Tárgy neve: Digital Factory Lab II.

Tárgyfelelős neve: Andó Mátyás

Tárgyfelelős tudományos fokozata: PhD, Habil., egyetemi docens

Tárgyfelelős MAB szerinti akkreditációs státusza: AT

Az oktatás célja angolul:

a) knowledge

- They are aware of the vital basics of organization and management, quality assurance and controlling, which enable them to carry out leadership and management duties related to their specialization.
- They have extensive knowledge on business, enabling them to perform business analysis, and to establish and run an IT enterprise.
- They have a high level of fluency in the language of IT – including its professional vocabulary and its characteristic features of expression and composition – both in their mother tongue and in English, at least.
- They are aware of methods and tools for competent and effective networking both in writing and speaking.
- They know the principles and problems of corporate social responsibility related to IT systems.

b) skills and abilities

- They are able to perform design, development, operation, and management tasks when operating complex software systems, database management systems, corporate information systems, decision support systems, and expert systems.
- They are able to comprehensively understand, plan, organize, manage and control processes related to their IT specialization at management level.
- They are able to initiate collaboration and work in a team as well as on projects with IT or other professionals.
- They are able to analyze and apply new problem-solving methods and procedures related to their IT specialization.
- They are able to apply their IT skills in a diverse, multidisciplinary professional environment.
- They are familiar with IT professional vocabulary, which enables them to express themselves at a high level, both orally and in writing, in their mother tongue and (at least) in English; i.e. they are able to participate in discussions and debates, to write reports, to work with, understand and utilize scientific and technical literature (e.g. professional books, chapters, articles etc.).
- They are able to plan and execute quality-management subtasks related to their IT specialization.
- They are able to professionally use scientific and technical information sources to obtain knowledge necessary for solving a problem, and to critically interpret and evaluate it.

c) attitude

- They are committed to critical feedback and evaluation based on self-examination.
- They are committed to lifelong learning, and they are open to acquiring new IT competencies.
- They accept and make their co-workers apply the ethical principles of work and organizational culture as well as those of IT scientific research.
- They share their knowledge and consider it important to disseminate professional IT results.
- They consider it important to propagate and realize environmentally conscious behavior and social responsibility, and they promote them with the help of information technology.
- They are committed to having quality requirements met and to analyzing them with IT tools.

- They are open to proactive collaboration with IT and other professionals.

d) autonomy and responsibility

- They undertake to meet deadlines and to have deadlines met.
- They bear responsibility for their own work as well as for the work of their colleagues they work together with in a project.
- Regarding mission critical IT systems, they can be entrusted with developing and operational responsibilities that are in accordance with their professional competencies.

Az oktatás tartalma angolul:

Personalized project task – taking into account prequalification and interest. The project task is related to the machining processes (CNC systems) or assembly line (PLC, Robot), where the data collection and processing is essential. The aim is that students meet with industrial problems and create appropriate solution for it with the help of the supervisor. Relevant knowledge for the project task:

1. Analysis of physical systems, define their transfer function both in theoretically (mathematically) and experimentally.
2. System stability analysis from control engineering viewpoint
3. PID controller, basic concepts, controller errors, and optimization with ITAE criteria
4. Sliding mode controller, basic concepts, benefits and drawbacks compared to PID

5-13. Project task

Through the practical lessons the students will learn to use Matlab Simulink to model and optimize control systems.

A számonkérés és értékelés rendszere angolul:

practical course mark

Idegen nyelven történő indítás esetén az adott idegen nyelvű irodalom:

Text book, compulsory:

- Mathworks: MATLAB and Simulink R2019B, tutorials

Proposed further reading:

- Katsuhiko Ogata: Modern Control Engineering (5th Edition), 2010 Pearson New Jersey
- Kalpakjian, S. – Schmid, S.: Manufacturing Engineering and Technology, 2014 Pearson, Singapore