BUILT ENVIRONMENT

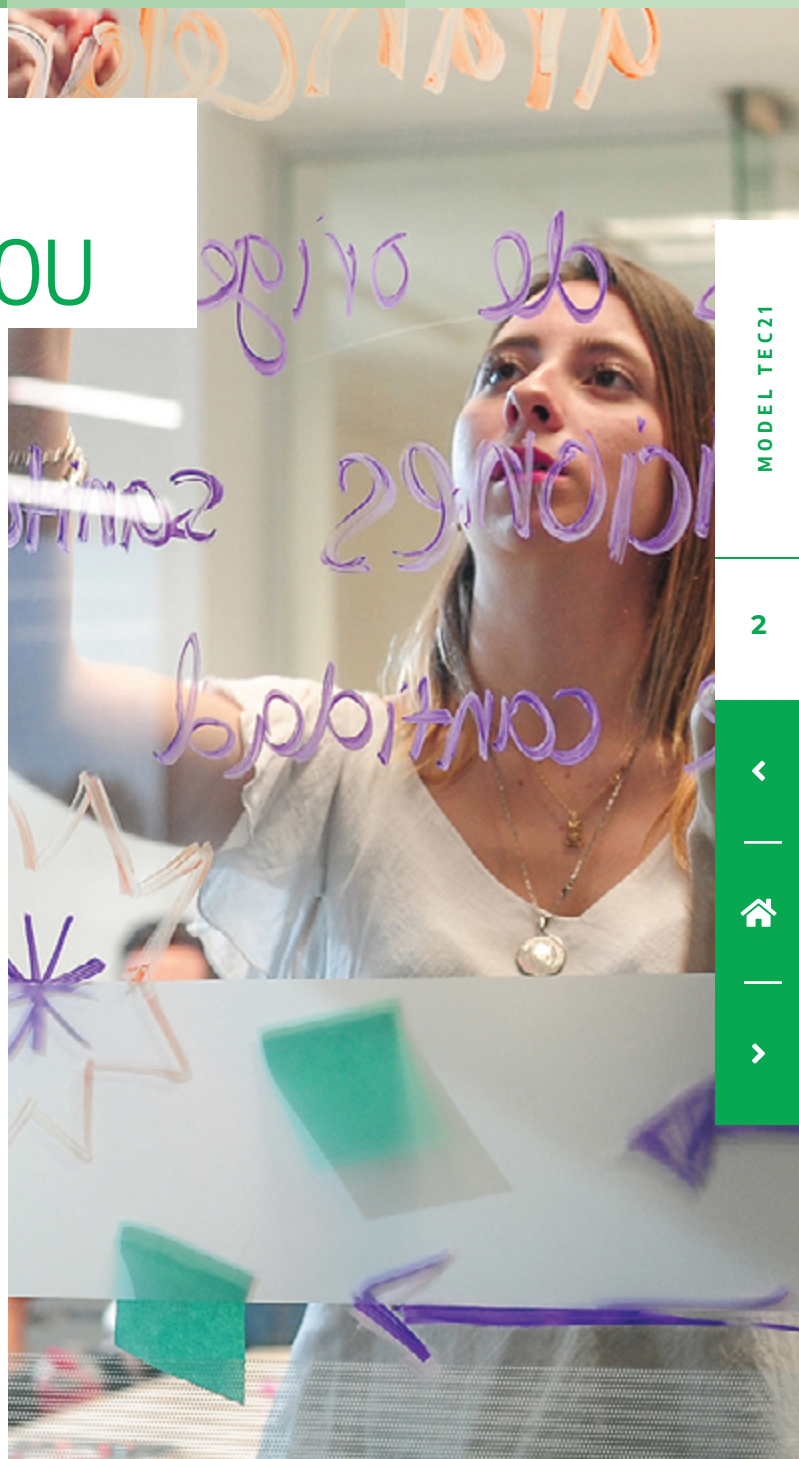Tecnológico de Monterrey

ICONS

WELCOME

CONTENTS

MODEL TEC21
TEC CHALLENGES YOU

Our **challenge-based educational model** develops the competencies that will enable you to face up to the opportunities and challenges of the 21st century creatively and strategically.

With an education that will accompany you throughout your life, our aim is for you to be aware of the needs of the environment, acquire a systemic vision of problems and develop the ability to solve them.

Right from the first semester, you will be participating in activities to develop your ability to identify opportunities, find resources, take risks and recover from failure.

