

# International Cooperation Framework for Next Generation Engineering Students

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# NextGEng Project

## Project Type

- Cooperation Partnerships in Higher Education - KA220-HED

## Title

- International Cooperation Framework for Next Generation Engineering Students [NextGEng]

## Coordinator

- Technical University of Cluj-Napoca

## Budget

- 400.000 Euro

## Time frame

- 1 Oct 2022 – 30 Sept 2025 (36 months)



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# NextGEng Project

- Consortium partners
  - Co - Technical University of Cluj-Napoca (Romania)
  - P1 - JAMK University of Applied Science (Finland)
  - P2 - University Of Jaen (Spain)
  - P3 -Integración Sensorial y Robótica (Spain)
  - P4 - Valmet Technologies (Finland)
  - P5 - Robert Bosch Cluj Plant (Romania)



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# Project Objective

- The aim of NextGEng is to **develop an international cooperation framework** between consortium partners that **promote international team-teaching** with the support of new learning material and teaching methods that are aligned with the European Education Area 2025 and are in accordance with labor market needs.
- Lines of action:
  - ▶ Tailored Training Process
  - ▶ International team-teaching pilot program
  - ▶ Cases for experiential learning projects



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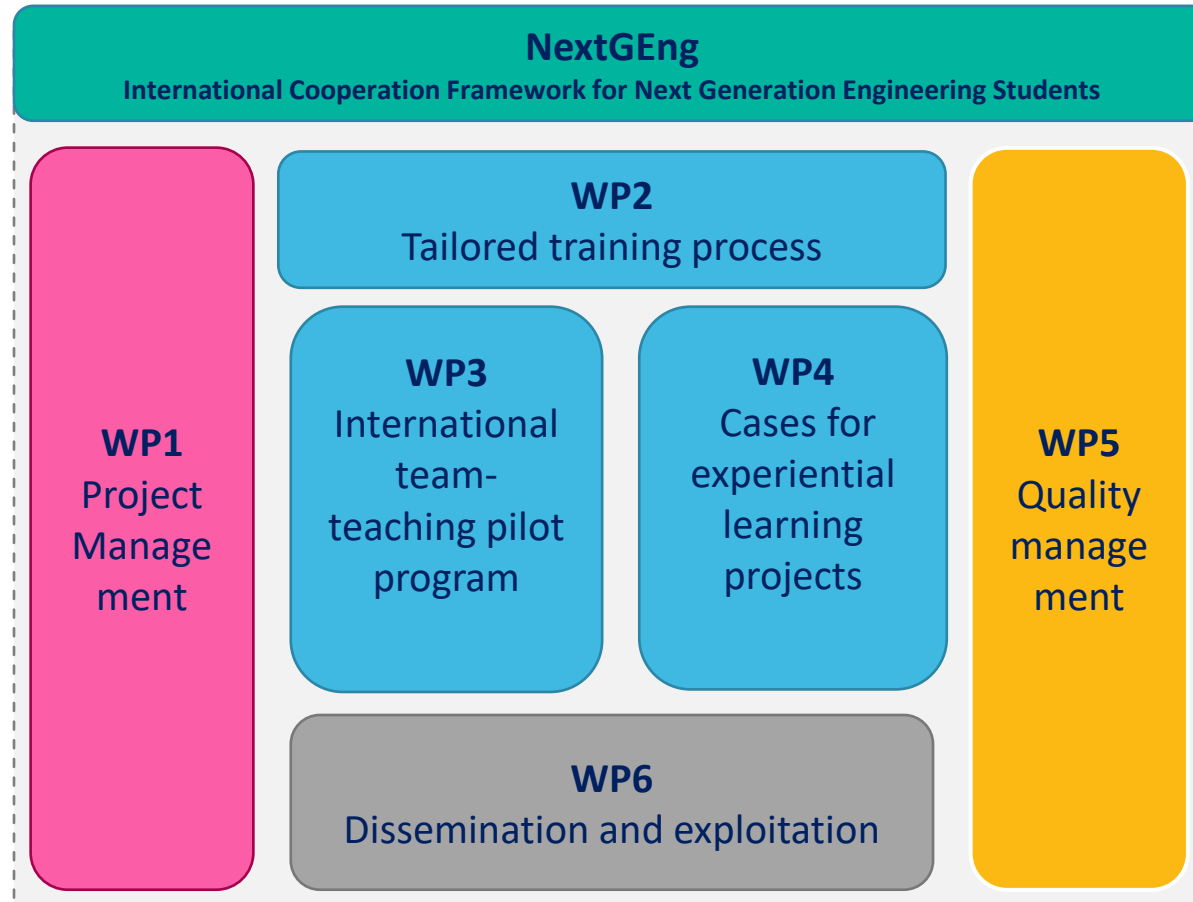


