

# ITBA

Instituto Tecnológico  
de Buenos Aires



# About ITBA

ITBA is the first and leading private University specialized in teaching and research in Engineering, Technology and Management in Argentina. Since 1959, the Instituto Tecnológico de Buenos Aires has been renowned for its academic excellence and for its commitment to generating and transferring innovative knowledge to society.

**8 BACHELOR'S  
 DEGREES IN  
 ENGINEERING**

**2 BACHELOR'S  
 DEGREES IN  
 BUSINESS**

**12 MASTER'S  
 DEGREES &  
 SPECIALIZATIONS**

**3 PH.D IN  
 ENGINEERING  
 AND INNOVATION**

**60+ ONLINE AND  
 LIVE PROGRAMS**

**FIRST TECHNOLOGICAL  
 LEVEL LABORATORIES**

**+33%**

**Studentes with  
 international  
 experience**

**+70%**

**Industry  
 agreements**

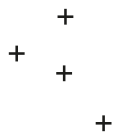
**100%**

**Programs with  
 double degree  
 agreements**

**5.2%**

**Students to  
 faculty ratio**





## **Undergraduate level**

- Bachelor in Business and Social Analytics
- Bachelor in Business Administration
- Bioengineering
- Electronic Engineering
- Engineering
- Mechanical Engineering
- Naval Engineering
- Chemical Engineering

## **Graduate level**

- Master in Data Science
- Master in Sustainable Energy Development
- Master in Strategic and Technological Management
- Master in Energy and Environment ITBA-KIT
- Master in Environmental Management
- Master in Management & Analytics
- Master in Policy Analysis
- Master in Projects and Supply Chain Management
- Data Science Specialization
- Specialization in the Economy of Oil and Natural Gas
- Specialization in Oil and Natural Gas Production
- Specialization in Well Completion at unconventional reservoirs

## **Doctoral level**

- Ph.D. in Engineering
- Ph.D. in Software Engineering
- Ph.D. In Management of Systemic Innovation



# Bachelor in Business and Social Analytics

## What does a Bachelor in Business and Social Analytics do?

The world generates data at increasing speeds and magnitudes. The Bachelor in Business and Social Analytics trains students to analyze and interpret data to make decisions that positively impact their organizations.

Bachelors in Business and Social Analytics will understand economic, social, and cultural trends to define strategies, generate solutions, create proposals, and take decisions that optimize businesses and improve society's quality of life.

### COURSE

#### SUBJECT

#### FIRST YEAR

Computing Tools	Discrete Mathematics
Introduction to Business Administration	Statistics
Mathematical Analysis	Learning methodology
Algebra	Global Historical Overview
General Computer Science	

#### SECOND YEAR

Microeconomics	Macroeconomics
Philosophy	Data Management
Data Structures and Programming	Information Display
Applied Mathematics	Elective subject- General Training Area
Business Ethics	English I
Applied Statistics I	

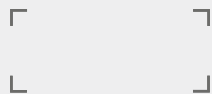
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**THIRD YEAR**

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Public and Private Law	Operations Research II
Organizational Structures	Elective subject Business
Applied Statistics II	Elective subject Social
Information Life Cycle Management	Elective subject Computer Science
Descriptive Analytics	Elective subject Analytics
Project I	Simulation
Predictive Analytics	Final Project- Analytics
Operations Research I	English II

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# Bachelor in Business Administration



## What does a Bachelor in Business Administration do?

Graduates in Business Administration from ITBA have a comprehensive vision of the business world, anchored in the potential of technology that enables them to create their own business, as well as to lead multinational or family companies.

Their training allows them to innovate, optimize and create new business models, staying ahead of the digital world and market demands, and have the skills to adapt to a constantly evolving environment.

## COURSE

### SUBJECT

#### FIRST YEAR

Introduction to Business Administration	Global Historical Overview
Algebra	Philosophy
Accounting Systems	Mathematical Analysis
General Computer Science	Managerial Accounting
Introduction to Information Technology	

#### SECOND YEAR

Microeconomics	Organizational Management based on business processes
Statistics	
Marketing	Public and Private Law I
Financial Management	Presentation techniques
Data Management	Computational Functional Analysis
Macroeconomics	Elective subjects- Management
Epistemology and heuristics	

### THIRD YEAR

Organizational Structures	Human Resources Management
Decision-making	Sales Management
Taxes and decision-making I	Taxes and decision-making II
Digital Solutions Architecture	Integrated Business Management Systems I
Elective subjects- Management	Elective subjects- Management
Elective subjects- System and Technology	Elective subjects- System and Technology
Operational Management	

### FOURTH YEAR

Business Strategy	Elective subjects- Management
Business Architecture	Elective subjects- System and Technology
Elective subjects- Management	English 1*
Elective subjects- System and Technology	English 2*
Final Project**	Technology certifications:*

-\*: The credits for these subjects are given by the certifications defined below.  
 -\*\*: The Final Project subject will be passed according to one of the following options: ↴

#### SUBJECT

Business Diagnosis and Action Plan (Final assignment)

Business Diagnosis and Implementation Systems Plan (Final assignment)

Project on products or services launching (Final assignment)

## What does a Bioengineer do?

Bioengineering graduates from ITBA have solid knowledge in molecular, cellular, anatomy and physiologic, mechanic biology, and electronic and computing technologies. These tools enable them to face the scientific challenges of the future, applying technology to medicine and biology.