In addition, **the model empowers you** to make more decisions about your university studies as you progress, in order to **develop a unique profile.**

MODEL TEC21

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WHAT IS A CHALLENGE?

A challenge is an opportunity to learn something new and reinforce what you already know. **To solve it, you need to apply yourself, investigate and interact in the "real world".** You won't be on your own: you will have a set of personal and technological resources and tools, as well as the advice of faculty who will accompany you throughout the process. Its resolution implies a certain degree of difficulty and a duration that will awaken your interest and enthusiasm and produce a sense of achievement.

COMPETENCIES THAT MAKE YOU UNIQUE

At Tecnológico de Monterrey, we have defined, after consulting leaders from diverse sectors and employers, seven competencies that all our students should possess. Regardless of which degree you are studying, the educational model anticipates that you will develop them through diverse challenges, courses and activities related to your university experience. They are:

1. **Self-knowledge and management**

2. **Innovative entrepreneurship**

3. **Social intelligence**

4. **Commitment to ethics and citizenship**

5. **Reasoning for complexity**

6. **Communication**

7. **Digital transformation**

These seven competencies, together with the **knowledge, skills, attitudes and values related to the area of Built Environment and your degree**, will be your letter of introduction and your passport in the professional world.

STEP-BY-STEP RECORD OF YOUR LEARNING

While you are at university, you will keep a record in your competency file of the degree of progress you have made and the supporting evidence. Taking responsibility for creating this file will, from this very moment, be extremely useful when you join the workforce.
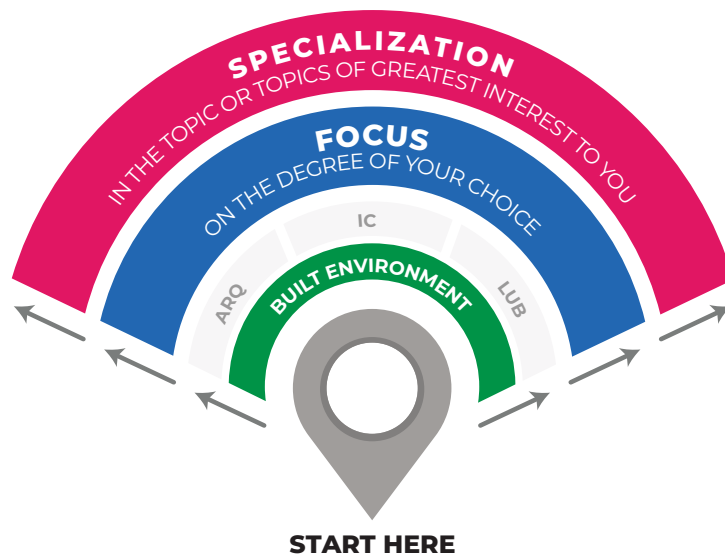
COMPETENCIES

4

YOU USED TO CHOOSE A DEGREE, NOW YOU CHOOSE A PATH

Your curriculum will be a non-linear educational, dynamic and flexible experience. You will enjoy **more time and more elements** to know and mature your degree choice, as well as to **discover and capitalize all the opportunities** you have to personalize your degree program.

The model is comprised of **three stages** and, from the first semester, you will experience educational units (courses and blocks) that have clearly defined, individual and collaborative project- and task-oriented competency development objectives (knowledge, skills, attitudes and values). In the "blocks", you will be tackling challenges connected to reality, working collaboratively with the support of a group of faculty who will guide your learning and, at the end, evaluate your competencies together with you and your peers.

These challenges, apart from being attractive, are comprehensive experiences, since they will drive you and your peers to observe reality, map situations, diagnose problems, reflect, dialogue and confront ideas on theories and techniques to solve these problems, while experiencing, designing and producing prototypes and solutions, within a reflective, applicative dynamic in which you can take risks and make mistakes and adjustments to achieve the objective.

COMPETENCIES

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START HERE

3 Give a personal touch to your degree program through specialization within or outside your discipline.

2 Develop the competencies relevant to your degree through more focused courses and challenges.

1 Acquire the basic knowledge of your area, through courses and challenges related to degrees from the area of Built Environment.

BUILT ENVIRONMENT
MAY OUR DREAMS INHABIT US

Currently, over half the population live in cities and by 2050 this figure will reach 70 %.

