Study Plan
Faculty of Engineering and Technology
Master Program
Intelligent Systems in Industrial Engineering
(Thesis Track)

First: GENERAL RULES & CONDITIONS:

1. This plan conforms to the valid regulations of the programs of graduate studies.
2. Areas of specialty of admission in this program:
   - The first priority: Industrial Engineering
   - The second priority: Mechanical Engineering
   - The third priority: Computer Engineering
   - The forth priority: Mechatronics Engineering
   - The fifth priority: Electrical Engineering
   - The sixth priority: Biomedical Engineering
   - The seventh priority: Civil Engineering
   - The eighth priority: Chemical Engineering
   - The ninth priority: Architectural Engineering

Second: SPECIAL CONDITIONS:

- None.

Third: STUDY PLAN: Studying 33 credit hours as follows:

1. **Obligatory Courses: 18 credit hours:**

Course No.	Course Title	Credit Hours	Theory	Prac.	Preq.
7080010	Applied Data analytics and machine learning	3	3	0	
7080011	Intelligent supply chain management	3	3	0	
7080012	Artificial Intelligence	3	3	0	
7080013	Continuous Improvement and Lean Six-Sigma	3	3	0	
7080014	IoT for Smart factories	3	3	0	
7080015	Scientific Research Methodology	3	3	0	

2. **Elective Courses: 6 credit hours from the following:**

Course No.	Course Title	Credit Hours	Theory	Prac.	Preq.
7080017	Advanced optimization	3	3	0	
7080019	Project Management for Industry 4.0	3	3	0	
7080020	Behavioral science in a practical problem solving framework	3	3	0	
7080021	Intelligent Decision Support Systems	3	3	0	
7080022	Data sciences for Enterprise Resource Planning	3	3	0	
7080023	Advanced simulation	3	3	0	
7080024	Marketing Engineering	3	3	0	
7080025	Industrial automation and Robotics	3	3	0	
7080026	Total Quality Management and Operational Excellence	3	3	0	

3. **Thesis: 9 credit hours (7080090).**

جامعة كل العرب

Program Education Objectives:

PEO 1: "Systems-Based Solutions" Produce graduates who will draw upon the fundamental knowledge, skills, and tools of Industrial engineering to develop scale-appropriate system-based engineering solutions that satisfy constraints imposed by a global society.

PEO 2: "Life-Long Learners" Produce graduates that will enhance their skills through formal education and training, independent inquiry, and professional development.

PEO 3: "Professional Responsibility" Produce graduates who will work independently as well as collaboratively with others, and demonstrate leadership, accountability, initiative, and ethical and social responsibility.

PEO 4: "Further Graduate Education" Produce graduates who will successfully pursue further graduate degrees at the PhD level.

PEO 5: "Successful careers" Our graduates will have successful professional careers in industry, government, academia and military as innovative engineers.

Program Learning Outcomes

- Gain practical, hands-on experience with statistics programming languages and big data tools through coursework and applied research experiences.
- Learn to apply quantitative modeling and data analysis techniques to the solution of real life problems.
- Communicate findings, and effectively present results using data visualization techniques.
- Recognize and analyze ethical issues in Industry related to intellectual property, data security, integrity, and privacy.
- Demonstrate knowledge of statistical data analysis techniques utilized in business decision making.
- Apply principles of Data Science to the analysis and decision making of quality control, sustainability, product development, production planning, and supply chain problems.
- Use of data science in smart and sustainable industries, that integrate IoT with syber physical systems.
- Use data mining software to solve real-world problems.
- Employ cutting edge tools and technologies to analyze Big Data.
- Apply algorithms to build machine intelligence.
- Demonstrate use of team work, leadership skills, decision making and organization theory.
- Become familiar will machine learning, artificial intelligence, and IoT and their applications in engineering.