Professionals in Bioengineering create or modify products, systems, and processes for specific applications and participate in the management and administration of technology in hospitals and clinics.

## COURSE

### SUBJECT

#### FIRST YEAR

Chemistry I	Chemistry II
Representation Systems	General Computer Science
Mathematics I	Mathematics II
Linear Algebra	Physics I
General Training I	Learning methodology

#### SECOND YEAR

Data Structures and Programming	Histology and Anatomy
Mathematics III	Mathematics IV
Physics II	Physics III
Molecular and Cellular Biology	Probability and Statistics

#### THIRD YEAR

Physiology	Numerical Methods
Physics IV	Electrotechnics
Mathematics V	Signals and Systems



Bio-materials	Biomechanics
Analogue and Digital Electronics	Quantitative Physiology

**FOURTH YEAR**

Biomedical Instrumentation I	Biomedical Instrumentation II
Structural and Computational Biomedicine	Biomedical Image Processing
Biomedical Signal Processing	Bioinformatics
Control Systems	Biosensors
Law for Engineers	Industrial Organization

**FIFTH YEAR**

Artificial Organs	Elective subjects
Medical Informatics	Hospital Engineering
Rehabilitation Engineering	Economics for Engineers
Course Final Project	Environmental and Occupational Safety
General Training II	Elective subjects

**Supervised Professional Practice**

Professional cycle

**Additional requirements:**

Two levels of English required.



## What does an Electronics Engineer do?

Electronics Engineers from ITBA are trained in basic sciences and in the disciplines of Electricity and Electronics with the objective of studying, constructing, and maintaining electronic and signal processing equipment, systems, and devices.

They can, for instance, make mobile phones smarter, make medical equipment more precise, or store and control energy resources more efficiently.

### COURSE

#### SUBJECT

#### FIRST YEAR

Introduction to Computing	Programming I
Representation Systems	Mathematics II
Mathematics I	Discrete Mathematics
Linear Algebra	Physics I
Learning methodology	General Training I

#### SECOND YEAR

Chemistry I	Technology of Electronic Materials
Algorithms and Data Structure	Mathematics IV
Mathematics III	Probability and Statistics
Physics II	Physics III

#### THIRD YEAR

Industrial Organization	Physics IV
Electrotechnics I	Numerical Methods
Electronic Physics	Mathematics V



Circuits Theory	Electronics Laboratory
Electronics I	Spanish
Electronics III	English I

**FOURTH YEAR**

Environmental and Occupational Safety	Information Transmission
Signal and Digital Systems Analysis	Control Systems
Electronics II	Microprocessors Laboratory
Random Signals	

**FOURTH YEAR: TELECOMMUNICATIONS ORIENTATION**

Electromagnetism	Telecommunications elective subject
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**FOURTH YEAR: MECHATRONICS/CONTROL ORIENTATION**

Economics for Engineers	Mechatronics/Control elective subject
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**FOURTH YEAR: SIGNAL PROCESSING ORIENTATION**

Adaptive signal processing	Signal processing elective subject
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**FIFTH YEAR: TELECOMMUNICATIONS ORIENTATION**

Electronics V	Antennas and Radio wave propagation
Power electronics	Digital Networks
Microwaves	Economics for Engineers
Electronic equipment design	Law for Engineers
Digital communications	English II
General Training II	Professional Practice

**FIFTH YEAR: MECHATRONICS/CONTROL ORIENTATION**

Electronics IV	Sensors and actuators
Electronics V	Machine technology
Electronic equipment design	Industrial automation

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Automated control	English II
Applied Mechatronics	Electromagnetism
Law for Engineers	Professional practice

**FIFTH YEAR: SIGNAL PROCESSING ORIENTATION**

Electronics V	Voice processing
Power electronics	Image Processing
Neural networks	DSP-fpga laboratory
Electronic equipment design	Economics for Engineers
Electromagnetism	Law for Engineers
Digital communications	English II

## What does a Petroleum Engineer do?

Petroleum engineers generate the fuel that moves our transportation systems and keeps industries running.

They boost the manufacture of thousands of products, ranging from medicines to plastics, and even cosmetics. They have the skills to design and supervise drilling operations, and they can also develop processes and equipment to optimize the production of oil and gas.