As global urbanization continues to grow, the challenges of orderly, sustainable and inclusive urban development grow day by day. Cities drive the economies, regional development, innovation, job creation and, consequently, social wellbeing of the leading countries. Therefore, it is crucial for cities to enhance their inhabitants' quality of life by respecting the environment, while fomenting sustainable economic development.

As part of the Built Environment area, students will not only understand the factors that determine the development of cities in their diverse scales, but also be capable of analytically and systemically tackling the urban challenges of the future, through multidisciplinary collaboration with other areas of knowledge.

AREA

6

The Built Environment area groups together the following degrees

ARQ   Architecture

IC   B.S. in Civil Engineering

LUB   B.A. in Built Environment

AREA

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LEARNING THROUGH TEC WEEKS

TEC Weeks, an intensive pause for your comprehensive growth

Every semester will be interspersed with Tec Weeks, specifically aimed at purposefully developing your competencies for life, such as social intelligence, commitment to ethics and citizenship, communication and entrepreneurship, among others. The better you know yourself, the more you will grow.

ARQ
ARCHITECTURE

MULTI-ENTRY DEGREE

Depending on your interests, you will have the option of choosing to study Architecture in the area of **Built Environment** or **Creative Studies**. Each area offers you a unique path, with different challenges and concentrations to personalize your degree according to your plans.

Sustainable spaces and cities

By 2030, 60% of the world's population will be living in cities, setting a challenge for architects: to create spaces and buildings that will enhance the quality of life with functional, comfortable, aesthetic and sustainable proposals. As an architect, you will be able to work in multidisciplinary teams seeking to transform human habitat; participate in initiatives and projects aimed at enabling spaces that will contribute to social and economic development.

Architects will graduate from Tec de Monterrey with the following competencies:

- Generate architectural solutions based on research methods that respond to users' needs, with a systemic approach.
- Design architectural spaces applying inhabitability, constructability and sustainability criteria.
- Develop building projects based on design premises, safety criteria, legality, technical and construction rigor, and sustainability.
- Manage architectural and real-estate projects from the conception to their operation, applying a comprehensive vision for the habitat.

WHICH SPECIALIZATIONS ARE AVAILABLE TO YOU?

The educational model enables you to personalize your graduate profile. During the specialization stage, consider a focus based on your post-graduation plans. Tec offers you the means to achieve this through diverse concentrations.

For further information, go to:

tec.mx/arqamc

CAREER FIELD

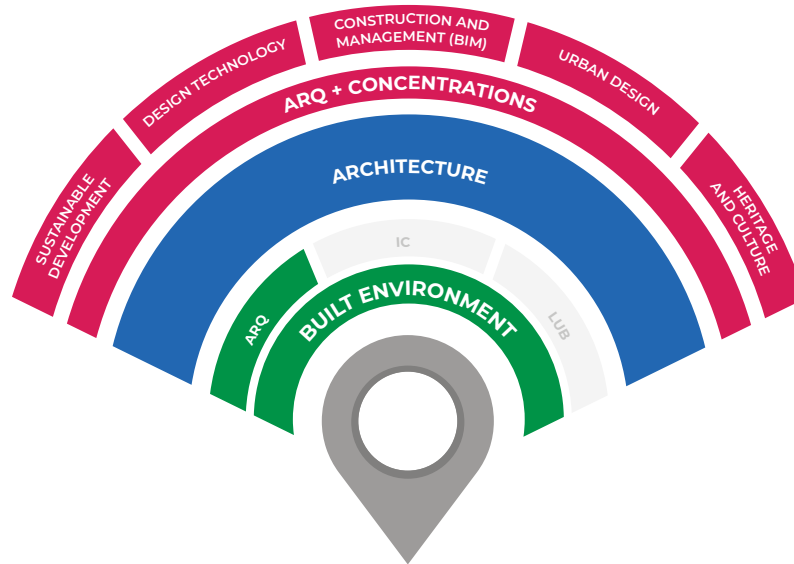On graduating from Architecture, you will be competent in:

- Offer architectural solutions based on analysis that starts with an in-depth understanding of social needs in diverse contexts, using a systemic approach.
- Design architectural spaces applying habitability, constructability and sustainability criteria.
- Work in prestigious architecture firms.
- Form part of multidisciplinary teams lined to the government, NGOs, and the private and business sectors.
- Develop building projects based on design premises, safety criteria, legality, technical and construction rigor, and sustainability.
- Manage architectural and real-estate projects from the detection of needs to human, financial, and technical-building operation. resources operation, applying a comprehensive vision for the habitat.

IS THIS RIGHT FOR YOU?

