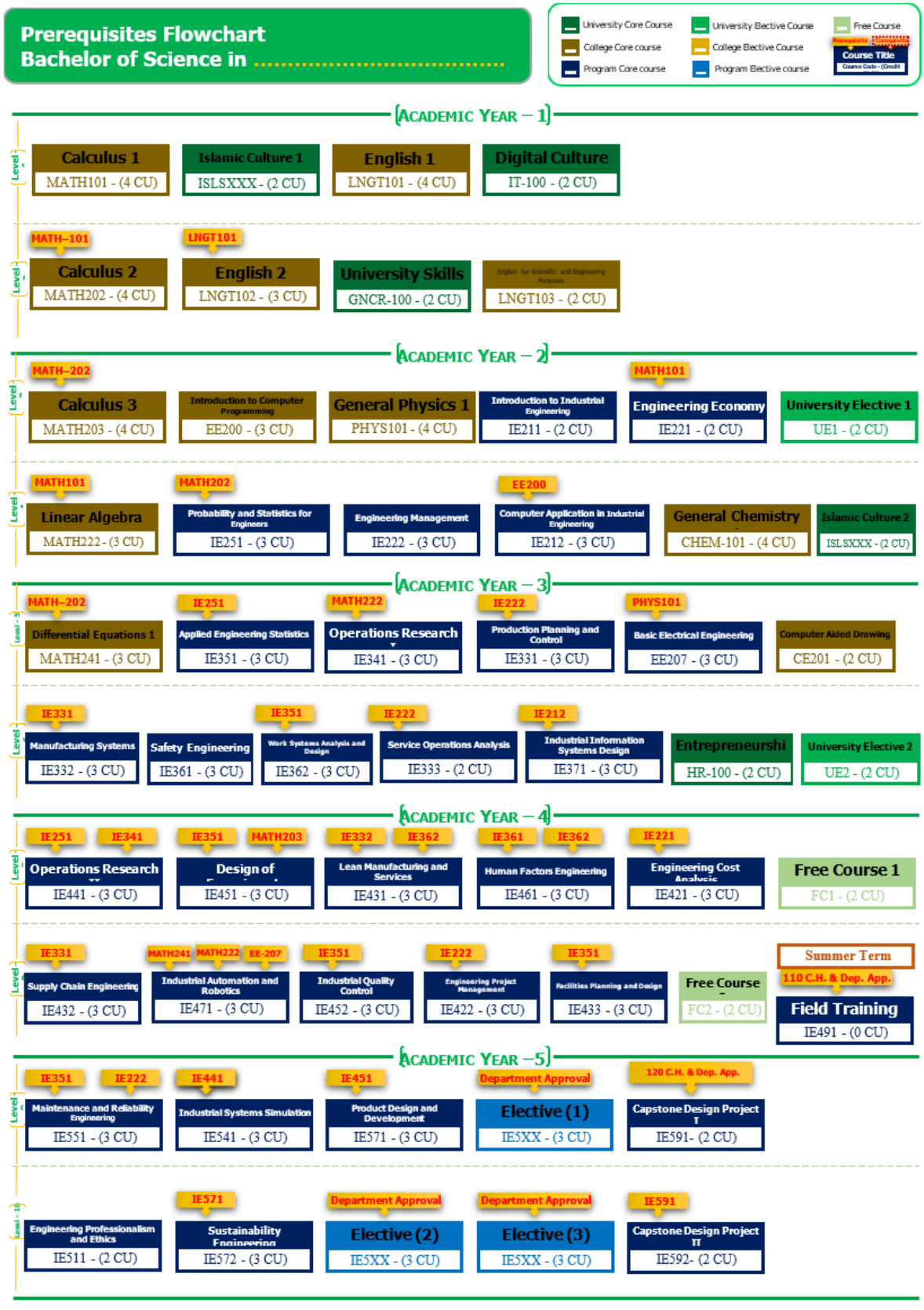
(*) The prerequisites for elective courses vary depending on each individual course.

Year 5/ Term 10

Course Number	Course Title	Prerequisites	C.H.
IE522	Engineering Professionalism and Ethics	None	2
IE572	Sustainability Engineering	IE571	3
IE5XX	IE Elective (2)	Department Approval*	3
IE5XX	IE Elective (3)	Department Approval*	3
IE592	Capstone Project II	IE591	2
		Total Credit Hours	**13**

(*) The prerequisites for elective courses vary depending on each individual course.

FLOWCHART OF PREREQUISITES


Prerequisites Flowchart
Bachelor of Science in .....
University Core Course
University Elective Course
Free Course
College Core course
College Elective Course
Course Title
Program Core course
Program Elective course
ACADEMIC YEAR – 1
Calculus 1
MATH101 - (4 CU)
Islamic Culture 1
ISLSXXX - (2 CU)
English 1
LNGT101 - (4 CU)
Digital Culture
IT-100 - (2 CU)
MATH–101
LNGT101
Calculus 2
MATH202 - (4 CU)
English 2
LNGT102 - (3 CU)
University Skills
GNCR-100 - (2 CU)
LNGT103 - (2 CU)
ACADEMIC YEAR – 2
MATH–202
MATH101
Calculus 3
MATH203 - (4 CU)
Introduction to Computer Programming
EE200 - (3 CU)
General Physics 1
PHYS101 - (4 CU)
Introduction to Industrial Engineering
IE211 - (2 CU)
Engineering Economy
IE221 - (2 CU)
University Elective 1
UE1 - (2 CU)
MATH101
MATH202
EE200
Linear Algebra
MATH222 - (3 CU)
Probability and Statistics for Engineers
IE251 - (3 CU)
Engineering Management
IE222 - (3 CU)
Computer Application in Industrial Engineering
IE212 - (3 CU)
General Chemistry
CHEM-101 - (4 CU)
Islamic Culture 2
ISLSXXX - (2 CU)
ACADEMIC YEAR – 3
MATH–202
IE251
MATH222
IE222
PHYS101
Differential Equations 1
MATH241 - (3 CU)
Applied Engineering Statistics
IE351 - (3 CU)
Operations Research
IE341 - (3 CU)
Production Planning and Control
IE331 - (3 CU)
Basic Electrical Engineering
EE207 - (3 CU)
Computer Aided Drawing
CE201 - (2 CU)
IE331
IE351
IE222
IE212
Manufacturing Systems
IE332 - (3 CU)
Safety Engineering
IE361 - (3 CU)
Work Systems Analysis and Design
IE362 - (3 CU)
Service Operations Analysis
IE333 - (2 CU)
Industrial Information Systems Design
IE371 - (3 CU)
Entrepreneurshi
HR-100 - (2 CU)
University Elective 2
UE2 - (2 CU)
ACADEMIC YEAR – 4
IE251
IE341
IE351
MATH203
IE332
IE362
IE361
IE362
IE221
Operations Research
IE441 - (3 CU)
Design of
IE451 - (3 CU)
Lean Manufacturing and Services
IE431 - (3 CU)
Human Factors Engineering
IE461 - (3 CU)
Engineering Cost Analysis
IE421 - (3 CU)
Free Course 1
FC1 - (2 CU)
IE331
MATH241
MATH222
EE-207
IE351
IE222
IE351
Summer Term
110 C.H. & Dep. App.
Supply Chain Engineering
IE432 - (3 CU)
Industrial Automation and Robotics
IE471 - (3 CU)
Industrial Quality Control
IE452 - (3 CU)
Engineering Project Management
IE422 - (3 CU)
Facilities Planning and Design
IE433 - (3 CU)
Free Course
FC2 - (2 CU)
Field Training
IE491 - (0 CU)
ACADEMIC YEAR –5
IE351
IE222
IE441
IE451
Department Approval
120 C.H. & Dep. App.
Maintenance and Reliability Engineering
IE551 - (3 CU)
Industrial Systems Simulation
IE541 - (3 CU)
Product Design and Development
IE571 - (3 CU)
Elective (1)
IE5XX - (3 CU)
Capstone Design Project I
IE591- (2 CU)
IE571
Department Approval
Department Approval
IE591
Engineering Professionalism and Ethics
IE511 - (2 CU)
Sustainability Engineering
IE572 - (3 CU)
Elective (2)
IE5XX - (3 CU)
Elective (3)
IE5XX - (3 CU)
Capstone Design Project II
IE592- (2 CU)

