

# TDDD16 Compilers & Interpreters TDDB44 Compiler Construction 2009

## Organizational Issues

Peter Fritzson, IDA

## Staff 2009

- Peter Fritzson, Examiner, Course leader
- Sergio Raffilio, Course assistant TDDD16 and TDDB44; Lab/tutorial assistant TDDB44
- Kristian Stavåker, Lab assistant TDDB44
- Erik Hansson, Lab/tutorial assistant TDDD16
- Gunilla Mellheden, Course secretary
- Peter Dalenius, Studierektor

## Lecture Plan



- F1: Introduction Peter Fritzson (PF)
- F2+3: [opt. f. TDDB44] Short introduction to formal languages and automata (PF)
- F4: Lexical analysis; Symbol tables (PF)
- F5: Parsing; Top-Down Parsing (PF)
- F6: Top-Down Parsing cont., Bottom-Up Parsing (intro) (PF)
- F7: Bottom-Up Parsing (PF)

## Lecture plan (cont.)



- F8: Semantic analysis and internal forms. Syntax-driven translation. (PF)
- F9: Memory Management; Run-time organization (PF)
- F10: Code optimization (PF)
- F11: Code generation, general (PF)
- F12: [opt. f. TDDD16] Code generation for RISC and superscalar processors (PF)
- F13: Error management. Interpreters (PF)
- F14: Bootstrapping. Compiler Generators (PF)

## Lessons/Tutorials

5 for TDDD16, by Erik Hansson  
4 for TDDB44, by Sergio Raffilio

- Exercises on background theory (TDDD16)
- Preparation for the lab assignments
- Exam preparation session

## Labs

- Separate for TDDD16 (1.5p) and TDDB44 (2p)
  - TDDD16: 2 lab groups
    - Erik Hansson (2)
  - TDDB44: 4 lab groups
    - Kristian Stavåker (2), Sergio Raffilio (2)
- Teams of size 2
- Register via webreg <https://www.i>  
(Also linked from the course home)
  - Deadline for registration:  
Next friday (30 / Oct / 2009)
- Lab deadline: 15/Dec/2009
- **Extra TDDB44 Exam 3 points:** If your TDDB44 labs are completed and approved latest at the deadline you get 3 points at the exam.



## Literature

### Mandatory:

- Aho, Lam, Sethi, Ullman: *Compilers Principles, Techniques, and Tools, Second Edition*. Addison-Wesley, 2006. (Also as paperback, 2007)
- Or the old, first edition (still ok)  
Aho, Sethi, Ullman: ..., 1986.

### Mandatory for TDDB44:

- *Compiler Construction Lab Assignments*, Kompendium, 2005, Bokakademien

### Optional:

- P. Fritzson: *TDDB44 Compiler Construction Lecture Notes*, 2005, and other lecture notes, are on the course home page.
- *Compiler Construction Exercises*, Kompendium



## For more information ...

See the course homepages,

- [www.ida.liu.se/~TDDD16](http://www.ida.liu.se/~TDDD16)
- [www.ida.liu.se/~TDDB44](http://www.ida.liu.se/~TDDB44)

- Schedule
- Reading directions
- References to additional literature
- Lab instructions for TDDD16  
– (but the lab skeletons are in `/home/TDDD16`)

## What comes after this course?

- New follow-up course, HT 2009:  
**TDDC86 Compiler optimizations and code generation, 4p**  
(C. Kessler)
- Join our compiler research team at PELAB and do a **master thesis project** in compiler technology!
  - Compiling for OO modeling languages (P. Fritzson)
  - Natural semantics based compiler generation (P. Fritzson)
  - Compiler bootstrapping, Java code gen, international open source [www.openmodelica.org](http://www.openmodelica.org) (P. Fritzson)
  - OO modeling language compilation on parallel machines (P. Fritzson)
  - Compilation & parallel programming on industry clusters (P. Fritzson)
  - Compiling for parallel / embedded systems (P. Fritzson, C. Kessler)
  - Code generation for embedded systems (C. Kessler)
  - Debugger technology (P. Fritzson)
  - ... and more!