### COURSE

#### SUBJECT

#### FIRST YEAR

Chemistry I	Chemistry II
Representation Systems	General Computer Science
Mathematics I	Mathematics II
Linear Algebra	Physics I
General Training I	Learning methodology

#### SECOND YEAR

Statics and Strength of Materials	Mathematics IV
Basic programming	Physics III
Mathematics III	General Mechanics
Physics II	Physical Metallurgy I
Probability and Statistics	

#### THIRD YEAR

Organic Chemistry for Petroleum	Fluid Mechanics
Electrotechnics	Geology for Engineers





Physics IV	Fluid reservoirs and Petrophysics
Electrical installations and Machinery	Numerical Methods
Thermodynamics	English I
Oil Drilling I	

#### FOURTH YEAR

Industrial Organization	Enhanced Oil Recovery
Fieldwork I	Reservoir Geophysics
Oil Drilling II	Oil and Gas Well Completion and Workover
Reservoir Engineering	
Pressure Transient Analysis	Oil Production
Well logging	Economics for Engineers
Petroleum Geology	

#### FIFTH YEAR

Environmental and Occupational Safety	Natural Gasoline and Gas
Surface Facilities Project	Business Development
Fieldwork II	General Training III
Reservoir development	English III
Reservoir simulation	Elective subjects
Law for Engineers	Professional practice
General Training II	
Oil industrialization and Economic Development	

## What does an Industrial Engineer do?

Industrial Engineers analyze the links between the parties of an organization and relate them with the general scenario to guarantee the best results.

The comprehensive overview of such Engineers outstands in various situations like shortening the waiting times at the bank, managing to forecast the sales of a company, or even making a marketing campaign more effective.

The analysis and creativity allow these Engineers to find the best solution, positively transform the technological, economic, environmental, and social surroundings.

### COURSE

#### SUBJECT

#### FIRST YEAR

Chemistry I	Chemistry II
Representation Systems	Basic programming
Mathematics I	Mathematics II
Linear Algebra	Physics I
General Computer Science	General Training I

#### SECOND YEAR

Statics and Strength of materials	Mathematics IV
Mathematics III	Physics III
Probability	Thermodynamics
Physics II	Mechanics and Mechanisms
Learning methodology	Materials and Processes
Numerical Methods	



**THIRD YEAR**

Production Organization I	Industrial Costs
Physics IV	Thermal Machines
Fluid Mechanics	Electrical Machines
Applied Statistics I	Applied Statistics II
Electrotechnics	Systems and Models
Production Organization II	English I
Electronics and Instrumentation	

**FOURTH YEAR**

Production Processes and Technologies	Operations Research II
Operations Research	Marketing
Information Systems	Economics
Budget and Control	Logistics
Thermal Installations	Quality Assurance
Electrical Installations	Technology Updates Seminars
Elective subjects	

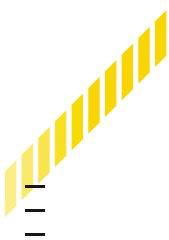
**FIFTH YEAR**

Planning and Evaluation of Projects	Training for Entrepreneurs
Strategic Planning	Project Management
Simulation	Law for Engineers
Industrial Engineering Final Project	Industrial Facilities
Environmental Management	General Training III

**OTHER REQUIREMENTS**

Professional practice	Two levels of English
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## What does a Computer Engineer do?

Computer Engineers transform and manage information through the design, development, and implementation of technology. They lead technology innovation in organizations.

Their training allows them to intervene in the analysis of data and the different stages of a computer project. Also, they are skilled in the images, videos, and texts as data sources in the development of algorithms for several applications focused on confidentiality, integrity, and availability of information.

### COURSE

#### SUBJECT

##### FIRST SEMESTER BASIC CYCLE (FIRST YEAR)

Introduction to Computing	Representation Systems
Algebra	Learning methodology
Mathematical Analysis	

##### SECOND SEMESTER BASIC CYCLE (FIRST YEAR)

Imperative Programming	Mathematical Analysis II
Discrete Mathematics	Physics I

##### FIRST SEMESTER BASIC CYCLE (SECOND YEAR)

Design and Processing of XML	Computer Logic
Documents	Physics II
Object-Oriented Programming	Chemistry

##### SECOND SEMESTER BASIC CYCLE (SECOND YEAR)

Algorithms and Data Structures	Probability and Statistics
Computer Architecture	Physics III

**FIRST SEMESTER BASIC CYCLE (THIRD YEAR)**

Database I	Operating Systems
Human-Computer Interaction (HCI)	Software Engineering I

**SECOND SEMESTER BASIC CYCLE (THIRD YEAR)**

Communication Protocols	Numerical Methods
Languages Theory, Automata and Compilers	General Training I
Web Applications Project	English I

**FIRST SEMESTER PROFESSIONAL CYCLE (FOURTH YEAR)**

Cryptography and Security	Software Engineering II
Database II	Artificial Intelligence Systems
Economics for Engineers	

**SECOND SEMESTER PROFESSIONAL CYCLE (FOURTH YEAR)**

Advanced Numerical Methods	Systems Simulation
Distributed Objects Programming	Law for Engineers
Computer Project Management	Elective subjects

**FIRST SEMESTER PROFESSIONAL CYCLE (FIFTH YEAR)**

Information Networks	Final Project
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**SECOND SEMESTER PROFESSIONAL CYCLE (FIFTH YEAR)**

General Training III	English II
Environmental and Occupational Safety	Professional practice

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## What does a Mechanical Engineer do?