COURSE DESCRIPTIONS

The course description is organized as it appears in the study plan. For the Islamic culture courses, university elective courses, and elective program courses, they can be found at the end of the description.

Academic Year 1 / Level 1

Course Code	Course Name	Course Description
MATH101	Calculus 1	This course is considered as a first course in differential calculus, dealing mainly with differentiations of elementary functions and their applications.
-	Elective Islamic Culture 1	Please refer to the descriptions of the corresponding courses located at the end of this section.
LNGT101	English 1	This course is designed for students with adequate previous exposure to general English. It is intended to provide students with a foundation from which they can advance to B1 English on the Common European Framework of Reference for Languages (CEFR). The course will build students' English proficiency in the four language skills and further enhance these skills with the linguistic and lexical competencies, as well as develop thinking skills, presentation skills, and related sub-skills.
IT100	Digital Culture	This course includes a set of general knowledge related to computer science and communications, in addition to modern trends in digital technology and the principles of cybersecurity. The course also deals with skills related to digitization and education, including dealing with a number of office programs in addition to using cloud services, e-learning platforms, and search engines. This course also highlights the commitment to the ethics of the digital world in various uses of computers through the aforementioned topics.

Academic Year 1 / Level 2

Course Code	Course Name	Course Description
LNGT102	English 2	This course is designed for students with adequate previous exposure to general English. It is intended to provide students with a foundation from which they can advance to B2 English on the Common European Framework of Reference for Languages (CEFR). The course will build students' English proficiency in the four language skills and further enhance these skills with the linguistic and lexical competencies, as well as develop thinking skills, presentation skills, and related sub-skills.
GNCR100	University Skills	This course includes a set of skills that a student should acquire in his university life, such as study skills, communication skills in the university environment, presentation skills, public speaking, problem-solving, self-discovery, and marketing skills that enable him to develop himself intellectually, psychologically, socially, functionally, and in research.
MATH202	Calculus 2	This course is mainly dealing with integral calculus, including the following topics: Inverse functions, inverse trigonometric and hyperbolic functions and their derivatives, L'Hopital's rule, The indefinite integral, methods of integration (substitutions, parts, trigonometric substitutions, partial fractions ...). The definite integral, the fundamental theorem of calculus. Applications of definite integral (Area between two curves, volumes, length of a plane curve, area of a surface of revolution ...).
LNGT103	English for Scientific and Engineering Purposes	This course assists students in developing the necessary skills to communicate effectively using English in professional situations. It focuses on the development of appropriate and relevant language skills and language content that are directly applicable to a wide range of professional contexts. In addition, it develops student's ability to communicate and interact with others through focusing on dialogue, persuasion, negotiation, personal interview, presentation skills. It incorporates multiple assignments with opportunities for individualized feedback. These activities are based on a diverse collection of topics that will further develop students' vocabulary and grammar and their subsequent usage in a variety of writings, i.e. emails and reports.

Academic Year 2 / Level 3

Course Code	Course Name	Course Description
MATH203	Calculus 3	This course is mainly dealing with calculus of several variables, including the following topics, Parametric equations and polar coordinates, calculus with parametric and polar curves, and applications of parametric curves and polar coordinates. Functions of several variables, limits and continuity, partial derivatives, the chain rule, implicit differentiations, applications of partial derivatives. Multiple integrals: Double integrals over rectangles, general regions, polar coordinates, applications of double integrals. Triple integrals in boxes, cylindrical, and spherical coordinates. Change of variables in multiple integrals.
EE200	Introduction to Computer Programming	This course introduces basic computer programming concepts using the C++ language. From variables and data types to control structure and functions, students will learn how to transform ideas into code and solve problems.
PHYS101	General Physics 1	The course is interested in the study of units and dimensions, vectors and their properties, motion in different dimensions and projectile motion. Newton's laws with examples involving friction force or without friction force. The study of kinetic and potential energy conservation and the calculation of work and power. Elastic and inelastic collision and the difference between them. The study rigid body rotation. Lab Experiments: Simple pendulum, Verification of Newton's 2nd law, Static and kinetic friction, Projectile motion, Hook's law, Free fall, Force balance table, Rotational motion, collision.
IE211	Introduction to Industrial Engineering	This course introduces students to the industrial engineering subject matter areas, problem types, and design/analysis approaches, techniques, and methodologies. Special emphasis on formulation and design alternatives for problem solving.
IE221	Engineering Economy	Engineering Economy introduces fundamental concepts and techniques for making sound economic decisions in engineering projects. The course covers topics such as the time value of money, interest rates, cash flow analysis, benefit-cost analysis, risk analysis, and depreciation. Students will gain the skills to evaluate project proposals, allocate resources, and assess the financial feasibility of engineering investments. Engineering Economy provides a practical foundation for making informed economic decisions in engineering contexts.
-	University elective 1	Please refer to the descriptions of the corresponding courses located at the end of this section.