If you are aware of the grave consequence of the unbridled development of cities and feel that you have the capacity to transform human habitat in order to enhance people's quality of life, then Architecture is the right degree for you.

DEGREES

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CURRICULUM
CHOOSE YOUR PATH

What you need to know about each stage of your curriculum:

Exploration

1. You will open your competency file and add to it throughout your degree program.

2. You will learn the foundations of the area of Built Environment.

3. You will participate in fundamental and exploration challenges from the area of Built Environment, interacting with peers from different degree programs.

4. You will study general education courses, selecting them from a collection.

5. You will participate in a challenge that integrates all the competencies to be developed in this phase.

Focus

1. You will acquire the core competencies of your degree, in other words, those that distinguish it.

2. You will participate in more focused challenges to reinforce what you have learned and broaden your basic knowledge.

3. You will have the elements to decide whether to deepen your knowledge or diversify and, subsequently, build your specialization plan.

4. The Tec Weeks, challenges and overall university experiences will enrich your file.

Specialization

1. You have decided whether to diversify or delve further into your degree, by choosing a concentration, a modality, an internship stay, to mention just a few of your options. The Tec Semester is a flexible-time space to get started.

2. You will develop the competencies related to your specialization, increasingly connected to your passions, interests and plans.

3. If you decided to opt for a concentration, on graduating you will obtain a professional concentration certificate issued by the Office of the Registrar at your campus.

SEMESTER 1

Elective Course	Elective Course	Elective Course
Mathematics Based Reasoning	Mathematics Based Reasoning	Mathematics Based Reasoning
Chemical Analysis of the Environment and Construction Materials	Chemical Analysis of the Environment and Construction Materials	Resolution of Problems with Computational Logic
Exploration in the Habitat: From the Scale of the Element to the Territory	Modeling of Physics in the Built Environment: Statics	Modeling of Physics in the Built Environment: Dynamics

Tec Week · Tec Week · Week 18

SEMESTER 2

Elective Course	Elective Course	Elective Course
Fundamentals of Geology Applied to the Built Environment	Application of Numerical Methods to the Built Environment	Application of Numerical Methods to the Built Environment
Evaluation of the Environmental Impact of Territorial Projects	Analysis of Natural and Social Phenomena with Probability and Statistics	Analysis of Natural and Social Phenomena with Probability and Statistics
Modeling and Graphic Representation of a Building	Modeling and Graphic Representation of your Campus with Topography	Modeling and Graphic Representation of your Environment with Geomatics

Tec Week · Tec Week · Week 18

CHOOSE YOUR PROGRAM

SEMESTER 3

Elective Course	Elective Course	Elective Course
Representation of Architecture and its Construction	Representation of Architecture and its Construction	Representation of Architecture and its Construction
The Conceptualization of Space, its Theory and its History	The Conceptualization of Space, its Theory and its History	The Conceptualization of Space, its Theory and its History
Exploration Topic	Design and Construction of an Ephemeral Habitat	Design and Construction of an Ephemeral Habitat

Tec Week · Tec Week · Week 18

SEMESTER 4

Elective Course	Elective Course	Elective Course
Research and Architectural Project	Research and Architectural Project	Research and Architectural Project
Architecture and Contexts	Community Facilities	Community Facilities

Tec Week · Tec Week · Week 18

CHOOSE YOUR CONCENTRATION

DEGREES

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Legend

- ● General education course
- ● Area exploration course
- ● Introductory block (CHALLENGE)
- ● Area exploration block (CHALLENGE)
- ● Optional block outside the area (CHALLENGE)
- ● Disciplinary course
- ● Disciplinary block (CHALLENGE)
- ● Disciplinary global block (CHALLENGE)
- ● Tec Semester
- ● Multi-disciplinary block (CHALLENGE)
- ● Final global block (CHALLENGE)

SEMESTER 5

Elective Course		Elective Course		Elective Course
Constructibility		Constructibility		Constructibility
Single Family Home	Tec Week	Collective Housing	Tec Week	Collective Housing

Week 18

SEMESTER 6

Tec Semester
(Elective I-VI)

Week 18

SEMESTER 7

Tec Semester
(Professional Elective I-VI)

Week 18

SEMESTER 8

| Elective Multidisciplinary Professional | Tec Week | Entrepreneurship in the Field of Architecture | Tec Week | Architectural Management |

Week 18

- ● General education course
- ● Area exploration course
- ● Introductory block (CHALLENGE)
- ● Area exploration block (CHALLENGE)
- ● Optional block outside the area (CHALLENGE)
- ● Disciplinary course
- ● Disciplinary block (CHALLENGE)
- ● Disciplinary global block (CHALLENGE)
- ● Tec Semester
- ● Multi-disciplinary block (CHALLENGE)
- ● Final global block (CHALLENGE)

MULTI-ENTRY DEGREE

Depending on your interests, you will have the option of choosing between Civil Engineering in the area of **Built Environment** or **Innovation and Transformation.** Each area offers you a unique path, with different challenges and concentrations to personalize your degree according to your plans.