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# NextGEng Work Packagase



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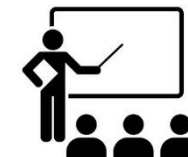
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# International team-teaching pilot program

## 1. Tailored Training Process

- Jan 2023
- Organized by P1-JAMK



## 2. Course upgrading process (Round 1) [C1...C4]

- Feb - Sept 2023
- CO-TUCN, P1-JAMK, P2-UJA, P3-ISR, P4-Valmet, P5-Bosch



## 3. Implementation of the Team-Teaching Pilot Program

- Sept 2023-June 2024
- CO-TUCN, P1-JAMK, P2-UJA



## 4. Course upgrading process (Round 2) [C5,C6]

- Feb - Sept 2024
- CO-TUCN, P1-JAMK, P2-UJA, P3-ISR, P4-Valmet, P5-Bosch



## 5. Implementation of the Team-Teaching Pilot Program

- Sept 2024-June 2025
- CO-TUCN, P1-JAMK, P2-UJA



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# Tailored Training Process

- At the beginning of the project, an initial **training program** for the **teachers** that participate in the project is organized
- At the event, experts in **innovation in pedagogy** from different fields address **novel teaching techniques** and resources, that are to be **adapted to engineering**
- These include **cooperative team-teaching**, **student-centered approaches**, and **flexible assessment**, framed within the modular organization of **engineering courses**



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# International team-teaching pilot program

- The ITT pilot program supports the development of an international teaching framework where teachers and industry experts collaborate in the **development of new course content** and **specific teaching methods for engineering**.
- The **new course content** are designed so that could be easily delivered using blended methods in an international team-teaching environment
- The updated courses integrate new student-centered elements that make use of **experiential learning** in close collaboration with **real-life case studies from industry** and address **eco-friendly** and specific **digitalization** engineering concepts.



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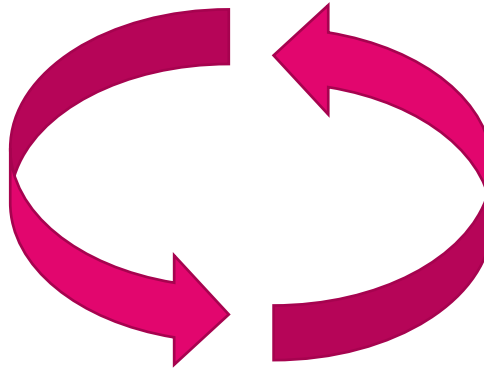


# International team-teaching pilot program



## Six upgraded joint courses (C1-C6)

- C1 – Strength of Materials
- C2 – Industrial Automation
- C3 – Design Projects
- C4 – Quality Assurance and Applied Methods
- C5 – Computer Aided Design
- C6 – Manufacturing Technology



## Developed by a co-teaching team

For each of the courses (C1-C6) an international co-teaching team is created that includes **HEI course responsible teachers** and **company experts** that work together in the development of **new teaching materials** and **teaching methods**.



