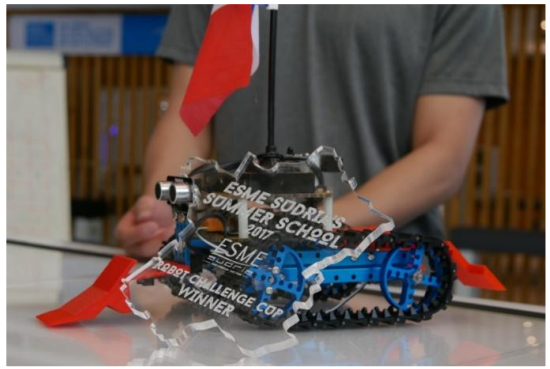
ESME sudria
SCHOOL OF ENGINEERING FOUNDED IN 1905

EPITECH.
THE FUTURE OF SOFTWARE
THE BEST OF INNOVATION

SUMMER SCHOOL 2021

Become a maker: build your own robot and bring it home!

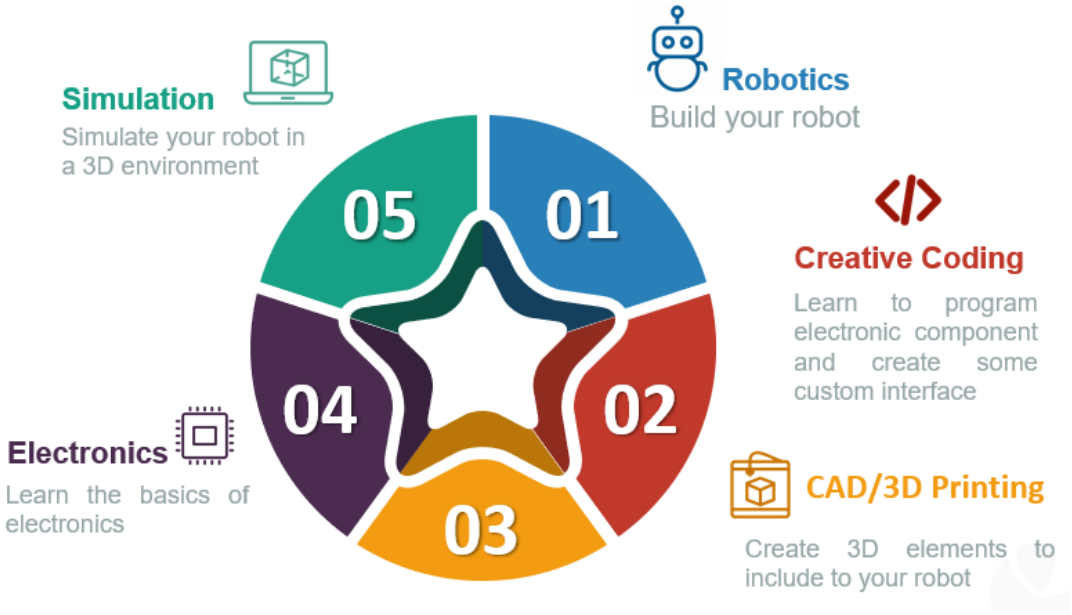


1. Presentation

ESME Sudria and EPITECH design 2021 Summer School. They have combined their strengths to offer a brand new programme in Robotics with lots of projects to work on.

ESME Sudria is recognized as a highly innovative engineering school through its educational programs, teaching and learning methods and technological tools: since 2013, Fab Labs - named “e-Smart LABs”- have been established on every ESME Sudria campus. The ESME Sudria E-smart labs’ network is present all over France (Paris, Lille, Lyon and Bordeaux) and aims to encourage formal and informal education in order to get students involved more actively in their learning process.

With 20 campuses around the world, EPITECH, pioneer in the implementation of the project-based learning approach, trains students to be experts in IT, recognized by all IT companies. Thanks to an innovative and active pedagogy, EPITECH designs highly technical graduates, adaptable to any environment, international or national. EPITECH Innovation Hub, located in all campuses, helps the students to build their own innovative project in IT.