Academic Year 2 / Level 4

Course Code	Course Name	Course Description
MATH222	Linear Algebra	The course typically begins with an introduction to vectors and vector spaces, including concepts such as linear independence, basis, and dimension. Then, students learn about linear transformations and matrices, including topics such as matrix multiplication, inverses, and determinants.
IE251	Probability and Statistics for Engineers	This course explores the mathematical foundations of statistics and probability theory. It covers fundamental concepts such as statistical data description, rigorous probability theory, random variables, probability distributions, mathematical expectations, and in-depth explorations of discrete and continuous random variables. The course also includes a rigorous study of sampling distributions and statistical techniques for one- and two-sample estimation problems. Through mathematical rigor, students will develop a strong foundation in statistical analysis and probability theory. This mathematical-based course in probability and statistics will serve as a fundamental base for engineers in their subsequent engineering courses.
IE222	Engineering Management	This course provides an introduction to the principles and practices of engineering management and technology management. It covers the historical development of engineering management, the fundamentals of operations management, the key functions of engineering managers, decision-making processes in engineering organizations, production planning techniques, and project management methodologies specifically tailored for engineering projects.
IE212	Computer Application in Industrial Engineering	Provides basic familiarization, instruction, and competence with common computer applications used in Industrial Engineering. Focuses on providing students with expertise in using computational tools for various applications, with hands-on practice and deepening understanding in their use.
CHEM101	General Chemistry 1	Introduction to the general principles of chemistry for students planning a professional career in chemistry, a related science, the health professions, or engineering. The SI units, the chemical formula, Naming covalent and ionic compounds, Stoichiometry, Atomic structure, Electron configuration, Periodic table, Chemical bonding, Gases, Chemical equilibrium, Acids and Bases, Organic chemistry and Biochemistry chemistry. Weekly laboratory experiments aiming the safety rules in chemistry lab. and identify the main inorganic acidic and basic radicals based on specific qualitative tests. Weekly discussion sessions focus on homework assignments and lecture material.
-	Islamic Culture 2	Please refer to the descriptions of the corresponding courses located at the end of this section.

Academic Year 3 / Level 5

Course Code	Course Name	Course Description
MATH241	Differential Equations 1	The topics covered include ordinary differential equations and some methods to solve them.
IE351	Applied Engineering Statistics	This course offers a solid mathematical basis for key statistical methods used in engineering, emphasizing both theoretical understanding and practical applications. Students will engage with Hypothesis Testing and Confidence Intervals to learn the basics of statistical inference. The curriculum includes Nonparametric Tests, allowing for the analysis of data beyond standard distribution assumptions. Essential techniques like Simple and Multiple Linear Regression are covered, enabling students to model and interpret relationships between variables. The course introduces Time Series Analysis for handling data collected over sequential intervals. It also demystifies the principles of Bayesian Statistics as an alternative framework for statistical inference. An introduction to Multivariate Statistics is provided, focusing on the analysis of datasets with multiple interrelated variables. This course is designed to build a strong foundational understanding of statistical concepts, preparing students for advanced studies or professional roles in engineering fields.
IE341	Operations Research I	This comprehensive course searches into the mathematical foundations of operations research (OR), providing a thorough grounding in the theoretical principles and techniques that underpin OR methodologies. Students will gain a deep understanding of optimization theory, linear programming, network flows, integer linear programming, and distribution models, all within a framework of mathematical rigor.
IE331	Production Planning and Control	Production Planning and Control covers the specific strategies and methodologies used in the planning, scheduling, and management of production processes. Distinct from a broader study of manufacturing systems, this course emphasizes the operational aspects of production management. Key topics include detailed analysis and application of production planning techniques, such as demand forecasting, capacity planning, and inventory management. Special attention is given to the practical aspects of scheduling, including short-term scheduling and sequencing, and the optimization of production workflows. The course also covers the fundamentals of Materials Requirement Planning (MRP) and Enterprise Resource Planning (ERP) systems, focusing on their roles in synchronizing production activities. Students will explore the challenges and solutions in just-in-time (JIT) production environments and learn about approaches to achieve efficiency and responsiveness in production operations.
CE201	Computer Aided Drawing (CAD)	This course represents an introduction to engineering drawings. Computer-aided drawings (CAD) is utilized to produce 2-D engineering drawings. The course is divided into two sections: AutoCAD and drawing. The course begins by teaching the main basics and features of AutoCAD software. Then AutoCAD is used to create pictorial projections, section views, auxiliary views, and dimensioning.
EE207	Basic Electrical Engineering	This course provides the required knowledge of basic electrical engineering namely basic electric circuits and electrical machines including Ohm's and Kirchhoff's laws, Mesh analysis in DC circuits, AC circuits and sinusoidal steady-state analysis, phasor diagrams, three-phase circuits, types of electrical machines, construction and principle of operation of electrical machines, and Advantages and disadvantages of electrical machines.

Academic Year 3 / Level 6

Course Code	Course Name	Course Description
IE332	Manufacturing Systems	Covers the definition and classification of manufacturing systems; Manufacturing automation fundamentals; Manufacturing strategies (lean manufacturing, agile manufacturing and Application of Knowledge-Based-Systems in manufacturing); performance of manufacturing system; Modeling of manufacturing systems; High volume manufacturing systems design and analysis; Flexible manufacturing performance analysis; automated inspection analyses
IE361	Safety Engineering	This course will provide students with tools and guidelines to become safety engineers or managers in real-world industries. It emphasizes on national and international safety regulations and standards, industrial hazard avoidance concepts and techniques, accident losses and its effect on organizations and the national economy, workers' compensation, and developing and maintaining safety programs, plant safety applications, management and its safety responsibilities, and emergency planning.
IE362	Work System Analysis and Design	This course is designed to teach the fundamentals of work study, a key approach in examining various work processes. It begins with an introduction to work study, followed by detailed coverage of problem-solving tools including recording and analysis tools, activity charts, and line balancing. The curriculum includes operation analysis and the principles of manual work design, focusing on motion economy and motion study. Time study is also a major component, where students will learn about performance rating, allowances, and the use of standard data and formulas. The course additionally covers work sampling methods and predetermined time systems, providing students with a comprehensive understanding of work study and its practical application in optimizing work processes.
IE333	Service Operations Analysis	This course explores key concepts and strategies in service operations management. It covers service design, process efficiency, quality control, and customer relationship management in various service sectors like healthcare, hospitality, and finance. Students will learn to analyze and improve service processes through tools such as queuing theory and service blueprinting. Case studies will be used to illustrate real-world applications, preparing students for roles in service management and operations.
IE371	Industrial Information Systems Design	The course explores key aspects of the industrial information systems, it covers industrial information systems planning, project identification and selection, database construction, user interface and report design, and the implementation of human-computer interfaces. Practical exercises, case studies, and real-world projects will allow students to apply their knowledge and skills, equipping them with the expertise needed to tackle information systems challenges within industrial settings.
HR-100	Entrepreneurship	The course covers all concepts related to entrepreneurship and innovation, where the course topics focus on the types of entrepreneurship and the partial and comprehensive system of entrepreneurship, in addition to studying creativity and innovation and studying the characteristics of the creative person, and the factors supporting and hindering creativity. The course also deals with the qualities and skills of the entrepreneur and the intellectual schools of the entrepreneur's traits. In addition to how to transform ideas into projects, the course also deals with the concept of small enterprises, the success and failure of small enterprises, and how to avoid failure, and preparing a business plan for the project.