Mechanical Engineers transform and adapt nature's energy sources as well as products and processes to move the world and the industries since they know how nature, materials, and technologies available work, and they use such knowledge to create better solutions to the existing options.

Their training allows them to design products, plan and manage machinery maintenance and manufacturing processes, develop and build facilities, assess materials, and optimize energy conversion processes.

### COURSE

#### SUBJECT

#### FIRST YEAR

Chemistry I	Chemistry II
Representation Systems	General Computer Science
Mathematics I	Mathematics II
Linear Algebra	Physics I
General Training I	Learning methodology

#### SECOND YEAR

Mechanical Design	Probability and Statistics
Introduction to Programming	Mathematics IV
Mathematics III	Physics III
Physics II	General Mechanics

#### THIRD YEAR

Electrotechnics	Numerical Methods
Statics	Physics IV
Mathematics V	General Electronics



Tensile Testing	Fluid Mechanics
Thermodynamics	Strength of Materials

**FOURTH YEAR**

Industrial Organization	Industrial Control and Instrumentation
Environmental and Occupational Safety	Internal Combustion Engines
Machinery Elements	Polymer Materials
Physical Metallurgy I	Mechanisms
Heat Transfer	Management of Mechanical Projects
Turbomachines	Finite Elements I

**FIFTH YEAR**

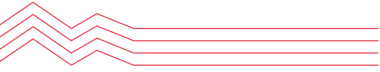
Manufacturing Processes I	Law for Engineers
Pneumatic Hydraulics and PLC	Elective Orientation
Economics for Engineers	Professional practice

**AUTOMOTIVE ORIENTATION (FIFTH YEAR)**

Electrical Installations	Transmissions in automobiles
Automotive mechatronics systems	Internal Combustion Engines design
Automotive structures	Automotive project
Dynamics in automobiles	

**MATERIALS ORIENTATION (FIFTH YEAR)**

Electrical installations	Laboratory of Advanced Materials
Introduction to steel manufacturing	Manufacturing Processes II
Mechanics and Physics of steel	Structural Integrity
Strain and Fracture of Materials	Technology of Composite Materials
Corrosion and Degradation of Materials	Materials Project



**PRODUCTION ORIENTATION (FIFTH YEAR)**

Electrical Installations	Manufacturing Processes II
Refrigeration and Air-Conditioning	Finite Elements II
Industrial Installations	Industrial Maintenance
Strain and Fracture of Materials	Mechanics Project

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**OTHER REQUIREMENTS**

English I and English II

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## What does a Naval Engineer do?

Naval Engineers master the technologies and technical tools that facilitate the use and comprehensive exploitation of seas and oceans, focusing on the care of their ecosystems.

Students in naval engineering will be able to design, project, build, repair, and inspect ships of any kind, work or sport boats, and marine devices, among others.

Their training allows them to innovate, optimize and create new business models, staying ahead of the digital world and market demands, and have the skills to adapt to a constantly evolving environment.

## COURSE

### SUBJECT

#### FIRST YEAR

Chemistry I	Materials Science I
Representation Systems	General Computer Science
Mathematics I	Mathematics II
Linear Algebra	Physics I
General Training I	Learning methodology

#### SECOND YEAR

Mechanical Design	General Mechanics
Introduction to Programming	Mathematics IV
Mathematics III	Physics III
Physics II	Statics

#### THIRD YEAR

Electrotechnics	Mathematics V
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Hydrostatics and Stability	Strength of Materials
Physics IV	Probability and Statistics
Materials Science II	English I
Thermodynamics	Resistance and Propulsion
Fluid Mechanics	

**FOURTH YEAR**

Economics for Engineers	Finite Elements I
Machinery Elements	Electronics and Instrumentation
Shipbuilding	Naval Readiness
Turbomachines	Marine Engines
Numerical Methods	Law for Engineers

**FIFTH YEAR**

Ship Structures	English II
Ships Project	Elective subjects- General Training Area
Marine Propulsion Plants	Elective subjects- Technology area
Shipyards and Vessels maintenance	Professional practice
Workboats Project	Shipping Practice





## What does a Chemical Engineer do?

Chemical Engineers develop comprehensive projects involving physical, chemical, and biological transformations applied to industrial processes. Their training includes the safety and protection of the environment.

These professionals may work in the planning and development of processes and manufacturing products for the chemical industry and related areas.

### COURSE

#### SUBJECT

#### FIRST YEAR

Chemistry I	Chemistry II
Representation Systems	General Computer Science
Mathematics I	Mathematics II
Linear Algebra	Physics I
General Training I	Learning methodology

#### SECOND YEAR

Introduction to Chemical Engineering	Physics II
Organic Chemistry I	Organic Chemistry II
Chemistry Laboratory Work	Probability and Statistics
Statics and Strength of Materials	Mathematics IV
Mathematics III	Physics III

#### THIRD YEAR

Biochemistry and Microbiology	Physical Chemistry
Analytical Chemistry	Electrotechnics





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Transport Phenomena	Numerical Methods
Thermodynamics	General Mechanics
Supervised Work I	Spanish

**FOURTH YEAR**

Unit Operations I	Oil industrialization and Economic Development
Unit Operations II	
Reactors and Reaction Engineering I	Process Control
Physical Metallurgy I	Process Control Laboratory
Law for Engineers	Chemical Industries
English I	Polymer Materials
Elective subjects	Economics for Engineers
Unit Operations III	

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**FIFTH YEAR**

Industrial Organization	English II
Conceptual Design Process	Introduction to Environmental Engineering
Plants Project	
Supervised Work II	General Training III
General Training II	

**Total course hours: 4320 hours.**

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# Master in Data Science

The **Master in Data Science** provides tools to the professionals to design, prepare, analyze and manage large volumes of data, both structured and unstructured.