Become a maker: build your own robot and bring it home!

Our Summer School has been designed for you to take part in the “Maker Movement”. You will learn about Electronics, Robotics, Creative Coding, CAD, Digital Manufacturing in a fun and informal way.

Our program encompasses intensive courses and practical workshops led by our experts as well as Survival French and Inter-culture Workshops. You will also explore Paris, platforms for innovation and new technologies, and meet with the French Makers Community!

During three weeks, you will study and work with your teammates in a creative and inspiring environment, having free access to our cutting-edge technologies (3D Printers, Laser Cutters, Digital Pen Plotter, Connected Objects, etc.).

At the end of this program, you will be able to program, assemble and design your own robot. Be ready to challenge yourself!

AxiDraw V3/A3

Drawing Machine

Alfawise U20 / U30

3D Printers

V2000

Laser Cutting & Engraving Machine

2. Objectives

Experiments & learning outcomes		
Technical skills	ROBOTICS, CODING, DESIGN, CAD / 3D PRINTING, ELECTRONICS, DIGITAL ARTS	• Ability to use a set of digital tools and methods to build a product • Ability to solve problems independently (DIY) and as a team (DIWO)

Soft skills	DESIGN THINKING, CO-WORKING, TROUBLESHOOTING, PROJECT MANAGEMENT	• Ability to coordinate multiple, interdisciplinary tasks in order to achieve a goal • Ability to apply newly learned information to define, design and lead a project • Ability to drive a project and to meet deadlines

// Kit / Robot Presentation's

3. Content

You will discover the basics of Creative Coding, Electronics and work on subjects such as Generative Design and CAD.

You will also benefit from **Survival French** lessons, and intercultural **Workshops**, with Intercultural Exchanges and debates on geopolitics!

WEEK #1: Electronics & Code

Introduction to Electronics > Code (Processing)

During the first week, you will be introduced to electronics followed by the general principles of Coding. You will have your first CNC initiation: **Drawing Machine**.
This week will end with your **First Creative Challenge**: you will use the skills acquired on Generative Design to draw a sketch with your Digital Pen Plotter. The greatest sketch will win the challenge.*

SUPRISE GUEST 1

TOOLS:

- **Processing, Electronics Components**.
- **Drawing Machine** (AxiDraw A3/V3)

** If the conditions do not allow it, this activity cannot be done but the Coding part with processing will be more advanced.*

Furthermore, you will use our custom Robotic / Electronic kit.

Week #2: Robotics & Simulation

Assembly & Simulation of the robot > 3D Modelisation (CAD)

During the second week, you will assemble and learn how to program your robot. You will try to design the best solutions for the final robotic challenge. For the **Second Creative Challenge**, you will also meet the robot creators and they will help you design your own 3D parts and hack your robot.

SESSIONS
6. Robot Assembly & Discovery
7. Electronics & Programming

8. CAD
9. 3D Printing *
10. Second Creative Challenge
Survival French
Pop Inter-culture Workshop

SURPRISE GUEST 2

TOOLS:

- **Arduino** and Electronics
- **Fusion360**, **3D Printers** (Alfawise U20, U30)

**If the conditions do not allow it, this activity cannot be done.*

WEEK #3: Final Challenge

Time to hack your robot ! Be creative :)

During the last week, you will customize and program your robot for the final challenge. Last but not least, you will prepare for the two different parts of the Final Creative Challenge:

1) Presentation of each robot in French
2) Robot Challenge

SESSIONS
12. Laser Cutting / Engraving Initiation*
13. Final Challenge Preparation
14. Final Challenge Tests
15. Final Challenge
Survival French
Pop Inter-culture Workshop(s)

SURPRISE GUEST 3

TOOLS:

- **Laser Cutting & Engraving Machine** (Thermoflan V2000)

**If the conditions do not allow it, this activity cannot be done.*

CONTACTS

ESME Sudria International Office : international@esme.fr

EPITECH international Office : international-relations@epitech.eu