Academic Year 4 / Level 7

Course Code	Course Name	Course Description
IE441	Operations Research II	This course focuses on advancing students' mathematical understanding of operations research, covering Non-Linear Programming for complex optimization problems, and Dynamic Programming for decision-making in multi-stage processes. The course introduces Waiting Line Models, applying probabilistic concepts to analyze queueing systems. Markov Analysis is also covered, providing insights into stochastic process models. Lastly, students will be introduced to the basic principles of Game Theory, exploring strategic decision-making in mathematical terms. Each topic is presented with a balance of theoretical rigor and approachability, ensuring students comprehend both the mathematical foundations and the conceptual relevance of these advanced operations research techniques. This course advances students' knowledge in operations research, laying the groundwork for application-based courses.
IE451	Design of Experiments	This course provides the mathematical exploration of experimental design principles within the field of industrial engineering. It equips students with the foundational knowledge and mathematical tools required to plan, execute, and analyze experiments in industrial settings. Topics covered include the fundamentals of experimental design, randomized complete block designs, Latin square and Greco-Latin square designs, general factorial designs, 2^k factorial designs, response surface methodology, and robust design. Students will gain proficiency in using mathematical techniques to optimize industrial processes, manage variability, and make data-driven decisions. Through problem-solving assignments, practical projects, and statistical analysis, students will develop the mathematical knowledge needed for effective experimentation and decision-making in the industrial engineering domain.
IE431	Lean Manufacturing and Services	The course aims to provide students with knowledge and practical skills to systematically analyze, develop, evaluate, and deploy technical issues of Lean Manufacturing and Services. Focuses on processes that use less material, require less investment, use less inventory, consume less space, and use fewer people.
IE461	Human Factors Engineering	This course provides an introduction to the principles of HFE and their application to the design of industrial systems. Students will learn about the human body and its limitations, the factors that influence human performance, and the methods used to analyze and design for human interaction with systems.
IE421	Engineering Cost Analysis	Engineering Cost Analysis is an essential course in the Industrial Engineering program, providing an in-depth exploration of cost determination and financial management principles in engineering contexts. It covers the fundamental concepts of cost accounting, estimation, control, and analysis, along with budgeting methods and investment appraisal. Students gain a comprehensive understanding of these techniques and how they are applied in engineering projects. The course emphasizes practical application of cost analysis tools to real-world engineering problems, focusing on analyzing, interpreting, and managing project costs throughout the project lifecycle. Through a blend of lectures, case studies, and practical exercises, it equips future engineers with critical skills for effective financial planning and cost control in engineering practice.

Academic Year 4 / Level 8

Course Code	Course Name	Course Description
IE432	Supply Chain Engineering	This course provides a comprehensive introduction to the field of supply chain engineering, covering the design, analysis, and optimization of supply chains. The course begins with an overview of the supply chain concept and its importance in today's global economy. Students then learn about the different components of a supply chain, including demand management, sourcing, production, logistics, and information systems. The course also covers a variety of modeling and optimization techniques that are used to analyze and improve supply chain performance.
IE471	Industrial Automation and Robotics	The course provides a general view of current methods and tools in automation technologies. It discusses technological aspects for the implementation of automation systems, including digital control, programming logic controllers, communication protocols, and programming industrial robots.
IE452	Industrial Quality Control	Statistical quality control (SQC) is an essential aspect of industrial engineering, enabling the monitoring, evaluation, improvement, and control of product and process quality. This course introduces students to the fundamental principles and techniques of SQC, empowering them to apply statistical methods to ensure product consistency, minimize defects, and achieve continuous process improvement.
IE422	Engineering Project Management	Provides an overview of engineering project management, covering the project life cycle from inception to completion. Includes planning, implementing, and managing projects, with focus on budgeting, scheduling, resource allocation, project network tools, cost optimization, project crashing, time-cost trade-offs, and risk analysis.
IE433	Facilities Planning and Design	This course covers the essentials of facilities planning and design in manufacturing and service industries. It focuses on strategies for site selection, facility layout, space optimization, and the integration of production systems. Students will learn about facility location analysis, material handling, workplace design, and the use of planning tools. The course also touches on environmental and safety considerations in facility design. Through theoretical learning and practical case studies, students will gain skills in creating efficient facility designs that align with business objectives.

Academic Year 5 / Level 9

Course Code	Course Name	Course Description
IE551	Maintenance and Reliability Engineering	The course introduces concepts of reliability and maintenance engineering. Topics include, Reliability characteristics, failure distributions, estimation of system reliability, failure analysis, maintenance workload analysis, maintenance planning, maintenance scheduling, audit and performance measurement of maintenance works, Computerized Maintenance Management Systems (CMMS), Reliability-Centered Maintenance (RCM) and Total Productive Maintenance (TPM).
IE541	Industrial Systems Simulation	This course explores the details of industrial systems simulation, providing students with a thorough understanding of simulation principles and practical experience in applying simulation techniques to solve complex industrial problems. The course starts with a solid foundation in the mathematical principles of simulation, focusing on generating random numbers, probability distributions, and statistical analysis. This theoretical grounding is then applied to practical scenarios using ARENA software, a powerful simulation modeling tool. Students will gain hands-on experience in building, analyzing, and interpreting simulation models, with an emphasis on the role of probability distributions and statistical analysis in effectively representing real-world variability, validating and verifying simulation models, and extracting meaningful insights from simulation output.
IE571	Product Design and Development	This course on Product Design and Development introduces students to essential aspects of the product life cycle, emphasizing 'Design for...' methodologies such as Design for Manufacturing, Design for Assembly, and Design for Environment. It covers the process from concept generation to market launch, integrating principles of engineering with user-centered design and sustainability. Students will engage in quality function deployment, learn about ergonomic design considerations, and apply practical skills in prototyping and testing through hands-on projects. This approach equips them with the knowledge and skills needed for effective and innovative product development in real-world applications.
-	IE ELECTIVE 1	Please refer to the descriptions of the corresponding courses located at the end of this section.
IE591	Capstone Project I	In the Capstone Design Project 1 course, students work in teams to tackle complex engineering challenges, applying industrial engineering principles alongside broader engineering, science, and mathematics concepts. This course focuses on the initial phases of the design process, from problem identification to the evaluation of design alternatives. By the end of the course, students will have generated and assessed multiple design alternatives based on specified criteria, setting the stage for informed decision-making in the subsequent Capstone Design Project 2. Throughout the course, students engage in comprehensive problem identification, employing analysis, synthesis, and brainstorming techniques to develop clear problem statements. Emphasis is placed on addressing technical challenges within the context of diverse stakeholder needs and integrating key constraints with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors. The application of engineering knowledge and scientific principles is central to developing solution alternatives that meet specific requirements and adhere to appropriate standards. By the conclusion of Capstone Design Project 1, students will have selected a preliminary design solution for further development. This course not only enhances the students' technical and problem-solving skills but also focuses on developing teamwork, project management, and communication abilities. It also prepares students for the subsequent Capstone Design Project 2, where they will refine and implement their chosen design concept, integrating the comprehensive skills and knowledge they have acquired.

