

# Laboratory for Manufacturing Systems & Automation – LMS



<http://lms.mech.upatras.gr/>

The **Laboratory for Manufacturing Systems & Automation (LMS)** is oriented on research and development in cutting edge scientific and technological fields. LMS is involved in a number of research projects funded by the CEU and European industrial partners. Particular emphasis is given to the co-operation with the European industry as well as with a number of "hi-tech" firms. LMS is organized in three different groups:

## **Group Manufacturing Processes Modelling and Energy Efficiency**

LMS is involved in the research and development of innovative manufacturing processes with a high potential for improving quality, productivity, cost and environmental efficiency.

### *Specific fields involve:*

- Simulation of manufacturing processes
- Processing of innovative materials
- Monitoring and control of manufacturing processes
- Design for manufacturing
- Micro- and nano-scale manufacturing

## **Group Robots, Automation and Virtual Reality in Manufacturing**

LMS is involved in research and development of advanced design techniques in order to support the verification of products and processes in terms of feasibility, functionality, ergonomics and reliability, as well as in the development, software implementation and use of advanced tools based on Artificial Intelligence methods for industrial Robotics applications.

### *Specific fields involve:*

- Industrial Robotics
- Robot cognition in manufacturing
- Sensor guided robot programming/ interaction
- Virtual Reality Applications (product design, process simulation and validation)
- Augmented Reality
- Virtual Collaborative Environments
- Ergonomics Analysis and Modelling, Human Motion Modelling and Simulation

## **Group Manufacturing Systems**

LMS interest is focused on the development, software implementation and use of advanced tools based on Artificial Intelligence methods for production systems planning & control and for the development of intelligent Internet-based applications addressing the enterprise-wide business activities.

### *Specific fields involve:*

- Design & Planning of Manufacturing Systems & Networks
- Mass Customisation & Personalisation Knowledge Management
- Mobile Apps Technology for Planning & Control
- Modelling and Measurement of Flexibility and Complexity
- Performance Evaluation of Manufacturing Systems

LMS is running a fully equipped Machine shop, including Flexible robot cells, heavy duty industrial robots, fixturing systems, flexible grippers, welding equipment, sensors, Safety systems.

LMS fully operates a great variety of industrial PLM/ERP/MES systems for product design and production system design and prototyping.

Finally, LMS operates a fully equipped Virtual Reality facility for industrial research.

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