

Course Title: **Terminología Especializada en Tecnología**  
Program and Track: **Interpretación y Traducción: 6° Cuatrimestre**  
Course ID: **IT0627**  
Cohort ID: **6A**

### **Description**

This course uses a constructivist approach for advanced English language learning with an emphasis on terminology. The specialized jargon, terminology and acronyms that are used in science, engineering, and in the broader field of advanced technologies, will be examined and framed through context. Foundational concepts and mental models in science, engineering, and technology will be reviewed along with the form and function of the language of science. Selected topics in modern science and technology will be introduced, and the analysis and evaluation of scientific texts, open-access journal articles and reviews will provide the context for vocabulary building and English language acquisition. Selected English grammatical structures and writing styles will be reviewed, and translations between English and Spanish will be routine.

The professional translational mapping tools developed in this course will be specific to Spanish and English translations, although such tools and methodologies can readily be extended to the translation of other languages. Students will receive credit for any work completed through the *Coursera* on-line learning platform.

Major elements of the course will include:

- I. Foundations of Science, Engineering, and Technology
- II. Elements of Academic Work
- III. Topics in Modern Science, Engineering, and Technology
- IV. Analysis, Evaluation, and Translation of Research Papers and Reviews
- V. Technology Futures in Mexico
- VI. Vocabulary Building

### **Scope and General Sequence**

#### ***I. Foundations of Science, Engineering, and Technology***

1. The Language of Science and Engineering
  - 1.1 History of Science
  - 1.2 Structure and Function of Language in Science and Engineering
  - 1.3 Discipline-Specific Jargon: Good and Bad
2. Foundations of Science, Engineering, and Technology
  - 2.1 Structure, Order, and Predictability
  - 2.1 Mental Models and Mathematical Models
  - 2.2 Kuhn's Perspective
    - 2.2.1 Evolution of Normal Science as a Paradigm
    - 2.2.2 Scientific Revolutions
  - 2.3 Science vs. Engineering vs. Technology

- 3. Systems Analysis
  - 3.1 Definition of a System
  - 3.2 Elements and Relations
  - 3.3 Energy and Material Flows

## *II. Elements of Academic Work*

- 1. The Elements of Style in Professional Writing
  - 1.1 Marron's Modified APA Style
  - 1.2 Strunk and White's, *Elements of Style*
- 2. Review of Essential English Grammar
  - 2.1 Murphy's, *English Grammar in Use*
- 3. Homework as a Deliverable

## *III. Topics in Modern Science, Engineering, and Technology*

- 1. Mathematical Models: Successes and Limitations
  - 1.1 Scientific Laws
  - 1.2 Computational Irreducibility in Complex Adaptive Systems
  - 1.3 Wicked Problems
- 2. Information Theory
  - 2.1 Shannon's Theory of Communication
  - 2.2 Entropy
- 3. Complexity Theory
  - 3.1 Types of Complexity
  - 3.2 Analysis of Complexity
- 4. AI and Machine Learning
  - 4.1 Perceptrons and Neural Networks
  - 4.2 Large Language Models (LLMs)

## *III. Analysis, Evaluation, and Translation of Research Papers and Reviews*

- 1. Open-access Journals
  - 1.1 IEEE Open Journal of Engineering in Medicine and Biology
  - 1.2 IEEE Open Journal of the Communications Society
  - 1.3 Nature Communications
  - 1.4 ...and others!

## *IV. Technology Futures in Mexico*

- 1. Batteries
- 2. Semiconductors
- 3. Artificial Intelligence (AI)
- 4. ... and others!

## *V. Vocabulary Building*

### **Expectations**

Students will be expected to:

- Attend all classes on time
- Be prepared to take notes and access materials on-line
- Participate in all class activities, including discussions and presentations
- Complete all assignments and exams

### **Exit Criteria**

Upon the successful completion of the course the student will be able to:

- Demonstrate a basic knowledge of the foundations for traditional science and engineering as the basis for technology
- Analyze, evaluate, and translate excerpts from selected topics in modern science, engineering, and technology
- Analyze, evaluate, and translate scientific, engineering and technology research papers and reviews
- Compare and contrast various technology futures in Mexico
- Design, develop, and implement personal dictionaries for the translation of specialized terminology in science, engineering, and technology
- Produce professional-quality deliverables

### **Interim Evaluations (Partials)**

Daily Work and Participation	10%
Homework	60 %
Interim Exam	30%

### **Final Grade**

1P	25 %
2P	25 %
3P	25 %
Final Exam	25 %