It emphasizes the theoretical fundamentals to allow the graduates with the necessary flexibility to adjust to abrupt technological changes and also in the study of case studies and laboratory practices with commercial software and open source.

## COURSE

### Module 1:

Leveling.

### Module 2:

Data Science Fundamentals.

### Module 3:

Data Mining.

### Module 4:

Data Storage and Online Analytical Processing.

### Module 5:

Big Data Processing Tools.

### Module 6:

Data visualization.

### Module 7:

Machine learning Algorithms and Techniques.

### Module 8:

Big Data Transformation and Loading, Design, and Application of Extraction Processes.

### Module 9:

Geographical and Scientific Data Analysis.

### Module 10:

Intensive Seminar on Complex Data Advanced Topics.

**Thesis workshop.**

**Thesis workshop II.**

**Elective I-Graphs Databases**

**Elective II-Analysis and Processing of Satellite Images**

**Elective III-Implementation of Automated Learning Applications the Cloud**

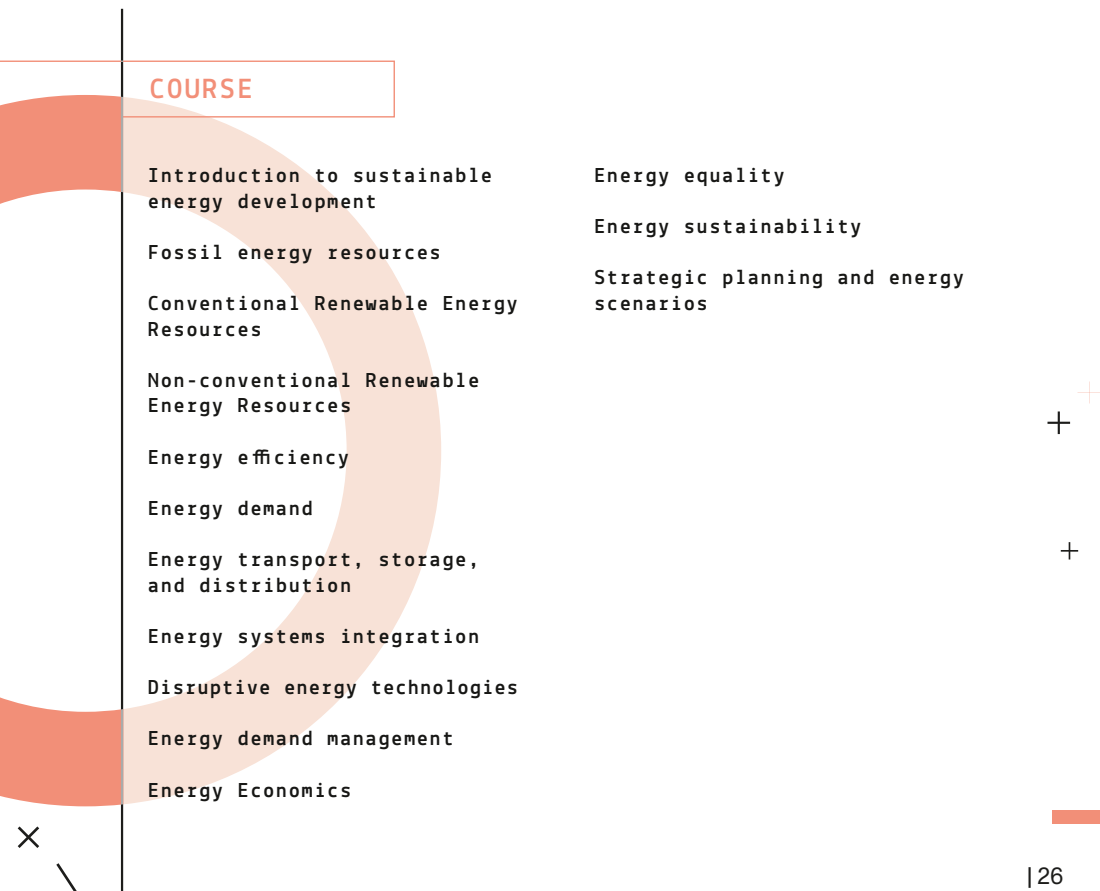
**Elective IV-Neurorobotics**

**Thesis**

# Master in Sustainable Energy Development

One of the current main challenges in the world is obtaining universal access to energy and, at the same time, mitigating the impact of its production and consumption as factors contributing to climate change. This predicament requires professionals who can **project, design, manage and regulate dynamic energy systems** that bring sustainable and innovative solutions considering the natural resources available and demand.

