

# TDDD55 Compilers & Interpreters TADB44 Compiler Construction 2014

## Organizational Issues

Peter Fritzson, IDA

## Staff 2014

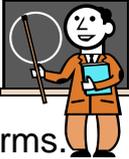
- Peter Fritzson (PF), Examiner, Course leader, Lecturer
- Jonas Wallgren (JW), Lecturer
- Martin Sjölund (MS), Lecturer
- Martin Sjölund, Course assistant TDDD55 and TADB44; Lab/tutorial assistant TADB44
- Adrian Horga, Lab/tutorial assistant TADB44
- Jimmy Axenus, Course lab developer TADB44
- Zeinab Ganjei, Lab/tutorial assistant TDDD55
- Åsa Kärrman, Course secretary
- Tommy Färnqvist, Director of studies

## Lecture Plan



- F1: Introduction (PF or MS)
- F2+3: [opt. f. TADB44] Short introduction to formal languages and automata (JW)
- F4: Lexical analysis; Symbol tables (JW)
- F5: Parsing; Top-Down Parsing (JW)
- F6: Top-Down Parsing cont., Bottom-Up Parsing (intro) (JW)
- F7: Bottom-Up Parsing [LR(0) items opt. f. TDDD55] (JW)

## Lecture Plan (cont.)



- F8: Semantic analysis and internal forms. Syntax-driven translation. (MS)
- F9: Memory Management; Run-time organization (MS)
- F10: Code optimization (MS)
- F11: Code generation, general (MS)
- F12: [opt. f. TDDD55] Code generation for RISC and superscalar processors (MS)
- F13: Error management. Interpreters (MS)
- F14: Bootstrapping. Compiler Generators (PF)

## Lessons/Tutorials

4 for TDDD55, by Zeinab Ganjei

4 for TADB44, by Martin Sjölund

- Exercises on background theory (TDDD55)
- Preparation for the laboratory assignments
- Exam preparation session

## Laboratory Assignments

- Separate for TDDD55 (2hp) and TADB44 (3hp)
  - TDDD55: 2 lab groups
    - Zeinab Ganjei (2)
  - TADB44: 4 lab groups
    - Martin Sjölund(1), Adrian Horga (3),
- Teams of size 2
- Register via webreg <https://www.ida.liu.se/webreg/> (Also linked from the course homepages)
  - Deadline for registration: Sunday November 10 2014
- Lab deadline: December 20 2014
- **Extra TADB44 Exam 3 points:** If your TADB44 labs are completed and approved latest at the deadline you get 3 points at the exam.



## Literature

### Mandatory:

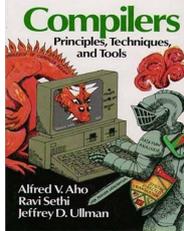
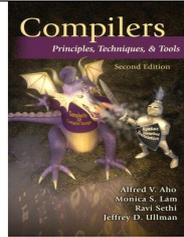
- Aho, Lam, Sethi, Ullman: *Compilers Principles, Techniques, and Tools, Second Edition*. Addison-Wesley, 2006. (Also as paperback, 2007)
- Or the old, first edition (still ok)  
Aho, Sethi, Ullman: ..., 1986.

### Mandatory for TDDB44:

- *Compiler Construction Lab Assignments*, Kompendium, 2012, Bokakademien

### Optional:

- P. Fritzson: *TDDB44 Compiler Construction Lecture Notes*, 2014, 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/~TDDD55](http://www.ida.liu.se/~TDDD55)
- [www.ida.liu.se/~TDDB44](http://www.ida.liu.se/~TDDB44)

- Schedule
- Reading directions
- References to additional literature
- Laboratory instructions for TDDD55  
– (but the lab skeletons are in `/home/TDDD55` )

## What comes after this course?

- Join our compiler research team at PELAB and do a **master thesis project** in compiler technology!
  - Compiling for OO modeling languages (P. Fritzson)
  - Operational 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!