ADVANCED ARTIFICIAL INTELLIGENCE CAMP
Syllabus

General description:

The Advanced Artificial Intelligence course introduces the students to Application Programming Interfaces services, also known as API.

An API is a software interface that enables the communication between two applications, one of those being the program developed by the student and the other one being a cloud-based database.

The student will learn to properly request and store information from a variety of API services in real-time; then, the student will develop practical projects that try to solve digital age needs.

This course´s focus is to get students to know how modern artificial intelligence applications work, how is information stored online, how to request information from a web service, and how to develop their digital assistant applications based on cloud-based information.

By developing a diverse set of projects, the student will learn to:

- Discover useful API services
- Set up a developer account in any API service
- Write basic HTTP requests structures based on an URL
- Identify common API input parameters
- Interpret JSON files
- Request and manage public domain information
- Develop semi-professional AI skills

Novum Educational Robotics:

Educational Robotics is the academic learning of the automation of a wide variety of processes. From the simplest or general robotics (Bionic, Commercial, Industrial, Vehicles) to the most complex or specialized robotics (Arduino, Internet of Things, Artificial Intelligence) that empower the student's cognitive processes.

All our courses incorporate STEM, in which Science, Technology, Engineering, and Mathematics subjects are naturally integrated into the course projects. We ensure that students fully understand the lessons without the need for hypothetical cases.

Educational Robotics is a discipline based on the cognitive theory of teaching-learning that allows students to move from the concrete to the abstract and vice versa. It allows them to solve problems and facilitates the development and implementation of multiple projects. Students acquire knowledge and transfer it to diverse fields. The use of Robotics in different national and international educational environments is becoming more and more common as it is an innovative strategy with enormous potential in the integral training of students by promoting critical and creative thinking.

Our educational offer is based on multiple educational models and learning strategies such as:

- Project-based learning
- Problem-based Learning
- Competency-based learning
- Meaningful Learning
- Active learning
- The New Taxonomy of Educational Objectives by Marzano and Kendall

These provide the development of the skills needed to thrive in 2020 and the Fourth Industrial Revolution that we are experiencing nowadays. The World Economic Forum mentioned some transversal competencies in their report "The Future of Jobs" published in January 2016 and that our courses foster:

1. Complex Problem Solving
2. Coordinating with Others
3. People Management
4. Critical Thinking
5. Negotiation
6. Quality Control
7. Service Orientation
8. Judgment and Decision Making
9. Active Listening
10. Creativity

The whole curriculum is based on national standards to ensure the compatibility with state educational programs and keeps the quality of its contents across multiple dimensions.

- CCSS – Common Core State Standards
- NGSS – Next Generation Science Standards
- ISTE – International Society for Technology in Education
- STL – Standards for Technological Literacy

Projects in this course:
Our courses are designed to be personalized, self-managed, and self-paced. Everything happens inside our unique and state-of-the-art web platform MakerSTEAM and combines concepts and theory with reality and practice. This course can be taken by a single student or in teams. Students become self-sufficient in their learning, gradually being able to build a mental structure that allows them to be expert lifelong learners. They will learn to learn.

Our learning path:
Each project follows a sequence of activities focused on providing the student with theoretical and practical knowledge about real-life applications.

In each sequence, the student will:
- Know a specific set of goals and competencies to be developed
- Acquire project contextualization through a conceptual framework
- Follow a construction manual
- Control a robotic device through programming
- Challenge him/herself by pushing each project capacity beyond what is expected
- Analyze the obtained results

Each learning path has the learning objectives and competency to develop in each project.

There are 12 projects included in this course. Each project's final product will be an automated digital assistant with a variety of skills. The difficulty of these projects is significantly higher. We strongly recommend finishing the beginner and intermediate courses before attempting these projects.

Course projects			
Simple kitchen recipes	Simple alarm systems	Simples reminder system	Introduction to API services
Difficulty level: ★★★	Difficulty level: ★★★	Difficulty level: ★★★	Difficulty level: ★★★★
Global weather monitoring station	Language translation	Chatbot development	Daily news request
Difficulty level: ★★★★	Difficulty level: ★★★★	Difficulty level: ★★★★★	Difficulty level: ★★★★
Movie information request	T.V. series information request	Currency conversion	Kitchen recipes information request
Difficulty level: ★★★★★	Difficulty level: ★★★★★	Difficulty level: ★★★★★	Difficulty level: ★★★★★

WEF (2016). The Future of Jobs. From World Economic Forum website: https://www.weforum.org/reports/the-future-of-jobs