The **Master in Sustainable Energy Development** provides knowledge and tools to work in planning and energy management areas through a comprehensive approach that combines innovative technologies and development considering the economic, social, and environmental determinants they produce.



# Master in Strategic and Technological Management

Technology development that determines economics and productivity growth has implications for human labor. Therefore, technology becomes a strategic asset for business management.

The **Master in Strategic and Technological Management** promotes skills and knowledge to transform technological innovation into business innovation.

Professionals will learn to apply technology to create value and sustainable competitive advantages, developing decision-making skills and a systemic vision of the business.

## COURSE

### Fundamentals for business administration

Microeconomics and Macroeconomics  
 Accounting and Costs  
 Management Quantitative Techniques  
 Management Control and Finances  
 Strategic Marketing  
 Commercial Planning  
 Supply Chain and Operations  
 Sustainable Development  
 Global Markets

### Strategic management

Systemic thinking for strategic planning  
 Organizations' management and administration  
 Competitive strategies in Argentina  
 Strategic management  
 Organizational culture and Leadership  
 Seminar for Conferences about strategies  
 Seminar on Negotiation skills

### Technological Innovation

Innovation and Production Economics  
 Innovation Trends  
 Innovation Policies in Argentina  
 Technological Innovation Management  
 Assessment of Technological projects  
 Management of Technological projects  
 Development of Technology Ventures  
 Trademarks, Patents, and Intellectual Property  
 Seminar on Renewable Energies  
 Seminar on Health Technology  
 Seminar on the Agribusiness  
 Seminar on ICTs  
 Seminar on the Environment  
 Integrated Seminar: Transfer week  
 Seminar on Emotional Intelligence  
 Seminar on Technology  
 Seminar on Analytics  
 Fieldwork  
 Research Methodology  
 Tutoring and Research Activities  
 Thesis research methodology

# Master in Energy and Environment ITBA-KIT

This Master trains **leaders in socio-economic and cultural change processes**; related to a **comprehensive improvement in the energy chain** and its links; energy efficiency, care of the environment, energy policies and regulations, and the management of distributed energy and the incorporation of **renewable energy** to smart grids. At the end of the course, graduates will relate technical, environmental, regulatory, and economic concepts; manage the latest tools in calculating, simulating, and designing; put forward and develop efficient, sustainable, and competitive solutions; and work in interdisciplinary and network.

The Master in Energy and Environment is part of the Binational Program to Strengthen Argentine-German Interuniversity Networks. ITBA and Karlsruhe Institute of Technology (KIT) jointly administer this double degree program: ITBA awards a *Magister in Energy and Environment* degree and KIT a *Master in Mechanical Engineering* degree. The course has a CUA-DAHZ subsidy with coverage for language courses and mobility for professors and students.

## COURSE

### Advanced engineering fundamentals

Mechanical Design  
 Electronics and Control  
 Fluid Mechanics  
 Modeling and Simulation  
 Thermodynamics and Heat Transfer

### Specialization in Renewable Energies Bioenergy

Circular Value Chains  
 Energy Economics  
 Wind Energy  
 Geothermal Energy  
 Hydraulic Energy

Solar Energy  
 Hydrogen Energy

### Thesis of interest for the business area

## KIT Curriculum

### Advanced Fundamentals

Fluid Mechanics  
 Thermodynamics and Heat Transfer  
 Mechanical Design  
 Modeling and Simulation  
 Electronics and Control

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### **Renewable Energies**

Applied Combustion Technology  
Applied Mechanics  
Automation Technology  
Building Simulation  
CFD for Power Engineering  
Chemical Fuels  
Combined Cycle Power Plants  
Development of Innovative Appliances  
and Power  
Efficient Energy Systems and Electric  
Mobility  
Electrical Machines  
Energy and Indoor High Performance  
Buildings  
Energy Converting Engines  
Energy Technology for Buildings  
Engineering Design  
Fundamentals of Combustion  
Fundamentals of Energy Technology  
Fundamentals of reactor safety

Fusion Technology  
Geothermal Energy  
Heat Transfer  
Hydrogen Technology  
Integrated Product Development  
Lightweight Construction  
Machines and Processes  
Man - Technology - Organization  
Materials Science and Engineering  
Microsystem Technology  
Nuclear Power Plant Technology  
Polymer Engineering  
Simulator Training Combined Cycle  
Power Plants  
Technical Ceramics and Powder  
Materials  
Technical Thermodynamics and Heat  
Transfer II  
Transport and Storage of Chemical  
Energy Carriers

### **Thesis Work**



# Master in Environmental Management

The Master in **Environmental Management** focuses on the technical analysis of environmental topics emphasizing the use of specific management tools and the implementation of sustainable policies.

Graduates will be able to analyze environmental topics through multidisciplinary approaches connecting technical knowledge to the management experience in companies and governmental and non-governmental as well as current economic and social issues.