Academic Year 5 / Level 10

Course Code	Course Name	Course Description
IE522	Engineering Professionalism and Ethics	This course introduces students to the fundamental principles and concepts of engineering professionalism and ethics. It explores the ethical responsibilities of engineers in various fields, including their commitment to safety, honesty, environmental protection, and social responsibility. Students will examine real-world case studies and ethical dilemmas to develop critical thinking and decision-making skills in the context of engineering practice. By the end of the course, students will be able to identify, analyze, and address ethical issues that arise in engineering, apply ethical principles to real-world scenarios, and make informed ethical decisions.
IE572	Sustainability Engineering	Sustainability engineering is a course designed to immerse Industrial Engineering students in the principles, indicators, and concepts of sustainability within the engineering domain. It focuses on making students aware of the impacts of unsustainable designs and equips them with the skills to integrate sustainability into engineering practices.
-	IE ELECTIVE 2	Please refer to the descriptions of the corresponding courses located at the end of this section.
-	IE ELECTIVE 3	Please refer to the descriptions of the corresponding courses located at the end of this section.
IE592	Capstone Project II	In Capstone Design Project II, students in the Industrial Engineering program build on their initial design from Capstone Design Project I. This continuation course further develops and refines the selected design, integrating the comprehensive skills and knowledge acquired throughout the program. Students apply advanced problem-solving techniques, manage project execution, and deliver a finalized design that meets project specifications and industry standards. The course emphasizes the practical application of engineering principles, enabling students to showcase their abilities in a professional setting.

University Required Courses (Islamic Cultures)

Course Code	Course Name	Course Description
ISLS100	Islamic Culture (1) (Fundamentals of Islamic Culture)	This course provides a general introduction to Islamic culture, its concept, sources, and characteristics, the achievements of Islamic civilization and its impact on Western civilization, then it addresses the Islamic Creed (Aqidah), its concept, pillars, nullifiers, and the most important contemporary cultural challenges, and concludes by mentioning the most prominent purposes of Sharia and the concept of worship (Al-'Ibadat), its importance and the wisdom of its performance.
ISLS102	Islamic Culture (2) (Studies in the Prophetic Biography)	Defining the concept of the Prophetic biography and its sources, and the stages of his life (may God bless him and grant him peace), his first mission, and events and facts from the Meccan and Medinan era, the first battles, his illness and death, (may God bless him and grant him peace), and his rights (may God bless him and grant him peace) to his community (Al-Ummah).
ISLS109	Islamic Culture (3) (Medical Jurisprudence)	Defining the concept of medical jurisprudence, explaining its importance, its sources, the rule of healing, and the guidance of the Prophet, may God bless him and grant him peace, in treating himself and his policy, the most important medicines mentioned in the Quran and the Hadith, the rule of pharmacy and its provisions, the provisions of the patient, and the general jurisprudential rules and legal purposes related to medical provisions, its meanings and its most important applications, the provisions of medical consent, medical responsibility, its types, its causes, and its exemptions, the provisions of contraception and its regulation, the most important contemporary medical issues, and the provisions related to AIDS patients, human cloning, and organ transplantation.
ISLS104	Islamic Culture (4) (The Family in Islam)	Defining the concept of the family in Muslim society, explaining its status and importance, the foundations on which it is based, strengthening the values and principles on which it is based, discussing the most important family problems, and presenting appropriate solutions to them, while highlighting the wisdom of legislation in each unit of this course.
ISLS105	Islamic Culture (5) (Professional Ethics)	The course deals with the concept of both ethics and the profession and their status, and the conditions of the profession, and presents examples of ethics, including honesty and integrity, sincerity, chastity, justice, good treatment, cooperation, initiative, competence, and mastery, management ethics, professional ethics in Islamic civilization, and means of establishing professional ethics. And legal violations in the profession.
ISLS106	Islamic Culture (6) (Women and their Developmental Role)	Defining the concept of development, its characteristics, the role of women in spiritual and personal development and economic development and its obstacles, and the Kingdom's efforts in supporting the developmental role of women.

ISLS107	Islamic Culture (7) (The Economic System)	This course explores the economic system in Islam, focusing on its origins and objectives. It introduces the doctrinal principles that guide the Islamic economy, encompassing both moral and legislative aspects. Key topics include the fundamentals of the Islamic economic framework, such as concepts of ownership and its various types, economic solidarity, and the principles of Islamic insurance. The course aims to provide students with a comprehensive understanding of how these principles are applied within contemporary economic practices.
ISLS108	Islamic Culture (8) (Contemporary Issues)	This course examines the adolescent stage, focusing on methods for guiding and safeguarding young individuals. It addresses significant challenges encountered by youth and proposes practical solutions. Key topics include the risks associated with smoking and alcohol use, the responsibilities towards one's country, the implications of rebellion against rulers, and the harm caused to innocents. The course also explores the definition of terrorism, its dangers, and its effects. Additionally, discussions will cover advocacy, volunteerism, and the efforts undertaken by the Kingdom in these domains.

University Elective Courses

Course Code	Course Name	Course Description
GNCR103	Kingdom & Its Pioneering Role	This course examines the historical development of the Kingdom of Saudi Arabia, highlighting the contributions of its rulers in political and civilizational development. It focuses on their role in the stewardship of the Two Holy Mosques, their involvement in addressing Arab, Islamic, and international issues, and their efforts towards realizing the Kingdom's Vision 2030.
ARAB-103	Academic Writing Skills	This course explores various patterns of knowledge and rules essential for assessing the understanding of scientific concepts across academic disciplines. It equips students with the skills to document and reinforce the linguistic vocabulary, scientific knowledge, and intellectual insights they have acquired. Additionally, the course aims to enhance students' capabilities in understanding, analyzing, thinking critically, and engaging in scholarly critique.
GNCR104	Physical Fitness and Sports Science	This course focuses on key concepts and practices within physical fitness and sports science. It addresses different types of physical fitness, highlighting their importance, elements, development methods, and measurement techniques. The course also explores the impact of fitness activities on the vital organs. Topics include sports sciences related to healthy nutrition, obesity management, physical activity, and techniques for managing psychological stress.
BIO-104	Sustainable Development	This course introduces the basic principles of sustainable development, including its economic, social, and environmental dimensions. It also examines sustainability within the context of Islamic culture and outlines the goals of sustainable development. The course further includes a discussion on the strategic plans and indicators of sustainable development in the Kingdom of Saudi Arabia, featuring selected models from the Kingdom's Vision 2030.
CUET-101	Lifelong Learning Skills	This course explores the concept of lifelong learning by covering its nature, importance, and the essential skills required. It reviews the theoretical foundations, various models, and practical applications of lifelong learning. Additionally, the course highlights the characteristics of learners in the digital age, focusing on how lifelong learning strategies can be adapted to contemporary educational needs.

