

Tárgyleírás

Tárgy neve: Software Technology Lab I.- IV.

Tárgyfelelős neve: Dr. Tóth Melinda

Tárgyfelelős tudományos fokozata: PhD

Tárgyfelelős MAB szerinti akkreditációs státusza: AT

Az oktatás célja angolul / Aim of the subject:

Knowledge

- They have comprehensive and up-to-date knowledge and understanding of the general theories, contexts, facts, and the related concepts of IT, particularly – depending on their chosen specialization – in the areas of program design, synthesis and verification, logical programming, programming languages, computing models, computer architectures, operating systems, computer networks, distributed systems.
- They have comprehensive and up-to-date knowledge of the principles, methods, and procedures for designing, developing, operating, and controlling IT processes, particularly – depending on their chosen specialization – in the areas of program design methods; design, construction and management of complex software systems; service-oriented program design; the design and development of tools and services for the internet; the design, construction and management of distributed systems.
- They have comprehensive and up-to-date knowledge of specific IT tools, particularly – depending on their chosen specialization – in the areas of artificial intelligence methods, software methods of operation research and optimization, modern programming languages and paradigms, the usage of modern programming languages; theoretical foundations and applications of information systems; distributed and parallel systems; web and multimedia applications, and media informatics.
- 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.

Abilities:

- They are able to apply their mathematical, computer science and informatics skills in a novel way in order to solve tasks in IT research and development.
- They are able to formalize complex IT tasks, to identify and study their theoretical and practical background and then to solve them.
- They are able to perform design, development, operation, and management tasks when operating complex software systems.
- 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 analyse and apply new problem-solving methods and procedures related to their IT specialisation.
- 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 professionally use scientific and technical information sources to obtain knowledge necessary for solving a problem, and to critically interpret and evaluate it.
- Under professional guidance, they are able to carry out scientific research on their own, and to prepare for further studies at postgraduate level.

Attitude:

- They follow professional and technological developments in their IT field.
- They are committed to critical feedback and evaluation based on self-examination.
- They are committed to lifelong learning, and 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 are committed to having quality requirements met and to analysing them with IT tools.
- They are open to proactive collaboration with IT and other professionals.

Autonomy, responsibility:

- They take responsibility for their professional decisions made in their IT-related activities.
- 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.

Az oktatás tartalma angolul / Major topics:

The aim of the course is for MSc students to work together with PhD students and researchers in small teams (approx. 10 members). MSc students get to know the methods of developing complex software systems in practice by working on a complex research and development project task to be completed on time based on a real, mainly industrial, or R&D grant application related work plan; work independently and in cooperation with others on research and development tasks, acquire project management, version control, testing, software integration, documentation, presentation skills.

In the lab, students get to know the project environment and the results of previous research / development for the first time. Then they choose a task, for which they prepare a schedule and an implementation plan together with the project manager / sub-topic manager. The size of the task may justify students working closely with their fellow students on the task, but it may also be the case that the subtasks are only loosely related.

Students get to know / process the literature related to the chosen topic, develop their own algorithms / methods to solve the task. To do this, they create an implementation that is properly tested and documented. The results achieved will be reviewed, compared with existing methods and options for improvement will be developed if necessary.

It is not obligatory, but the publication of the achieved results, its presentation at a conference, the preparation of a master thesis and a TDK thesis on the topic are supported. Students choosing a research career will be assisted by the lab in preparing for their PhD training.

At the beginning of the semester, the project manager describes the project, possible tasks, methods used and expected background. If a student does not have the necessary prior knowledge, the project manager may reject their application to the lab.

A számonkérés és értékelés rendszere angolul / Requirements and evaluation:

Practice grade/Continuous assessments

The evaluation is based on the continuous, reliable, active activities of the students in the project. The solution of the chosen tasks can span the semesters according to the agreed schedule, so the project manager monitors and evaluates the continuous work of the students and gives a grade based on it.

Irodalom / Literature

The literature related to the subject is determined by the specific project / task, which the project manager makes available to the students at the beginning of the semester.