

Tárgyleírás angol nyelvű képzés tárgya esetén

Tárgy neve: Functional Languages L+Pr.

Tárgyfelelős neve: Kaposi Ambrus

Tárgyfelelős tudományos fokozata: PhD

Tárgyfelelős MAB szerinti akkreditációs státusza: AT

Az oktatás célja angolul / Aim of the subject:

The subject aims to introduce students to a new programming paradigm. During the semester, they are introduced to the main concepts and terminology of functional programming languages. Through the Haskell programming language, they learn how a strongly typed functional language can help them during development.

Knowledge

- They have comprehensive and up-to-date knowledge and understanding of the general theories on programming languages.
- They have comprehensive and up-to-date knowledge of specific IT tools, particularly – depending on their chosen specialization – in the areas of modern programming languages and paradigms, the usage of modern programming languages.

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 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.).

Attitude:

- They follow professional and technological developments in their IT field.
- They are committed to lifelong learning, and are open to acquiring new IT competencies.
- They are committed to having quality requirements met and to analysing them with IT tools.

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.

Az oktatás tartalma angolul / Major topics:

In this course they learn types in Haskell (basic types, list types, tuple types, function types, polymorphic and overloaded functions, currying, partial application), function definitions (con-

ditional expressions, guarded equations, pattern matching, lambda expressions, operator sections), list comprehensions (multiple generators, dependent generators, guards), recursion (recursive functions over lists, recursive functions with multiple arguments), higher-order functions, defining new types (type synonyms, algebraic data types, defining functions over new data types, parametric data types), declaring type classes (declaring new type classes, making a type an instance of a type class).

A számonkérés és értékelés rendszere angolul / Requirements and evaluation:

Mixed assessment - There is a small test at the beginning of every tutorial and several assignments during the semester. These determine whether the student can apply for the final exam. The final grade is determined by an exam. The exam is a combination of a quiz and a computer-based programming part.

Irodalom / Literature:

- Graham Hutton: Programming in Haskell, ISBN 978-1316626221
- Miran Lipovaca: Learn You a Haskell for Great Good!
<http://learnyouahaskell.com/chapters>
- Christopher Allen, Julie Moronuki: Haskell Programming from First Principles
- Bryan O'Sullivan, Don Stewart, and John Goerzen: Real World Haskell
<http://book.realworldhaskell.org/>