Program Elective Courses

Course Code	Course Name	Course Description
IE512	Feasibility Study	The course introduces students to how feasibility studies are conceived, conducted, and appraised, covering marketing, technical, financial, legal, organizational, and environmental and national impact studies.
IE552	Computational Methods in Industrial Engineering	This course gives students an explores the design and implementation of decision support systems (DSS) using MATLAB program, Excel, and VBA. The following topics are covered: Excel basics & formatting; referencing & names for cells, worksheets, and workbooks; R1C1 notation; functions & formulas; auditing; creating charts & sparklines; chart tools; pivot tables & charts; performing statistical analysis & solving mathematical models using MATLAB; solving engineering formula, Excel; working with large data in Excel; Visual Basic environment; recording macros; properties, methods, referencing & formulas in VBA; objects & variables; sub & function procedures; programming structures; arrays; debugging; creating user interface; DSS development process; graphical user interface design; case studies in DSS.
IE542	Decision Analysis	The course aims to build the students' ability to understand the principles of decision-making and methods for decision analysis under uncertainty to apply them in industrial areas. It creates an understanding to appreciate the use of expert judgment and the value of information in decision-making and risk management. It is a design function to consider constraints, Solutions, and analysis of decision problems.
IE543	Network Optimization	This course is a continuation of the operations research courses. In this course, students will learn deep industrial network analysis using network techniques and its applications.
IE533	Queuing Systems	The course introduces students to "Queuing System" characteristic and notation, birth-death Markovian models, single and multiple servers, advanced Markovian models and their issues, non-Markovian models, queuing networks, the measure of effectiveness and optimization problems in queuing and solving case studies using numerical and simulation techniques.
IE562	Additive Manufacturing	This course introduces 3D printing technologies including history and basics of 3D printing, currently available 3D printing methods and printable materials as well as current and emerging applications of 3D printing. The course will be composed of a lecture and a laboratory session, during which students will create a 3D design and print a functional prototype to discover for themselves the potential and limitations of 3D Printing. The students will learn how to be "makers" by using various types of 3D modeling software and imaging equipment, printing actual physical objects that they have designed and modeled themselves, and participating in educational outreach in the university and the community.
IE563	Computer Aided Manufacturing and Design	Computer-aided manufacturing/design focuses to introduce the modern computer-aided manufacturing technologies about the use of computers for design and manufacturing, including the theory of computer numerical control (CNC) as well as the related computer-aided geometric modeling methods. Students will develop practical knowledge and understanding of the applications, underlying mathematical principles, and limitations of these technologies through lectures and laboratory tutorials/projects. Also, students will practice the skills of the computer-integrated manufacturing components such as: CAD/CAM/CIM by software CAM concept, and programming the machine tool (G-Code) using a CNC machine.

Course Code	Course Name	Course Description
IE520	Enterprise Resource Planning	This course provides students with the fundamentals of enterprise resource planning (ERP) systems concepts, the importance of integrated information systems in an organization, Marketing Information Systems and the Sales Order Process, Production and Materials Management, Customer Relationship Management, and Human Resources Processes with ERP.
IE575	Healthcare System Engineering	This course develops a basic understanding of the quantitative tools used in performing system analyzes and decision-making in a healthcare context. It is the study of applying industrial engineering and operations research methods to model, analyze, and improve healthcare systems. Lean and Six Sigma study for continuous improvement of healthcare systems. Explore common issues related to decision-making and optimization in healthcare including scheduling and capacity planning. Health policy examination, data analysis and healthcare information technology.
IE542	Quality Management Systems	The main idea of this course is to introduce students to the basic principles of concepts, tools, and techniques used in total quality management, quality cultures, effective team structures, quality measurement, productivity, and competitiveness in an industrial environment. As well as emphasizing the interdependence of leadership, relationships between suppliers and customers, employee involvement, data collection and analysis, productivity, statistical process control, and other issues with quality and customer satisfaction. Students gain hands-on experience with basic quality decision-making and troubleshooting techniques.
IE554	Introduction to Applied Data Analytics	This course aims to develop a basic understanding of data science technologies and their applications, as well as the fundamental principles of data mining. It provides an overview of the data-driven approach and the data analytics life cycle, with an emphasis on basic statistics, programming, and SQL. Students will be introduced to data acquisition, cleaning, processing, and pre-processing, as well as exploratory data analysis and visualization. They will also have the opportunity to implement and validate linear and penal regression, basic classification, and basic grouping methods. Additionally, an introduction to big data analysis will also be covered in this course, highlighting the concepts, implementation techniques, and applications of data mining.
IE561	Occupational Health and Safety	This course provides students with the fundamentals of occupational health and safety (OHS), hazard recognition, assessment and control techniques (physical, chemical, biological, ergonomic, and psychosocial), in the context of federal and provincial occupational health and safety legislation. Current issues in OHS and Environment.
IE532	Material Handling Systems and Logistics	The student will be introduced to material handling and packaging. Plant layout and material handling. Types of material handling equipment and their economics. Conveyors, overhead lifting, cranes, and hoists. Role of packaging in material handling. Management of the packaging function.
IE511	Introduction to Finance and Asset Management	In this course, students will learn the concepts and analytical techniques of investment and financing decisions with the ultimate goal of maximizing the wealth of shareholders. It covers the concepts of time value of money, asset valuation, risk and return paradigm, capital budgeting, financing, and payout decisions.

