



## **ACADEMIC CATALOG**

### **ENVIRONMENTAL ENGINEERING**

#### **DEGREE PROFILE**

An environmental engineer graduated from Universidad de Las Américas (UDLA) is a competent, enterprising professional with international/global vision who proposes innovative engineering solutions to environmental problems through the application of sustainable and environmentally-friendly technology, in accordance with national and international regulations.

UDLA's environmental engineer is able to identify, formulate and solve complex problems throughout the application of specialized engineering, science and math principles and concepts. Moreover, a graduate from this program applies designs specific to environmental 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. Furthermore, this professional communicates effectively with a wide range of audiences within the field. 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 Environmental Engineer.

An environmental engineer from UDLA is expected to work in multidisciplinary teams, respecting the gender and cultural identity of the collective groups that require inclusion of environmental technology, demonstrating professional ethics and environmental awareness.

#### **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.- FISZ0121 GENERAL PHYSICS**
- 3.- IAGI1108 GENERAL CHEMISTRY**
- 4.- IGAM1110 INTRODUCTION TO ENVIRONMENTAL ENGINEERING**
- 5.- FGLZ0192 LANGUAGE AND DIGITAL COMMUNICATION**

## **SECOND SEMESTER**

- 1.- MATZ0341 CALCULUS I**

**Prerequisites :**

MATZ0339 INTRODUCTION TO CALCULUS

- 2.- IAGI2108 ORGANIC CHEMISTRY**

**Prerequisites :**

IAGI1108 GENERAL CHEMISTRY



### **3.- IGAM1220 GENERAL BIOLOGY**

**Prerequisites :**

IGAM1110 INTRODUCTION TO ENVIRONMENTAL ENGINEERING

### **4.- FGLZ0180 RESEARCH AND ACADEMIC TEXTS**

**Prerequisites :**

FGLZ0192 LANGUAGE AND DIGITAL COMMUNICATION

### **5.- FGHZ0942 ART, HUMAN EXPRESSION AND COMMUNITY**

## **THIRD SEMESTER**

### **1.- MATZ0342 CALCULUS II**

**Prerequisites :**

MATZ0341 CALCULUS I

### **2.- IGAM2200 FLORA AND FAUNA**

**Prerequisites :**

IGAM1220 GENERAL BIOLOGY

### **3.- IBIO1606 BIostatISTICS**

**Prerequisites :**

FGLZ0192 LANGUAGE AND DIGITAL COMMUNICATION

MATZ0341 CALCULUS I

### **4.- IGAM2010 MASS AND ENERGY TRANSFER OPERATIONS**

**Prerequisites :**

MATZ0341 CALCULUS I

IAGI1108 GENERAL CHEMISTRY

FISZ0121 GENERAL PHYSICS

### **5.- FGHZ0933 CITIZENSHIP, CULTURE AND HISTORY**

## **FOURTH SEMESTER**

### **1.- IGAM2001 ENVIRONMENTAL MONITORING AND ANALYSIS LABORATORY**

**Prerequisites :**

IAGI2108 ORGANIC CHEMISTRY

IGAM2010 MASS AND ENERGY TRANSFER OPERATIONS



IBIO1606 BIOSTATISTICS

**2.- IGAM2211 ECOLOGY**

**Prerequisites :**

IGAM2200 FLORA AND FAUNA

**3.- IGAM2100 THERMODYNAMIC PROCESSES**

**Prerequisites :**

IGAM2010 MASS AND ENERGY TRANSFER OPERATIONS

**4.- IGAM2516 CLIMATOLOGY AND METEOROLOGY**

**Prerequisites :**

IGAM2010 MASS AND ENERGY TRANSFER OPERATIONS

IBIO1606 BIOSTATISTICS

**5.- IBIO1612 EXPERIMENTAL BIODESIGN**

**Prerequisites :**

IBIO1606 BIOSTATISTICS

**FIFTH SEMESTER**

**1.- IGAM2101 ENVIRONMENTAL FLUID MECHANICS**

**Prerequisites :**

IGAM2100 THERMODYNAMIC PROCESSES

MATZ0342 CALCULUS II

**2.- IGAM0105 ENVIRONMENTAL REGULATIONS MANAGEMENT**

**Prerequisites :**

IGAM2211 ECOLOGY

IGAM2001 ENVIRONMENTAL MONITORING AND ANALYSIS LABORATORY

FGLZ0180 RESEARCH AND ACADEMIC TEXTS

