



## **ACADEMIC CATALOG**

### **INDUSTRIAL ENGINEERING**

#### **DEGREE PROFILE**

An industrial engineer graduated from Universidad de Las Américas (UDLA) is a competent, enterprising professional with international/global vision who designs and optimizes operations through quality assurance, increased productivity and innovative development of operative processes of the manufacturing and services industry, with a focus on safe working environments and environmentally friendly methods.

The UDLA industrial engineer is able to identify, formulate and solve complex problems through the application of engineering, science and math principles and concepts. Moreover, a graduate from this program applies designs specific to industrial engineering with the purpose of creating solutions to satisfy specific needs related to public health, safety and wellness, as well as environmental, social, cultural, global and economic factors. They recognize ethical and professional implications in engineering projects and can make informed decisions while considering the impact of their solution in global, economic, social and environmental contexts. They work efficiently in teams with a collaborative and inclusive environment of leadership, where they establish and attain goals and plan necessary tasks together. Additionally, they can design, develop and carry out experiments, analyze and interpret data and results and use their engineering expertise to arrive to conclusions. Finally, they acquire and apply new knowledge as necessary, using appropriate learning strategies. The graduate of this program attains and is awarded the degree of Industrial Engineer.

An industrial engineer from UDLA is expected to lead multidisciplinary teams locally and internationally, while contributing to the needs of competitiveness, productivity and quality in the industry, acting with ethical values, social responsibility, environmental awareness and service to the community.

#### **LEARNING OUTCOMES**

- 1.- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.



- 2.- Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- 3.- Communicate effectively with a range of audiences within the field.
- 4.- Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- 5.- Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- 6.- Develop and conduct appropriate experimentation, analyze, and interpret data, and use engineering judgment to draw conclusions.
- 7.- Acquire and apply new knowledge as needed, using appropriate learning strategies.

## **FIRST SEMESTER**

- 1.- MATZ0339 INTRODUCTION TO CALCULUS**
- 2.- IIDZ1102 INTRODUCTION TO INDUSTRIAL ENGINEERING**
- 3.- FISZ0121 GENERAL PHYSICS**
- 4.- IIDZ1303 COMPUTER AIDED DESIGN**
- 5.- FGLZ0192 LANGUAGE AND DIGITAL COMMUNICATION**

## **SECOND SEMESTER**

- 1.- MATZ0341 CALCULUS I**  
**Prerequisites :**  
MATZ0339 INTRODUCTION TO CALCULUS
- 2.- MATZ0221 LINEAR ALGEBRA**  
**Prerequisites :**  
MATZ0339 INTRODUCTION TO CALCULUS
- 3.- IAGI1108 GENERAL CHEMISTRY**
- 4.- IIDZ2307 MATERIALS TECHNOLOGY**