1. APPENDIX A: REGULATIONS AND GUIDES

1. **Study and Examinations Regulations**
    - This document outlines the regulations and executive rules related to study and examinations at Northern Border University. It includes definitions, objectives, academic systems, admission procedures, academic actions, transfer and equivalency, visiting and student exchange, examinations, and grading. The document also provides guidance on graduation and learning outcomes. To read the full document, click on the following link: **1_Study and Examinations Regulations**

2. **Code of Conduct and Discipline**
    - This document sets forth the standards for student conduct and discipline within the university. It details the rules governing student behavior, the disciplinary procedures for violations, and the responsibilities of both students and the university in maintaining a respectful and safe academic environment. To read the full document, click on the following link: **2_Code of Conduct and Discipline**

3. **Guide to Academic Terms**
    - This guide explains the academic terms used within Northern Border University, providing clear definitions for key concepts such as academic records, warning, semester GPA, and cumulative GPA. It is an essential reference for understanding the academic policies and requirements of the university. To read the full document, click on the following link: **3_Guide to Academic Terms**

4. **Guide to Academic Services on the Banner System**
    - This guide provides instructions on how to use the Banner System for accessing various academic services. It covers services such as semester postponement, course withdrawal, IBAN modification, re-enrollment, and internal transfer between colleges. The guide is designed to help students navigate and utilize these electronic services effectively. To read the full document, click on the following link: **4_Guide to Academic Services on the Banner System**

5. **Student Rewards Guide**
    - This document describes the various student reward programs available at the university, including financial rewards for academic excellence and other forms of recognition. It outlines eligibility criteria, application processes, and the types of rewards that students can receive. To read the full document, click on the following link: **5_Student Rewards Guide**

6. **Academic Advising Guide**
    - This guide provides comprehensive information about the academic advising system at the university. It includes the roles and responsibilities of academic advisors, advising procedures, and the support available to students for achieving their academic goals. The guide emphasizes the importance of advising in enhancing student success. To read the full document, click on the following link: **6_Academic Advising Guide**

7. **Library Deanship Introduction Brochure**
    - This brochure provides an overview of the services and resources offered by the Library Deanship at Northern Border University. It includes information about the library's facilities, online resources, and support services available to students and faculty. To read the full document, click on the following link: **7_Library Deanship Introduction Brochure**

8. **Student Rights and Responsibilities**
    - This document outlines the rights and responsibilities of students at Northern Border University. It covers topics such as academic integrity, access to resources, and the expectations for student conduct and participation in university activities. To read the full document, click on the following link: **8_Student Rights and Responsibilities**

9. **Guide to Activating Special Needs Services on Blackboard Ally**
    - This guide provides instructions for students with special needs on how to use Blackboard Ally to access course materials in alternative formats. It aims to improve accessibility and enhance the learning experience for students requiring accommodation. To read the full document, click on the following link: **9_Blackboard Ally**

10. **Guide to Electronic Services**
    - This guide details the electronic services available to students at Northern Border University, including email, online course registration, and access to digital resources. It provides step-by-step instructions for using these services effectively. To read the full document, click on the following link: **10_Guide to Electronic Services**

11. **Guide to Health Services**
    - This document provides information about the health services available to students at the university, including medical care, counseling services, and wellness programs. It outlines how to access these services and what support is offered. To read the full document, click on the following link: **11_Guide to Health Services**

12. SafeAssign User Guide for Verifying the Authenticity of Assignments

- This guide explains how to use SafeAssign, a tool for checking the originality of assignments and research papers submitted by students. It provides instructions on how to submit work and interpret the similarity reports generated by the tool. To read the full document, click on the following link: **12_SafeAssign User Guide**

13. Guide to the Northern Pioneers Center

- This guide introduces the Northern Pioneers Center, highlighting its mission to support innovation and entrepreneurship among students. It describes the resources and programs available to help students develop their business ideas and projects. To read the full document, click on the following link:**13_Guide to the Northern Pioneers Center**

14. Guide to the Digital Library Unit

- This guide provides an overview of the Digital Library Unit, detailing the digital resources and services offered to support students and faculty in their research and academic work. It includes information on accessing e-books, journals, and databases. To read the full document, click on the following link: **14_Guide to the Digital Library Unit**

15. Student Fund

- This document outlines the purpose and operation of the Student Fund, which provides financial support to students in need. It explains eligibility criteria, the application process, and the types of assistance available. To read the full document, click on the following link: **15_Student Fund**

16. Research Ethics Policy at Northern Border University

- This policy outlines the university's commitment to promoting ethical research practices that align with Islamic Sharia, legal regulations, and international best practices. The policy emphasizes the importance of integrity, honesty, and transparency in research, while also ensuring the safety and well-being of all involved parties, including researchers, participants, and the community. The policy covers various aspects of research ethics, such as informed consent, confidentiality, data management, authorship, and conflict of interest. It also establishes a framework for addressing ethical violations and promoting a culture of ethical research within the university. The policy serves as a guide for researchers, faculty members, and students to conduct research responsibly and ethically, contributing to the advancement of knowledge while upholding the highest standards of integrity and respect for all individuals and communities involved. To read the full document, click on the following link:**16_Research Ethics Policy.**

17. Policies of the Deanship of E-Learning and Distance Education

- This document details the policies governing e-learning and distance education at Northern Border University. It includes guidelines on the use of e-learning platforms, student responsibilities in online courses, assessment methods, and quality assurance measures to ensure effective and efficient online education. **Click here to read the document.**

18. E-Learning Regulations

- This document outlines the regulations for e-learning at Northern Border University, focusing on the structure, delivery, and management of online courses. It covers the roles and responsibilities of students and faculty, technology requirements, and strategies for maintaining academic integrity in a virtual environment. **Click here to read the document.**

19. Library Regulations and Knowledge Sources

- This document provides information about the regulations governing the use of library resources and services at Northern Border University. It includes policies on library access, borrowing privileges, use of digital resources, and guidelines for maintaining a conducive learning environment**. Click here to read the document.**

2. APPENDIX B: STUDENT FORMS

1. **Re-enrollment Form**
    - This form is used by students who wish to apply for re-enrollment at Northern Border University after an interruption in their studies. It outlines the conditions and steps required for re-enrollment, including eligibility criteria and the necessary approvals from the university administration. To download the form, click on the following link: **1_Re-enrollment Form**

2. **Equivalent Courses Form (Old and New Plans)**
    - This form facilitates the mapping of courses between old and new academic plans for students who are transitioning between study plans. It allows for the identification of equivalent courses, ensuring that credits are appropriately transferred and recognized. To download the form, click on the following link: **2_Equivalent Courses Form**

3. **Visiting Student Form (External University)**
    - This form is intended for students who wish to study temporarily at another university as a visiting student. It requires details about the host institution and the courses to be taken, along with approvals from both the home and host universities. To download the form, click on the following link: **3_Visiting Student**

4. **Request for Duplicate or Replacement Document**
    - This form is for students who need to request a duplicate or replacement of official university documents, such as diplomas or transcripts. It includes the required documentation and fees associated with obtaining replacements. To download the form, click on the following link: **4_Request for Duplicate**

5. **Transfer from Northern Border University to Another University**
    - This form allows students to initiate a transfer from Northern Border University to another university. It outlines the conditions and processes required for a successful transfer, including the necessary approvals from university authorities. To download the form, click on the following link: **5_Transfer from NBU to Another University**

6. **File Withdrawal and Clearance**
    - This form is used by students who wish to withdraw from the university permanently. It includes a checklist for completing the clearance process, ensuring that all academic and financial obligations are fulfilled before leaving the university. To download the form, click on the following link: **6_File Withdrawal and Clearance**

3. APPENDIX C: ROLE OF STUDENT FEEDBACK IN PROGRAM IMPROVEMENT

The Industrial Engineering Program actively engages students through various surveys to assess and enhance different facets of the educational experience. Each of these surveys is designed to capture detailed feedback on specific aspects of the educational and campus experience, allowing the Industrial Engineering Program to make informed improvements that enhance student satisfaction and program effectiveness.