**3.- IGAM2810 TOPOGRAPHY AND MAPPING**

**Prerequisites :**

IGAM2516 CLIMATOLOGY AND METEOROLOGY

**4.- IGAM2221 HYDROGEOLOGY**

**Prerequisites :**

IGAM2516 CLIMATOLOGY AND METEOROLOGY



#### **5.- IGAM2511 ATMOSPHERIC POLLUTION**

**Prerequisites :**

IGAM2516 CLIMATOLOGY AND METEOROLOGY

#### **6.- IGAM3625 ECONOMIC ENVIRONMENTAL ASSESSMENT**

**Prerequisites :**

IBIO1612 EXPERIMENTAL BIODESIGN

IGAM2211 ECOLOGY

### **SIXTH SEMESTER**

#### **1.- IGAM3120 TRANSPORTATION, COMBINATION AND TRANSFORMATION OF ELEMENTS IN THE ENVIRONMENT**

**Prerequisites :**

IGAM2101 ENVIRONMENTAL FLUID MECHANICS

#### **2.- IGAM2610 INDUSTRIAL SAFETY**

**Prerequisites :**

IGAM0105 ENVIRONMENTAL REGULATIONS MANAGEMENT

#### **3.- IGAM2430 GEOGRAPHIC INFORMATION SYSTEMS**

**Prerequisites :**

IGAM2810 TOPOGRAPHY AND MAPPING

#### **4.- IGAM2311 HYDRAULIC DESIGN**

**Prerequisites :**

IGAM2101 ENVIRONMENTAL FLUID MECHANICS

#### **5.- IGAM3521 RADIOACTIVE CONTAMINATION**

**Prerequisites :**

IGAM2511 ATMOSPHERIC POLLUTION

#### **6.- IGAM1649 SUSTAINABLE DEVELOPMENT**

**Prerequisites :**

IGAM3625 ECONOMIC ENVIRONMENTAL ASSESSMENT

### **SEVENTH SEMESTER**

#### **1.- IGAM2620 ENVIRONMENTAL MANAGEMENT OF NATURAL RISKS**

**Prerequisites :**



IGAM2430 GEOGRAPHIC INFORMATION SYSTEMS

IGAM3625 ECONOMIC ENVIRONMENTAL ASSESSMENT

## **2.- IGAM3823 SOLID WASTE MANAGEMENT**

**Prerequisites :**

IGAM0105 ENVIRONMENTAL REGULATIONS MANAGEMENT

## **3.- IGAM3321 WASTEWATER TREATMENT**

**Prerequisites :**

IGAM2311 HYDRAULIC DESIGN

IGAM3120 TRANSPORTATION, COMBINATION AND TRANSFORMATION  
OF ELEMENTS IN THE ENVIRONMENT

## **4.- IGAM2631 ENVIRONMENTAL MANAGEMENT SYSTEMS**

**Prerequisites :**

IGAM2610 INDUSTRIAL SAFETY

IGAM0105 ENVIRONMENTAL REGULATIONS MANAGEMENT

## **5.- IGAM2530 ECOTOXICOLOGY**

**Prerequisites :**

IGAM2001 ENVIRONMENTAL MONITORING AND ANALYSIS LABORATORY

IGAM3521 RADIOACTIVE CONTAMINATION

## **6.- IGAM3820 REMEDIATION**

**Prerequisites :**

IGAM2001 ENVIRONMENTAL MONITORING AND ANALYSIS LABORATORY

IGAM3625 ECONOMIC ENVIRONMENTAL ASSESSMENT

## **EIGHTH SEMESTER**

### **1.- IGAM3341 MANAGEMENT OF HYDROGRAPHIC BASINS**

**Prerequisites :**

IGAM2430 GEOGRAPHIC INFORMATION SYSTEMS

### **2.- IGAM3331 TREATMENT PLANT DESIGN**

**Prerequisites :**

IGAM3321 WASTEWATER TREATMENT

### **3.- IGAM2636 ENERGY EFFICIENCY**

**Prerequisites :**



IGAM3625 ECONOMIC ENVIRONMENTAL ASSESSMENT

IGAM3120 TRANSPORTATION, COMBINATION AND TRANSFORMATION  
OF ELEMENTS IN THE ENVIRONMENT

**4.- IGAM3825 PRE-PROFESSIONAL INTERNSHIPS**

**5.- TITA6841 ENVIRONMENTAL IMPACT ASSESSMENT**

**Prerequisites :**

IGAM2631 ENVIRONMENTAL MANAGEMENT SYSTEMS

**NINTH SEMESTER**

**1.- IGAM2643 ENVIRONMENTAL AUDITS**

**Prerequisites :**

TITA6841 ENVIRONMENTAL IMPACT ASSESSMENT

**2.- IGAM3644 LAND-USE MANAGEMENT AND PLANNING**

**Prerequisites :**

IGAM2430 GEOGRAPHIC INFORMATION SYSTEMS

IGAM3823 SOLID WASTE MANAGEMENT

IGAM3341 MANAGEMENT OF HYDROGRAPHIC BASINS

**3.- IGAM3824 DRINKING WATER AND WASTEWATER SYSTEMS**

**Prerequisites :**

IGAM3331 TREATMENT PLANT DESIGN

**4.- IGAM2648 ENVIRONMENTAL MODELING**

**Prerequisites :**

IGAM3341 MANAGEMENT OF HYDROGRAPHIC BASINS

IGAM3120 TRANSPORTATION, COMBINATION AND TRANSFORMATION  
OF ELEMENTS IN THE ENVIRONMENT

**5.- TITA6842 ENVIRONMENTAL ENGINEERING PROJECTS**

**Prerequisites :**

IGAM3820 REMEDIATION

TITA6841 ENVIRONMENTAL IMPACT ASSESSMENT