

**EPS: SPRING SEMESTER AT UNIVERSITY POLITEHNICA OF BUCHAREST FACULTY OF MECHANICAL ENGINEERING & MECHATRONICS- UPB-FIMM**

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<https://upb.ro/european-project-semester>

**UPB FIMM**

**Subject:** 1. Mechatronic system for concentration and transformation of solar energy in mechanical energy.

**Profile:** Mechanical engineering; Design; Electronics

**Partner:** The National Research@ Development Institute for Textiles and Leather -BUCHAREST

**Subjects:** 1. Parchment-like materials for contemporary design  
2. Eco-sustainable fireproofing/waterproofing: modern leather finishing and leather artifacts conservation  
3. Textiles in Aeronautics  
4. The Impact of Collagen-based Biomaterials on Life Quality

**Profile :** Chemical engineering ; Design

**Partner:** The National Institute of Aerospace Research "ELIE CARAFOLI" BUCHAREST

**Subjects:** 1. Thermal barrier layers and testing methodology for temperature gradients.  
2. Applications of composite materials in aeronautics.

**Profile:** Materials science & Engineering, mechanical Engineering, Chemical Engineering

Requirements:

- Fiber-reinforced composites – (good knowledge)
- Mechanical testing methodology (basic knowledge)
- Engineering of metallic and ceramic materials and protective layers – (solid knowledge)
- Lubricants – (basic knowledge)
- Research methodology – (basic knowledge)

3. Elements of electronic user interface (microcontrollers/system architecture, hardware, software programming) for data transmission from GCS systems to aerial platform load (process payload)

4. Automated tracking systems for multiple aerial vectors (experimental model design/electromechanic elements, software programming)

**Profile:** Aeronautical engineering, Mechanical engineering, Electrical engineering

Requirements :

- Microcontrollers/system architecture – (solid knowledge)
- Automated tracking systems for multiple aerial vectors
- Hardware architecture –(solid knowledge)
- Software programming - (solid knowledge)
- Electronic user interface – (basic knowledge)
- Methodology of data transmission from GCS systems to aerial platform load (process payload) – (basic knowledge)
- Research methodology, experimental model design – (basic knowledge)

5. Airborne atmospheric research using INCAS ATMOSLAB infrastructure

**Profile:** Physics (Atmospheric Physics), Aeronautical engineering, Mechanical engineering, Electrical engineering, Chemical engineering

Requirements :

- Land atmospheric research applications– (solid knowledge)
- Unmanned aerial systems for atmospheric research –(solid knowledge)
- Hardware architecture – (solid knowledge)
- Software programming - (solid knowledge)
- Atmospheric Physics – (basic knowledge)
- Research methodology, experimental model design – (basic knowledge)

**Partner:** COMOTI ROMANIAN RESEARCH @ Development Institute for Gas Turbines

**Subjects:** 1. Increasing the Energy Efficiency of the Centrifugal Compressors Driven by Constant Speed AC Motor by Developing a Variable Air Flow Combined Control System (IGV & VVD).

**Profile:** Mechanics; Electronics; Computer science

2. Improved Solution for the Operation of Valves in the Natural Gas Distribution and Transport Network.

**Profile:** Mechanics; Electronics