COURSE	
<b>Mathematics</b>	Environmental economics and management
<b>Chemistry</b>	
<b>Biology</b>	<b>Masters' Module</b>
<b>Introduction to Social Geological Topics</b>	Social Responsibility and Social Impact
	Research Methodology
	Environmental Law II
	Environmental Management in the Oil industry
	Non-renewable natural resources 1
<b>General Module</b>	Biodiversity
Ecology Principles	Non-renewable natural resources 2
Waste	Climate change
Water and liquid effluent	
Air quality	
Soil assessment and remediation	
Environmental impact evaluation	
Energy and environment	
Environmental audits	
Management systems	
Environmental education and communication	

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# Master in Management & Analytics

The **Master in Management & Analytics** trains professionals with solid knowledge in management and decision-making in business environments, combined with thorough techniques of acquisition, administration, analysis, and **exploitation of large volumes of data** which allows them to articulate the **business vision** with the technical aspects of data management.

It provides theoretical, technical, and practical knowledge to analyze business contexts and define strategies based on data for decision-making, and **lead innovation processes** with great communication and leadership skills.

## COURSE

Management Control and Finances  
 Commercial Planning and Data- Driven  
 Businesses  
 Strategic management based on Data  
 Innovation Management  
 Organizations' Management and  
 Administration  
 Data Governance  
 Programming for Data Analysis  
 Fundamentals of Analysis and Data  
 Mining  
 Data Storage and Online Analytical  
 Processing  
 Big Data Processing Tools  
 Machine learning Algorithms and  
 Techniques  
 Workshop on Research Methodology  
 and Academic Writing

## Elective courses

Organizational Culture and Leadership  
 Systemic Thinking for Strategic Planning  
 Sustainable Development  
 Innovation and Production Economics  
 Global Markets  
 Evaluation of projects  
 Project Management  
 Competitive Strategies in Argentina  
 Supply Chain and Operations  
 Microeconomics and Macroeconomics  
 Accounting and costs  
 Technological Innovation Policies in  
 Argentina  
 Deep Learning



# Master in Policy Analysis

Contemporary societies face public problems characterized by their complexity: multiplicity of factors, different temporal frameworks, different territory scales, and high levels of uncertainty, among others. To address such complexity we need to **strengthen the analysis and design of public policies based on evidence, using rigorous analysis technologies and methods** that generate relevant and valid knowledge of the public policy processes.

The **Master in Policy Analysis** provides knowledge and tools to analyze, design, and assess public policies based on several methods and processes of production and analysis of information. The program, characterized by a holistic vision, allows the approach to complex issues considering multiple dimensions.

## COURSE

Systemic thinking and public policies  
 Public policy processes  
 Quantitative analysis methods applied to public issues  
 Qualitative analysis methods applied to public issues  
 Design and assessment of public policies  
 Modeling and simulation applied to public issues  
 Science, society, and public policy  
 Economic analysis of public policy  
 Workshop on writing and communication  
 Thesis workshop I  
 Thesis workshop II

### Elective courses

Advanced quantitative analysis methods  
 Data science and public problems  
 Neurosciences and decision-making in public policies  
 Prospective and futures analysis  
 Dialogue processes in public affairs  
 Employment and labor policies  
 Climate change and public policies  
 Energy transitions  
 Cities and public policies  
 Agriculture and sustainability

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# Master in Projects and Supply Chain Management

Due to complex logistics systems and the volatility of the markets, we need trained professionals in the **global supply chain and project management** to evaluate the expansion of a production line, the possible incorporation of new technologies related to production, the feasibility of a project, and its connectivity with the **operations in the national and international supply chain**.

The **Master in Projects and Supply Chain Management** provides unique training in the operations related to **complex logistics systems** and the design of sustainable and innovative solutions based on the available infrastructure, the macroeconomics conditions, and the demand levels.

## COURSE

### Fundamentals of the supply chain and 4.0

Fundamentals of the Supply Chain  
 Logistic planning  
 Supply chain design  
 Supply chain analytics  
 Supply chain systems and technologies  
 Supply chain simulation

### Management

Integrated Project Management  
 Risk Management in the Supply Chain  
 Complex Logistics Systems  
 Decision-making  
 Global Strategic Management

### Global operations

Global project logistics and physical Integration  
 Operations Management and Supply  
 Production planning and control  
 Transport, Infrastructure, and Maintenance

# Data Science Specialization

**Data Science Specialization** provides tools to the professionals to design, prepare, analyze and manage large volumes of data, both structured and unstructured.

It emphasizes the theoretical fundamentals to allow the graduates with the necessary flexibility to adjust to abrupt technological changes and also in the study of case studies and laboratory practices with commercial software and open source.

## COURSE

### Module 1:

Leveling.

### Module 2:

Data Science Fundamentals.

### Module 3:

Data Mining.

### Module 4:

Data Storage and Online Analytical Processing.

### Module 5:

Big Data Processing Tools.

### Module 6:

Data visualization.

### Module 7:

Machine learning Algorithms and Techniques.

### Module 8:

Big Data Transformation and Loading, Design, and Application of Extraction Processes.

