

## PhD Program in Industrial and Information Engineering

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Department of Engineering

The PhD course program in “Industrial and Information Engineering” takes into account the fact that research activity in the field of Engineering is usually strongly inter-disciplinary and therefore the specific blend of different skills, technical languages, methodologies and tools used is of the utmost importance in the education of PhD students. The PhD course includes two main curricula (“Industrial Engineering” and “Information Engineering”), however the educational and seminar activities are common for the most part. The educational and research training includes close cooperation with teachers from other departments of the University of Perugia, and with teachers from other Italian and foreign Universities and Research Centers. The education and research activity is organized using the “Formative Credits” system: its primary goal is to develop and strengthen the research predisposition of PhD students in the following areas: Basic Education Activity, Specialist Education Activity and Assisted Research Activity.

Educational activities include a period (usually 6 months) of permanence in a qualified Research Center (either in Italy or abroad) different from the University of Perugia.

### **The curriculum in “Industrial Engineering” includes:**

- Applied mechanics
- Applied physics
- Bioengineering
- Electrical engineering
- Clean energy transition and environmental systems
- Industrial systems
- Industrial plants for waste management
- Machine design
- Mechanical design
- Mechanical manufacturing technology and systems
- Mechanical measurements
- Metallurgy
- System engineering
- Thermo-fluid machines

### **The curriculum in “Information Engineering” includes:**

- Algorithm engineering, graph algorithms, and network science
- Antennas and electromagnetic propagation
- Artificial Intelligence and machine learning
- Automation and robotics
- Big data, data science, and IoT
- Cloud and distributed computing
- Computational biology and bioinformatics
- Electronic circuits and systems
- Information systems and human-computer interaction
- Information visualization and visual analytics
- Electronic measurements and estimation theory

Microwave and RF components and circuits  
Programmable networking and cybersecurity  
Radio Frequency Integrated Circuits (RFIC) design  
Signal processing  
Wireless and mobile systems

More details about the PhD program in Industrial and Information Engineering can be found at  
<https://www.ing.unipg.it/en/phd>