IC

B. S. IN CIVIL ENGINEERING

Our works speak for us

Civil engineers face diverse challenges, mainly recognizing what society needs for its development, in order to plan, design, build, operate and maintain the build environment, applying cutting-edge technology, adhering to standards and regulations, and with a deep sense of commitment to the environment. Through your work, you will create better places to live, having a direct impact on the life of citizens.

Civil Engineers will graduate from Tec de Monterrey with the following competencies:

- Design structural systems applying advanced methods, the regulatory framework, technical specification, and efficiency and sustainability criteria.
- Manage construction projects efficiently, complying with current technical standards and economic-financial feasibility.
- Design hydraulic infrastructure systems based on the established standards and considering the integral management of the natural environment.
- Conduct geotechnical studies, in accordance with current scientific and regulatory criteria.
- Design transportation and service infrastructure systems, based on the current needs of a specific region, regulations and development plans.

WHICH SPECIALIZATIONS ARE AVAILABLE TO YOU?

The educational model enables you to personalize your graduate profile. During the specialization stage, consider a focus based on your post-graduation plans. Tec offers you the means to achieve this through diverse concentrations.

For further information, go to:

tec.mx/icamc

CAREER FIELD

Thanks to the integral preparation you will receive in this degree, on graduating you will be able to develop professionally in different areas of business, services and research within the built environment development industry, such as:

- Construction and real-estate companies
- Structural design firms for building, roadway and transportation projects
- Hydraulic and water treatment system design firms and companies that conduct environmental impact studies.
- Management of projects and companies that supervise public and private infrastructure works.
- Government public works departments
- Companies that conduct soil mechanics studies
- International graduate programs to pursue a career in research (master's or doctorate)
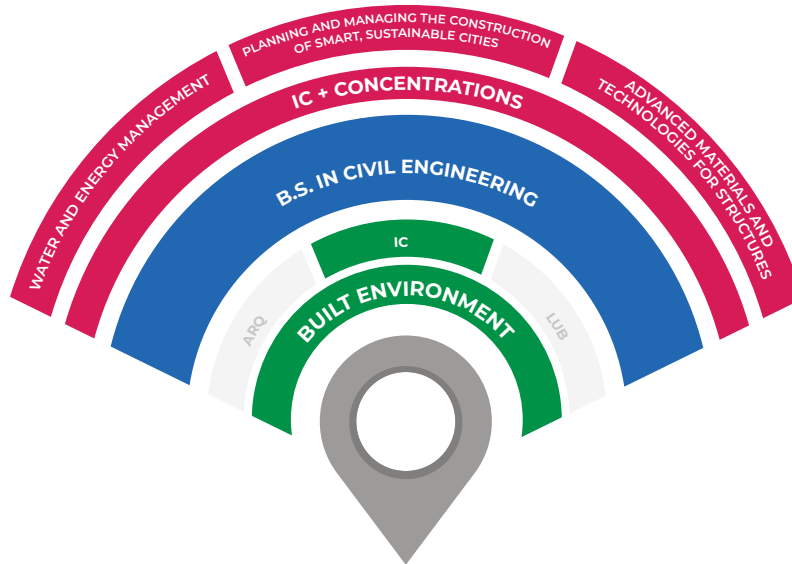
IS THIS RIGHT FOR YOU?

If you are inquisitive and analytical, have an affinity for mathematics and physics, and would like to contribute to society's development with major infrastructure works, you're in the right place.

DEGREES

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CURRICULUM
CHOOSE YOUR PATH

What you need to know about each stage of your curriculum:

Exploration

1. You will open your competency file and add to it throughout your degree program.

2. You will learn the foundations of the area of Built Environment.

3. You will participate in fundamental and exploration challenges from the area of Built Environment, interacting with peers from different degree programs.