### Module 9:

Geographical and Scientific Data Analysis.

### Module 10:

Intensive Seminar on Complex Data Advanced Topics.

### Module 11:

Comprehensive Final Assignment Workshop.

# Ph.D.

The Ph.D. in Engineering and Software Engineering are intended for training experts in multiple branches of technology. The programs are based on projects managed by ITBA research professors, financed and accredited by the Ministry of Sciences, Technology and Productive Innovation and other state scientific organizations, as well as private companies or ITBA funds. We share objectives and trends with the best international universities where we join the training, I+D+i, and the transference to the productive sector, a true Sabato's Triangle in the university world.

The Ph.D. In Management of Systemic Innovation is aimed to train researchers on innovation with skills to analyze, design, and manage innovative processes and ecosystems. This Program characterizes by a systemic vision that allows the approach to complex issues based on forms of investigation and analysis that consider both technological creativity and the economic, social, environmental, and cultural dimensions of the innovation processes.



Ph.D. in  
Engineering



Ph.D. in  
Software Engineering



Ph.D. in  
Management of  
System Innovation





# About the School of Innovation

We offer professionals the crucial analytical and technical knowledge and skills to act on future challenges.

Committed to the development of individuals and organizations, the School of Innovation promotes a collaborative, flexible and dynamic environment, capable of responding to technological challenges and new market demands. We offer academic learning experiences with real time results on cutting edge technologies and adaptive management capabilities for students and executives who are eager to expand their personal and professional possibilities with a thought-leading knowledge, culturally immersive and professional network enhancing experience in Buenos Aires.

## SUMMER & WINTER PROGRAMS

Spend a month earning college credits at your home university while enjoying an exciting multicultural Buenos Aires.

### + **Data analytics**

The program covers the transactional and multidimensional databases, which are fundamental to provide adequate data support to any IT project. It seeks to offer the necessary knowledge in order to implement database systems that respond to the requirements of the project that aims to impact.

### + **Physics ii**

The program aims to present the main physical foundations, an introduction to Electricity and Magnetism, Geometric and Physical Optics, and how they formulate the various physical models that explain them, their underlying hypotheses and the limits for their application, which serve as a basis for subsequent courses in this discipline, as well as others that relate to them.

### + **Digital manufacturing – Workshop**

This workshop was design to learn and experience hands on all the steps prior to the industrialization of a product: modeling, prototyping, defining materials, components and processes.

## **+ The energy challenge – Zero emissions by 2050**

The program provides discussions on the key factors and issues associated with the energy transition required to reach zero GHG emissions. The four energy value chains: power generation, transportation fuels, industrial energy and residential energy will be analyzed and discussed. After finishing the course, students will have the tools and knowledge to professionally use the main information sources, understand the policies, technical and economic issues, challenges and opportunities of the road to zero emissions with focus on renewable energies.

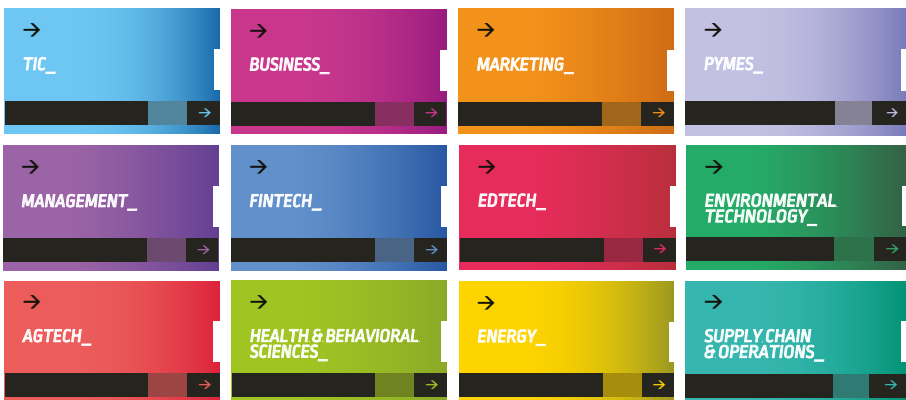
## **+ Operation research & simulation**

The program is designed to provide students with theoretical and practical tools for solving operations research and optimization problems related to industrial engineering. Beginning with mathematical modeling and evolving to simulation, this program gives the basics to understand the structure of systems and to identify the opportunities for optimization.



## **ONLINE PROGRAMS**

Training experiences in cutting edge technologies and adaptive management for professionals from around the world. Offers flexible access to digital learning courses from our course catalogue which are developed and taught by ITBA Instructors.



## **CUSTOMIZED PROGRAMS\_**

Targeted and customized learning experiences for corporate and educative organizations around the world. Unique programs specially developed to address our partners' goals and needs.

## **INTENSIVE PROGRAMS\_**

For Executives from around the world who are eager to expand their personal and professional horizons with an academic, cultural and network-enhancing experience in Buenos Aires.

Join us for one of our week-long intensive executive programs and benefit from what Argentina has to offer.

## **+ information**



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Escuela de  
**INNOVACIÓN**

EVOLUCIÓN CONTINUA



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