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# International team-teaching pilot program

## Teaching methods applied for engineering learning process

- ✓ Co-teaching/cooperative teaching
- ✓ Blended learning as part of cooperative teaching
- ✓ Student centered teaching
- ✓ Flexible Assessment
- ✓ Project-based learning
- ✓ Digital teaching and learning



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# International team-teaching pilot program

## Development of new course content

- ✓ **Modularity of contents and levels** - for each joint **course modules are defined**, facilitating in this way the **team-teaching process** and allowing flexible content implementation each course in all HEIs
- ✓ **Student-centered elements** - that make use of experiential learning in close collaboration with real life case studies from industry develop content that put students at the center of learning process stimulate experiential learning through study cases and experiments developed in collaboration with industry partners
- ✓ **Eco-friendly concepts** - new eco-friendly concepts are integrated in the course content that aim to raise awareness to students on the influence/impact on environment based on their decisions in the developing and life span of a certain engineering product
- ✓ **Material compatible with digital teaching and learning**



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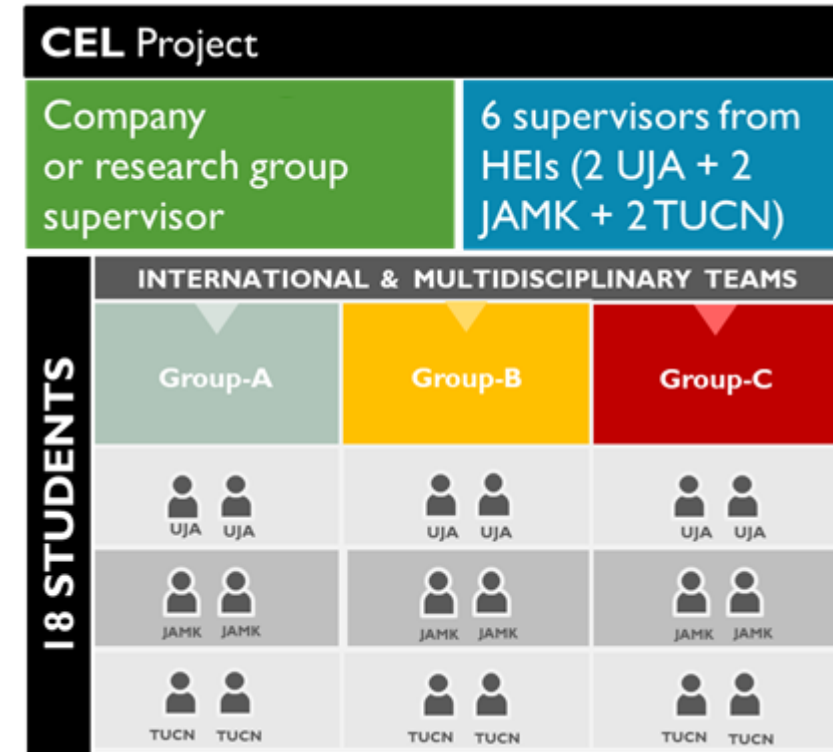
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# Cases for experiential learning projects

- CEL projects are **project-based learning activities** that are designed in collaboration with **companies** and **HEIs research groups** and aim to facilitate close cooperation between students, HEI staff, researchers, and industry experts on real-life industrial/research project topics
- The aim is to strengthen the role of experiential learning in engineering by implementing actions of different natures and extent in courses and projects
- Two rounds of projects
  - 3 projects proposed by research groups from UJA, JAMK and TUCN
  - 3 project proposed by companies: ISR, Valmet and Bosch



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# Cases for experiential learning projects

