ADVANCED GENERAL EDUCATIONAL ROBOTICS CAMP
- Kit included -
Syllabus

General description:

In this course you will learn to assemble and program complex robotic devices from a variety of areas such as: Bionic robotics, industrial robotics, commercial robotics and semi-autonomous vehicles.

Using your hands only, assemble your robot using plastic pieces, sensors and actuators; each project represents a real-life working device!

For programming, you are able to choose between 3 different programming tools (project programming, scratch programming and chart programming); whether this is your first-time using robotics or you have some experience, this camp will introduce you to the world of robotics in a fun way.

At the end of this course level, the student will be ready to participate at a competitive level (local, national and world tournaments). Contact us for more information.

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.

It integrates STEM, in which Science, Technology, Engineering and Mathematics subjects are naturally integrated in our Robotics courses without the need to create hypothetical lessons in order to be relevant to students.

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 several national standards to ensure the compatibility with states 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. It 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 lifelong learners experts. 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.
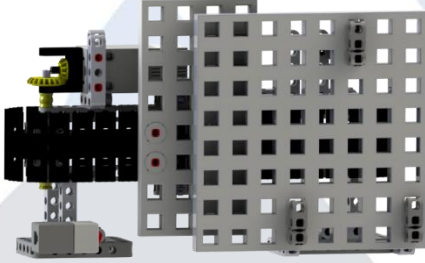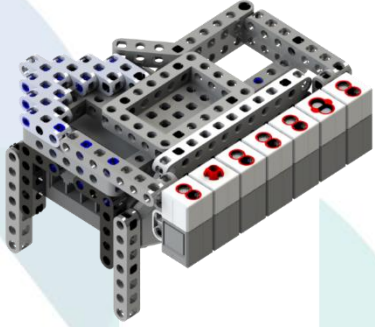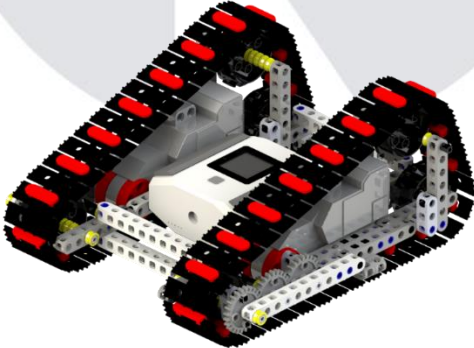
In each sequence, the student will:
- Know a specific set of goals and competencies to be developed.
- Acquire project contextualization through a conceptual framework.
- Follow a construction manual
- Control a robotic device through programming
- Challenge him/herself by pushing each project capacity beyond what is expected
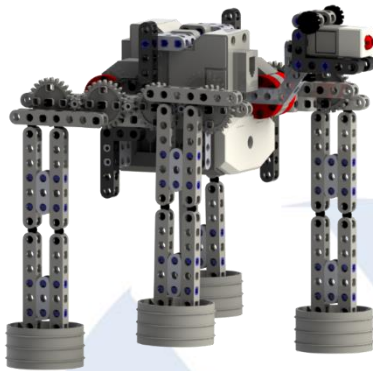
- Analyze the obtained results

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

There are 8 projects included in this course. Each project resembles a mechatronic device from a specific topic.

Commercial robotics	
Sliding door	Grand piano
Difficulty level: ★★★	Difficulty level: ★★★⯨

Vehicles	
Anti-rollover vehicle	Obstacle avoidance wheelie
Difficulty level: ★★★★	Difficulty level: ★★★★

Bionic robotics	
Camel	Thorn walker
Difficulty level: ★★★★	Difficulty level: ★★★★⯪
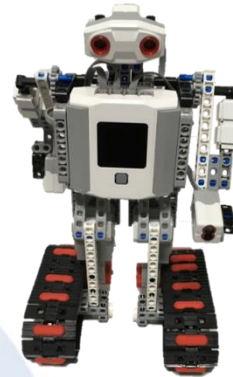
Industrial robotics	
Mechanical arm	Color master
Difficulty level: ★★★★⯪	Difficulty level: ★★★★★
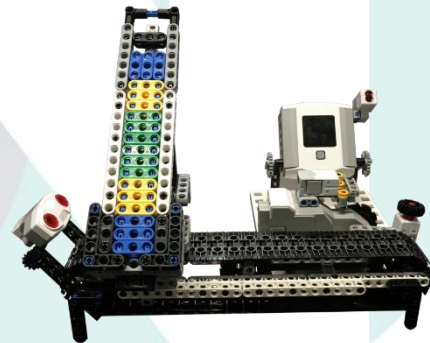
WEF (2016). The Future of Jobs. From World Economic Forum website: https://www.weforum.org/reports/the-future-of-jobs