4. You will study general education courses, selecting them from a collection.

5. You will participate in a challenge that integrates all the competencies to be developed in this phase.

Focus

1. You will acquire the core competencies of your degree, in other words, those that distinguish it.

2. You will participate in more focused challenges to reinforce what you have learned and broaden your basic knowledge.

3. You will have the elements to decide whether to deepen your knowledge or diversify and, subsequently, build your specialization plan.

4. The Tec Weeks, challenges and overall university experiences will enrich your file.

Specialization

1. You have decided whether to diversify or delve further into your degree, by choosing a concentration, a modality, an internship stay, to mention just a few of your options. The Tec Semester is a flexible-time space to get started.

2. You will develop the competencies related to your specialization, increasingly connected to your passions, interests and plans.

3. If you decided to opt for a concentration, on graduating you will obtain a professional concentration certificate issued by the Office of the Registrar at your campus.

SEMESTER 1

Elective Course	Elective Course	Elective Course
Mathematics Based Reasoning	Mathematics Based Reasoning	Mathematics Based Reasoning
Chemical Analysis of the Environment and Construction Materials	Chemical Analysis of the Environment and Construction Materials	Resolution of Problems with Computational Logic
Exploration in the Habitat: From the Scale of the Element to the Territory	Modeling of Physics in the Built Environment: Statics	Modeling of Physics in the Built Environment: Dynamics

SEMESTER 2

Elective Course	Elective Course	Elective Course
Fundamentals of Geology Applied to the Built Environment	Application of Numerical Methods to the Built Environment	Application of Numerical Methods to the Built Environment
Evaluation of the Environmental Impact of Territorial Projects	Analysis of Natural and Social Phenomena with Probability and Statistics	Analysis of Natural and Social Phenomena with Probability and Statistics
Modeling and Graphic Representation of a Building	Modeling and Graphic Representation of your Campus with Topography	Modeling and Graphic Representation of your Environment with Geomatics

CHOOSE YOUR PROGRAM

SEMESTER 3

Elective Course	Elective Course	Elective Course
Static Balance Analysis	Static Balance Analysis	Analysis of Electrical circuits
Process Modeling Using Linear Algebra	Engineering Modeling Using Dynamic Systems	Engineering Modeling Using Dynamic Systems
Exploration Topic	Design and Analysis of Experiments in Engineering Innovation	Introduction to Data Science Projects

SEMESTER 4

Elective Course	Elective Course	Elective Course
Modeling Information in Construction	Cost Management	Planning and Control of Work
Analysis of the Interaction of the Built Environment and the Environment	Evaluation of the Behavior of Materials In Structures	Analysis of the Behavior of Hydraulic Systems

SEMESTER 5

Elective Course	Elective Course	Elective Course
Project Management	Management of Construction Operations	Business Management in the Construction Industry
Evaluation of the Behavior of Structural Systems	Design of Hydraulic Systems for the Sustainable Use of Water	Design of Roads for Development

CHOOSE YOUR CONCENTRATION

SEMESTER 6

Modeling of Water Sanitation Techniques	Design of Efficient Mobility of People and Goods	Structural Design with Reinforced Concrete and Steel

SEMESTER 7

Tec Semester
(Professional Elective I - VI)

SEMESTER 8

Elective Multidisciplinary Professional	Integration of Civil Engineering Projects	Integration of Civil Engineering Projects

Tec Week — Week 18

Legend

- ● General education course
- ● Area exploration course
- ● Introductory block (CHALLENGE)
- ● Area exploration block (CHALLENGE)
- ● Optional block outside the area (CHALLENGE)
- ● Track integrating block (CHALLENGE)
- ● Disciplinary course
- ● Disciplinary block (CHALLENGE)
- ● Disciplinary global block (CHALLENGE)
- ● Tec Semester
- ● Multi-disciplinary block (CHALLENGE)
- ● Final global block (CHALLENGE)

LUB

B.A. IN BUILT ENVIRONMENT

Living cities, in motion

An urban planner is someone who is capable of understanding the systematic reality of the city and its territory, visualizing it and communicating its characteristics through state-of-the-art tools to influence decision making focused on solving and guiding urban issues. As a Bachelor in Built Environment, you will acquire knowledge to comprehend the complex, multidimensional nature of urban problems in the diverse scales and circumstances in which they occur.