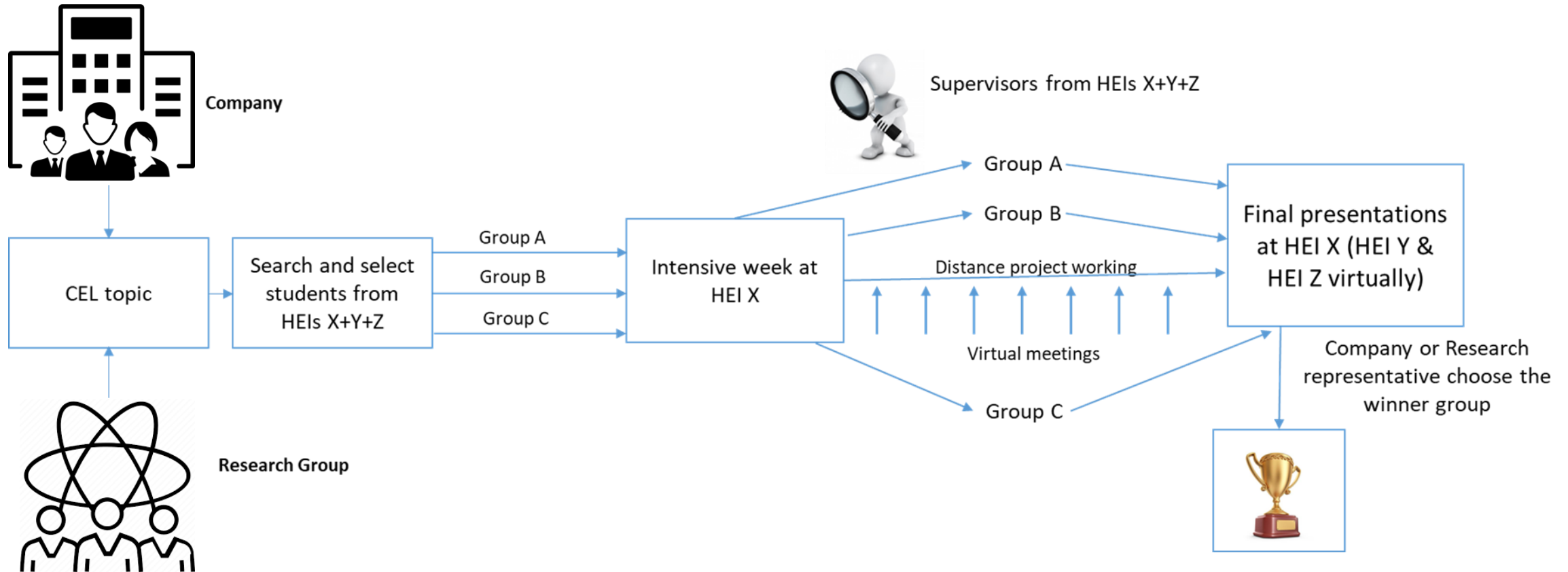


Image developed by : S. Satorres



# NextGEng Kick-Off meeting @UJA

28-29 November 2022, Jaen, Spain



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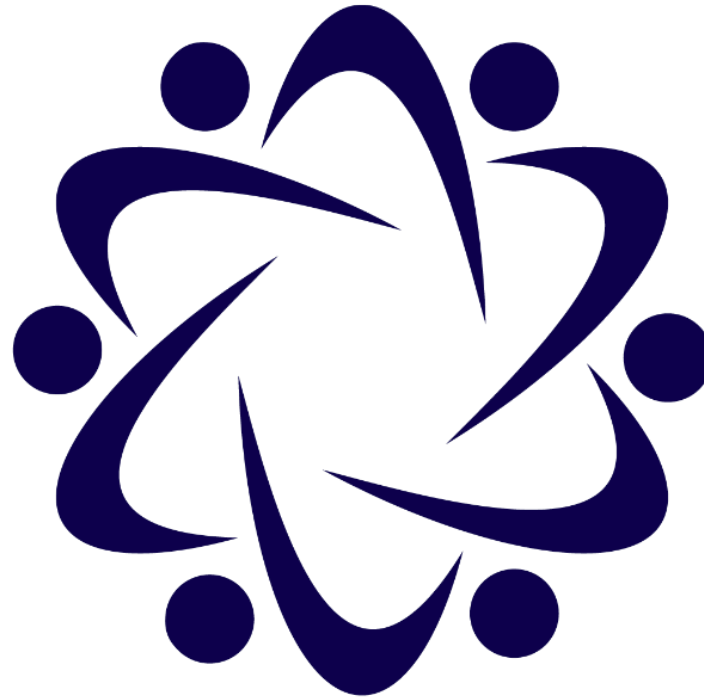




**Thank you!**

**Kiitos!**

**Gracias!**



**Multumesc!**

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