Tárgy neve: Logic programming II.

Tárgyfelelős neve: Ásványi Tibor

Tárgyfelelős tudományos fokozata: PhD, egyetemi docens

Tárgyfelelős MAB szerinti akkreditációs státusza: AT

Az oktatás célja angolul:
a) **knowledge**
- In order to be able to perform their work in an innovative way and do research (when necessary) in their own LP projects, they have comprehensive and up-to-date knowledge of general mathematical and computing principles, rules and relationships, particularly in the following areas: the theoretical background of Logic Programming (LP), its notions, language constructs, execution models, abstract machines, the programming methodology of LP, principles and tools of program verification in the field, program optimizations, efficiency anaysis. They also know the place of LP in IT, and its areas of applications.
- They have comprehensive and up-to-date knowledge of the principles, methods, and procedures for designing, developing, operating, and controlling logic programs, particularly in the areas of program design methods; design, construction and management of complex LP systems.
- They have comprehensive and up-to-date knowledge of specific LP tools, particularly model analysis, scientific computing methods, artificial intelligence methods, software, modern LP languages and paradigms, the usage of modern LP systems; theoretical foundations and applications of LP systems; distributed and parallel LP systems, expert systems.
- They have a high level of fluency in the language of LP – including its professional vocabulary and its characteristic features of expression and composition – both in their mother tongue and in English, at least.

b) **skills and abilities**
- They are able to formalize complex LP tasks, to identify and study their theoretical and practical background and then to solve them.
- They are able to initiate collaboration and work in a team as well as on projects with LP or other professionals
- They are familiar with LP 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.

c) **attitude**
- They follow professional and technological developments in LP.
- 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 LP competencies.
- They share their knowledge and consider it important to disseminate professional LP results.
- They are open to proactive collaboration with LP and other professionals.

d) autonomy and responsibility
- They take responsibility for their professional decisions made in their LP-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:
We shall deal with practical problems in this course via LP approaches. Program access and manipulation; generate-and-test programming, logic puzzles, forward checking; partial data structures, d-lists, queues, dictionaries; higher-order programming, all-solutions predicates; programming in large, exception handling, modules, hooking; searching state-space graphs and game trees, game playing programs; machine learning in LP; interpreters, logic grammars, compiler writing and language processing in Prolog.

A számonkérés és értékelés rendszere angolul:
continuous assessment, practice mark

Idegen nyelven történő indítás esetén az adott idegen nyelvű irodalom:
Text book, compulsory:
- Ásványi Tibor: *Logic programming and Prolog*, **in** Advanced Programming Languages, (**Ed. by** Nyékyné Gaizler Judit) Budapest: Eötvös Loránd Tudományegyetem, 2014. pp. 932-1011. (ISBN:978-963-284-450-3)
- Markus Triska: The Power of Prolog (https://www.metalevel.at/prolog, 2005-2018)
- *SICStus Prolog 4* Documentation and Manuals (https://sicstus.sics.se/documentation.html)

Proposed further reading:
- Sterling, Shapiro: The Art of Prolog (The MIT Press, 1994).
- O'Keefe: The Craft of Prolog (The MIT Press, 1994).
- Clocksin, Mellish: Programming in Prolog: Using the ISO Standard (Springer, 2005).