A Bachelor In Built Environment will graduate from Tec de Monterrey with the following competencies:

- Propose solutions to habitat functioning issues, applying state-of-the-art methods and technologies.
- Generate innovative solutions for regenerating the urban, rural and natural habitat that will elevate quality of life.
- Forecast functional territorial scenarios, based on the systemic analysis of future territorial challenges.
- Manage habitat projects, using territorial analysis tools and public policies with transdisciplinary teams.

WHICH SPECIALIZATIONS ARE AVAILABLE TO YOU?

For further information, go to:

tec.mx/lub

The educational model enables you to personalize your graduate profile. During the specialization stage, consider a focus based on your post-graduation plans. Tec offers you the means to achieve this through diverse concentrations.

CAREER FIELD

Thanks to the integral preparation you will receive in this degree, on graduating you will be able to you participate in diverse business areas, such as:

- Property development
- Urban, financial and social project management
- Government institutions
- Urban consulting
- Research
- Mobility and transport
- Regeneration of cities and historical sites
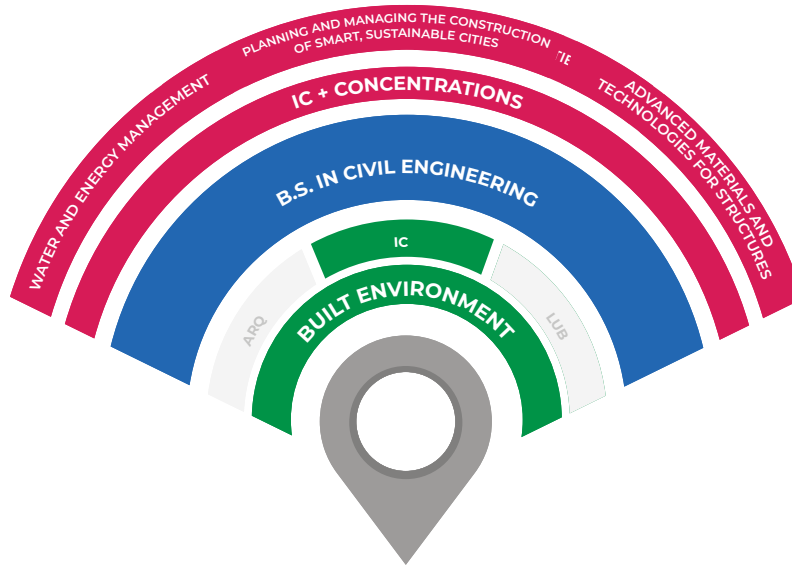- Geostatistical analysis

IS THIS RIGHT FOR YOU?

If you are analytical and organized and always looking for the way to make things more efficient, this could be the degree for you.

DEGREES

18

CURRICULUM
CHOOSE YOUR PATH

PLANNING AND MANAGING THE CONSTRUCTION OF SMART, SUSTAINABLE CITIES

WATER AND ENERGY MANAGEMENT

ADVANCED MATERIALS AND TECHNOLOGIES FOR STRUCTURES

IC + CONCENTRATIONS

B.S. IN CIVIL ENGINEERING

IC

ARQ

BUILT ENVIRONMENT

LUB

What you need to know about each stage of your curriculum:

Exploration

1. You will open your competency file and add to it throughout your degree program.

2. You will learn the foundations of the area of Built Environment.

3. You will participate in fundamental and exploration challenges from the area of Built Environment, interacting with peers from different degree programs.

4. You will study general education courses, selecting them from a collection.

5. You will participate in a challenge that integrates all the competencies to be developed in this phase.

Focus

1. You will acquire the core competencies of your degree, in other words, those that distinguish it.

2. You will participate in more focused challenges to reinforce what you have learned and broaden your basic knowledge.

3. You will have the elements to decide whether to deepen your knowledge or diversify and, subsequently, build your specialization plan.

4. The Tec Weeks, challenges and overall university experiences will enrich your file.

Specialization

1. You have decided whether to diversify or delve further into your degree, by choosing a concentration, a modality, an internship stay, to mention just a few of your options. The Tec Semester is a flexible-time space to get started.

2. You will develop the competencies related to your specialization, increasingly connected to your passions, interests and plans.

3. If you decided to opt for a concentration, on graduating you will obtain a professional concentration certificate issued by the Office of the Registrar at your campus.