A. KEY STUDENT SURVEYS

Your active participation in these surveys is crucial. By providing honest and thoughtful feedback, you play a vital role in enhancing the learning environment and strengthening the Industrial Engineering program. Your input is valued, and the industrial engineering program is dedicated to listening and responding to your needs. Below are the key surveys conducted:

1. Student Course Evaluation Survey (CES)

This survey focuses on specific aspects of course design, delivery, and support. It evaluates the clarity of course objectives, the alignment of course activities with these objectives, how well instructors deliver and manage the course, and the adequacy of resources provided. Students are asked about their perception of the instructor's knowledge, enthusiasm, and the helpfulness of the course materials. This survey aims to collect actionable feedback to improve course content, teaching methods, and overall student satisfaction with individual courses.

Access Survey: To review the content of this survey or discuss any questions in it with the academic advisor, please click on the following link: **Student Course Evaluation Survey (CES)**

2. Student Assessment of Learning Resources Survey

This survey measures students' access to and satisfaction with learning resources, including the university library and online materials. It covers the ease of access to these resources, the adequacy and currency of materials provided, and the effectiveness of library staff and training programs. The survey aims to ensure that learning resources are sufficient, up-to-date, and effectively support students' academic needs, thereby enhancing their learning experience.

Access Survey: To review the content of this survey or discuss any questions in it with the academic advisor, please click on the following link: Student_Assessment_of_Learning Resources Survey

3. Student Assessment of Program Quality Survey

This survey gathers feedback on the overall quality and effectiveness of the Industrial Engineering program. It addresses the clarity of program goals, the relevance of the skills taught to current job market trends, the success in achieving learning outcomes, and the support provided for academic and career planning. Feedback is also sought on how well the program responds to student suggestions and the perceived improvements made over time. The goal is to continuously refine the program to meet student needs and industry standards.

Access Survey: To review the content of this survey or discuss any questions in it with the academic advisor, please click on the following link: **Student_Assessment_of_Program Quality Survey**

4. Student Assessment of Health and Safety Survey

This survey focuses on health and safety standards across the campus, including compliance with safety regulations, clarity of safety policies, the availability of safety equipment, and training for emergencies. It aims to assess and enhance the safety culture on campus, ensuring that all safety measures are effectively communicated and implemented to maintain a safe learning environment.

Access Survey: To review the content of this survey or discuss any questions in it with the academic advisor, please click on the following link: **Student_Assessment_of_Health and Safety Survey**

5. Student Experience Survey (SES)

The SES is designed for more senior students (4th and 5th year) and covers a wide range of aspects concerning student life and services. It assesses the availability of information about the institution, the helpfulness of orientation programs, the adequacy of academic advice, and the quality and accessibility of learning and teaching facilities. It also evaluates the availability of extracurricular and religious facilities. The feedback from this survey is used to improve the quality of life and academic support for students, ensuring a fulfilling university experience.

Access Survey: To review the content of this survey or discuss any questions in it with the academic advisor, please click on the following link: **Student_Experience Survey (SES)**

6. Student Graduating Survey (PLOs Assessment)

This survey is aimed at graduating students, assessing their attainment of the Program Learning Outcomes (PLOs). It evaluates students' understanding and application of engineering principles, their ability to solve complex problems, design solutions considering various factors, communicate effectively, and work collaboratively in teams. Feedback from this survey is crucial for assessing the effectiveness of the educational program in preparing students for professional success and for making necessary adjustments to the curriculum.

Access Survey: To review the content of this survey or discuss any questions in it with the academic advisor, please click on the following link: **Student_Graduating Student Survey (PLOs Assessment)**

7. Student Program Evaluation Survey (PES)

Targeted at students in their final year, this survey evaluates the overall satisfaction with the program, covering aspects such as academic and career counseling, instructor support, resource availability, and the relevance of the education to their future careers. It also assesses the effectiveness of field experiences and technology usage in enhancing learning. The goal is to gather insights that help in continuously improving the program to better meet students' needs and industry demands.

Access Survey: To review the content of this survey or discuss any questions in it with the academic advisor, please click on the following link: **Student_Program Evaluation Survey (PES)**

Additional Notes:

- A course-specific survey assessing learning outcomes is also distributed by faculty at the end of each course, though it is not included in this appendix.
- The CES, SES, and PES are completed by students through the Banner system.

B. FEEDBACK LOOP AND CONTINUOUS IMPROVEMENT

When you participate in surveys, you are doing more than just answering questions — you are actively shaping the future of the Industrial Engineering program. Here is a closer look at how your feedback leads to tangible changes:

1. Analysis of Feedback

- What Happens: We gather all the responses from the surveys and break them down to understand what you and your peers appreciate and what you think could be better. This analysis helps us identify strong points that need to be maintained and specific areas where we can make improvements.
- Your Impact: Your honest feedback helps highlight what works well and what does not, guiding us to focus our efforts where they are needed most.

2. Action Planning

- What Happens: Based on what we learn from your feedback, we develop a plan of action. This might involve redesigning a course, updating resource materials, enhancing facilities, or even revising support services.
- Your Impact: The suggestions you provide can lead to real changes. For instance, if many students feel a course could use more practical examples, we might adjust the curriculum to include more case studies or hands-on projects.

3. Implementation of Changes

- What Happens: We put our plans into action. This could be anything from training our faculty with new teaching techniques to upgrading the technology in our labs.
- Your Impact: By noting what needs improvement, you can see these changes implemented during your time at the university or for future students. Your feedback directly influences how we teach, support, and provide for our student community.

4. Review and Reassessment

- What Happens: After implementing changes, we do not just assume everything is fixed. We revisit the altered areas to see if the changes have effectively addressed the concerns. This may involve follow-up surveys or other forms of feedback to evaluate the impact of the modifications.
- Your Impact: Your continued engagement in providing feedback helps us refine and perfect our approaches. It is an ongoing conversation — as the needs and expectations of students evolve, so does our program.