**Prerequisites :**

FISZ0121 GENERAL PHYSICS

IIDZ1303 COMPUTER AIDED DESIGN

**5.- IIDZ3313 MEASUREMENT SYSTEMS**

**Prerequisites :**

IIDZ1303 COMPUTER AIDED DESIGN

**6.- FGHZ0932 CITIZENSHIP, CULTURE AND HISTORY**

**THIRD SEMESTER**

**1.- MATZ0342 CALCULUS II**

**Prerequisites :**

MATZ0341 CALCULUS I

**2.- ISWZ1193 PROGRAMMING**

**Prerequisites :**

FGLZ0192 LANGUAGE AND DIGITAL COMMUNICATION

**3.- IIDZ2106 WORK STUDY AND PRODUCTIVITY**

**Prerequisites :**

IIDZ1102 INTRODUCTION TO INDUSTRIAL ENGINEERING

**4.- FGHZ0943 ART, HUMAN EXPRESSION AND COMMUNITY**

**5.- FGLZ0180 RESEARCH AND ACADEMIC TEXTS**

**Prerequisites :**

FGLZ0192 LANGUAGE AND DIGITAL COMMUNICATION

**FOURTH SEMESTER**

**1.- MATZ0346 DIFFERENTIAL EQUATIONS**

**Prerequisites :**

MATZ0342 CALCULUS II

**2.- IIDZ2505 STATISTICS FOR ENGINEERS**

**Prerequisites :**

MATZ0341 CALCULUS I

**3.- IIDZ2305 THERMODYNAMICS**



**Prerequisites :**

IAGI1108 GENERAL CHEMISTRY

MATZ0341 CALCULUS I

**4.- IIDZ2109 PROCESS-BASED MANAGEMENT**

**Prerequisites :**

IIDZ2106 WORK STUDY AND PRODUCTIVITY

**5.- IIDZ3312 MECHANICS FOR ENGINEERS**

**Prerequisites :**

IIDZ2307 MATERIALS TECHNOLOGY

MATZ0342 CALCULUS II

**6.- IIDZ3411 INDUSTRIAL ACCOUNTING AND COSTS**

**Prerequisites :**

FGLZ0192 LANGUAGE AND DIGITAL COMMUNICATION

**FIFTH SEMESTER**

**1.- IIDZ3109 EXPERIMENT DESIGN**

**Prerequisites :**

IIDZ2505 STATISTICS FOR ENGINEERS

**2.- IIDZ3114 OPERATIONS RESEARCH**

**Prerequisites :**

IIDZ3411 INDUSTRIAL ACCOUNTING AND COSTS

MATZ0221 LINEAR ALGEBRA

**3.- IIDZ3116 OPERATIONS MANAGEMENT I**

**Prerequisites :**

IIDZ2109 PROCESS-BASED MANAGEMENT

**4.- IIDZ3316 INDUSTRIAL ELECTRICITY AND ELECTRONICS**

**Prerequisites :**

ISWZ1193 PROGRAMMING

**5.- IIDZ3217 QUALITY MANAGEMENT**

**Prerequisites :**

IIDZ2109 PROCESS-BASED MANAGEMENT



## **SIXTH SEMESTER**

### **1.- IIDZ4121 PROCESS SIMULATION**

**Prerequisites :**

IIDZ2505 STATISTICS FOR ENGINEERS

IIDZ2109 PROCESS-BASED MANAGEMENT

### **2.- IIDZ3111 STATISTICAL PROCESS CONTROL**

**Prerequisites :**

IIDZ3217 QUALITY MANAGEMENT

IIDZ3313 MEASUREMENT SYSTEMS

### **3.- IIDZ4122 OPERATIONS MANAGEMENT II**

**Prerequisites :**

IIDZ3116 OPERATIONS MANAGEMENT I

### **4.- IIDZ3318 CAD CAM CAE SYSTEMS**

**Prerequisites :**

IIDZ1303 COMPUTER AIDED DESIGN

IIDZ3312 MECHANICS FOR ENGINEERS

### **5.- IIDZ3324 INDUSTRIAL MACHINERY**

**Prerequisites :**

IIDZ3312 MECHANICS FOR ENGINEERS

### **6.- IIDZ3422 ENGINEERING ECONOMICS**

**Prerequisites :**

MATZ0341 CALCULUS I

## **SEVENTH SEMESTER**

### **1.- IIDZ3120 SERVICE MANAGEMENT**

**Prerequisites :**

IIDZ3217 QUALITY MANAGEMENT

### **2.- IIDZ4135 SUPPLY CHAIN MANAGEMENT**

**Prerequisites :**

IIDZ4122 OPERATIONS MANAGEMENT II

### **3.- IIDZ3224 CLEANER PRODUCTION AND ENERGY EFFICIENCY**



**Prerequisites :**

IIDZ3116 OPERATIONS MANAGEMENT I

**4.- IIDZ4331 INDUSTRIAL AUTOMATION AND ROBOTICS**

**Prerequisites :**

IIDZ3324 INDUSTRIAL MACHINERY

**5.- IIDZ3226 INDUSTRIAL SAFETY**

**Prerequisites :**

IIDZ3116 OPERATIONS MANAGEMENT I

**6.- IIDZ4428 ORGANIZATIONAL MANAGEMENT**

**Prerequisites :**

IIDZ3116 OPERATIONS MANAGEMENT I

**EIGHTH SEMESTER**

**1.- IIDZ4133 PRODUCT DESIGN AND DEVELOPMENT**

**Prerequisites :**

IIDZ3318 CAD CAM CAE SYSTEMS

IIDZ3111 STATISTICAL PROCESS CONTROL

**2.- IIDZ4126 LOGISTICS AND TRANSPORTATION**

**Prerequisites :**

IIDZ4135 SUPPLY CHAIN MANAGEMENT

**3.- IIDZ4129 INDUSTRIAL MAINTENANCE MANAGEMENT**

**Prerequisites :**

IIDZ3224 CLEANER PRODUCTION AND ENERGY EFFICIENCY

**4.- IIDZ4229 ERGONOMICS AND OCCUPATIONAL HEALTH**

**Prerequisites :**

IIDZ3226 INDUSTRIAL SAFETY

**5.- TITA5841 CONTINUOUS IMPROVEMENT**

**NINTH SEMESTER**

**1.- IIDZ4136 INNOVATION AND TECHNOLOGY SEMINAR**

**Prerequisites :**

IIDZ4133 PRODUCT DESIGN AND DEVELOPMENT



## **2.- IIDZ4140 INDUSTRIAL PLANT DESIGN**

### **Prerequisites :**

IIDZ4126 LOGISTICS AND TRANSPORTATION

## **3.- IIDZ4139 PRE-PROFESSIONAL INTERNSHIPS**

### **Prerequisites :**

IIDZ4428 ORGANIZATIONAL MANAGEMENT

IIDZ4122 OPERATIONS MANAGEMENT II

## **4.- IIDZ4131 MANAGEMENT INFORMATION SYSTEMS**

### **Prerequisites :**

IIDZ4428 ORGANIZATIONAL MANAGEMENT

## **5.- TITA5842 INDUSTRIAL PROJECTS**

### **Prerequisites :**

TITA5841 CONTINUOUS IMPROVEMENT