SEMESTER 1 | SEMESTER 2

Elective Course		Elective Course		Elective Course		Elective Course		Elective Course		Elective Course
Mathematics Based Reasoning		Mathematics Based Reasoning		Mathematics Based Reasoning		Fundamentals of Geology Applied to the Built Environment		Application of Numerical Methods to the Built Environment		Application of Numerical Methods to the Built Environment
Chemical Analysis of the Environment and Construction Materials		Chemical Analysis of the Environment and Construction Materials		Resolution of Problems with Computational Logic		Evaluation of the Environmental Impact of Territorial Projects		Analysis of Natural and Social Phenomena with Probability and Statistics		Analysis of Natural and Social Phenomena with Probability and Statistics
Exploration in the Habitat: From the Scale of the Element to the Territory		Modeling of Physics in the Built Environment: Statics		Modeling of Physics in the Built Environment: Dynamics		Modeling and Graphic Representation of a Building		Modeling and Graphic Representation of your Campus with Topography		Modeling and Graphic Representation of your Environment with Geomatics

Tec Week · Tec Week · Week 18 · Tec Week · Tec Week · Week 18

CHOOSE YOUR PROGRAM

SEMESTER 3 | SEMESTER 4

Elective Course		Elective Course		Elective Course		Elective Course		Elective Course		Elective Course
Urban Ecology		Urban Ecology		Urban Ecology		Cities of the future		Cities of the future		Cities of the future
Urban Law		Urban Infrastructure		Urban Infrastructure		Competitive Cities: Modality		Competitive Cities: Quality of Life		Competitive Cities: Innovation
Exploration Topic		Territorial Diagnosis		Ecobarrio						

Tec Week · Tec Week · Week 18 · Tec Week · Tec Week · Week 18

CHOOSE YOUR CONCENTRATION

- ● General education course
- ● Area exploration course
- ● Introductory block (CHALLENGE)
- ● Area exploration block (CHALLENGE)
- ● Optional block outside the area (CHALLENGE)
- ● Disciplinary course
- ● Disciplinary block (CHALLENGE)
- ● Disciplinary global block (CHALLENGE)
- ● Tec Semester
- ● Multi-disciplinary block (CHALLENGE)
- ● Final global block (CHALLENGE)

SEMESTER 5

Elective Course		Elective Course		Elective Course	
Urban Economy		Urban Economy		Urban Economy	
Sustainable Metropolis: Adaptation	Tec Week	Sustainable Metropolis: Mitigation	Tec Week	Sustainable Metropolis: Resilience	Week 18

SEMESTER 6

Tec Semester
(Professional Elective I - VI)

Week 18

SEMESTER 7

| Management and Administration of Territorial Investment Projects | Tec Week | Management and Administration of Territorial Investment Projects | Tec Week | Management and Administration of Territorial Investment Projects | Week 18 |

SEMESTER 8

| Elective Multidisciplinary Professional | Tec Week | Complexity and Debate | Tec Week | Emerging Cities | Week 18 |

- ● General education course
- ● Area exploration course
- ● Introductory block (CHALLENGE)
- ● Area exploration block (CHALLENGE)
- ● Optional block outside the area (CHALLENGE)
- ● Disciplinary course
- ● Disciplinary block (CHALLENGE)
- ● Disciplinary global block (CHALLENGE)
- ● Tec Semester
- ● Multi-disciplinary block (CHALLENGE)
- ● Final global block (CHALLENGE)

BUILT ENVIRONMENT

With the Built Environment entry, you have the option of moving throughout your undergraduate studies to the campus that offers the specialization you would like to pursue.

Entry Campuses for the area of **BUILT ENVIRONMENT**	Campuses where you can enter and graduate from the corresponding degrees		
	ARQ	**IC**	**LUB**
Aguascalientes			
Chiapas			
Chihuahua			
Ciudad de México			
Ciudad Juárez			
Cuernavaca			
Estado de México ●	●	●	
Guadalajara ●	●	●	●
Hidalgo			
Irapuato			
Laguna			
León			
Monterrey ●	●	●	●
Morelia			
Obregón			
Puebla ●	●	●	
Querétaro ●	●	●	
Saltillo			
San Luis Potosí			
Santa Fe ●	●	●	
Sinaloa			
Sonora Norte			
Tampico			
Toluca			
Zacatecas			

UNLEASH YOUR POTENTIAL
TO TRANSFORM

At Tecnológico de Monterrey we're looking for students willing to be better for the benefit of others, people with the humility and courage to challenge paradigms, with the ambition to improve, who embrace the most advanced technical knowledge, and with an ethical and humanistic profile,who dare to go forward, more willing to be than to have.

For further information on the degrees from the area of Built Environment, go to

tec.mx/profesional