**The specialisation in Programming Languages enables you to:**

* Effectively use functional programming constructs also in object-oriented programming languages such as Scala, C# and Java
* Use at least one declarative programming notation besides SQL
* Work with software in a high-level and semi-automated fashion, when the program code itself is subject to manipulation by development tools
* Understand the concepts of byte code, abstract machines, interpretation, compilation, and simple static checking of programs, in order to design domain specific interpreters, develop software productivity tools or debug problems in projects using these technologies
* Use formal and semi-formal modelling notations such as automata, abstract syntax and grammars, and tools for automatic processing such as lexing and parsing tools, simple code generators and verification
* Discuss and evaluate new technologies and tools in programming languages
* Compare and discuss programming languages, and efficiently learn new languages
* Reason formally (mathematically) about programs.

**Career prospects**

This specialisation aims to prepare you to take software developer and software architect jobs in major software houses and consultancies (business software, administrative software, finance, etc). It is known that major national companies (say Edlund, Simcorp, Deltek/Maconomy) and major international corporations (including Google, Microsoft Development Center Copenhagen, Twitter, and so on) highly value advanced programming language skills.

Furthermore the specialisation prepares you to enter research in programming and modelling languages.

**Prerequisites**

The are no formal requirements for the specialisation, but students are expected to be fluent programming in Java and UML class diagrams. Furthermore they are expected to know foundations of computing and basics of programming languages theory (including basics of compiler construction).

**Project supervisors**

The following members of faculty have teaching or research experience that relate to the specialisation. You can contact them if you want to pursue the specialisation's topic area in a project or in your thesis.

* [Peter Sestoft](http://www.itu.dk/people/sestoft/) [[available thesis projects](https://www.itu.dk/people/sestoft/itu/specialeideer.html)]
* [Claus Brabrand](http://www.itu.dk/people/brabrand/)
* [Andrzej Wasowski](http://www.itu.dk/~wasowski/) [[available thesis projects](https://variete.wikit.itu.dk/Theses)]
* [Jesper Bengtson](http://www.itu.dk/people/jebe/)
* [Rasmus Møgelberg](http://www.itu.dk/people/mogel/)
* [Marco Carbone](http://www.itu.dk/people/maca/)
* [Thomas Hildebrandt](http://www.itu.dk/~hilde/)

On 2 September 2015, Andrzej Wasowski gave [a presentation in which you can find ideas for project topics](https://studyguide.itu.dk/~/media/studyguide/rod/studyguide2014/your-programme/your-curriculum/sdt/sdt-specialisations/proglang-pdf.pdf?la=en).

**Specialisation contact person**

[Peter Sestoft](http://www.itu.dk/people/sestoft/)

Contact Peter if you want to know more about the specialisation contents or its prerequisites.