



**TDDE35**

# **Short Introduction to Parallel Computing**

**Information and overview**

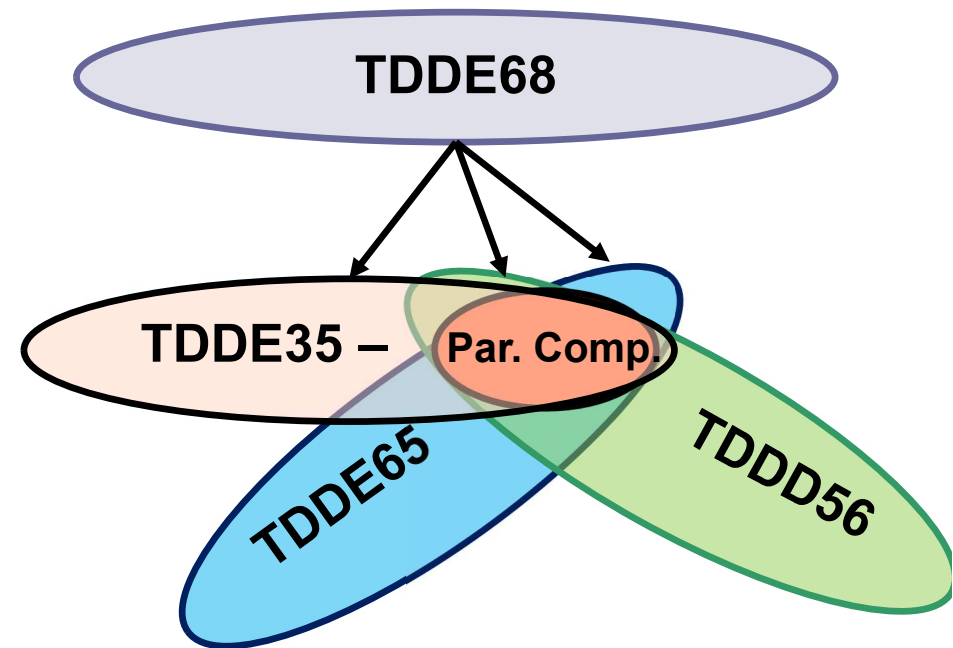
**2025**

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# Setup and Objectives

- 4 lectures
- Some questions in the exam
- Roughly matching 1hp



- **Introduction** of parallel computer architectures, programming techniques and algorithmic concepts
- Details to follow in **subsequent master-level courses**
  - **TDDE65** Programming parallel computers – methods and tools, 6hp
  - **TDDD56** Multicore and GPU Programming, 6hp

These can be taken stand-alone or both in arbitrary order.

# Lectures

- **Lecture 1:** Organization, Overview.  
Motivation, Parallel computer architecture concepts
  - **Lecture 2a:** Parallel programming with threads
  - **Lecture 2b:** Parallel programming with message passing
  - **Lectures 3-4:** Design and analysis of parallel algorithms
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- No exercises, no labs  
→ follow-up courses

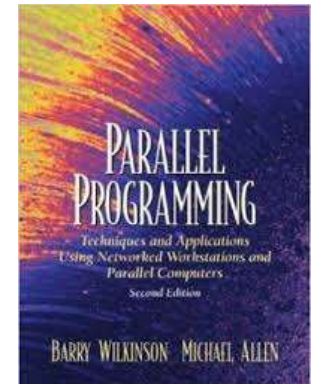


# Literature

- Slide sets will be made available on the course homepage.

If you prefer to work with a textbook, one of the following introductory books might be useful:

- B. Wilkinson, M. Allen:  
***Parallel Programming*, 2e.**  
Prentice Hall, 2005.  
(general introduction; pthreads, OpenMP, MPI)
  - Recommended book for TDDE65
- C. Lin, L. Snyder:  
***Principles of Parallel Programming*.**  
Addison Wesley, 2008.  
(general introduction; Pthreads)

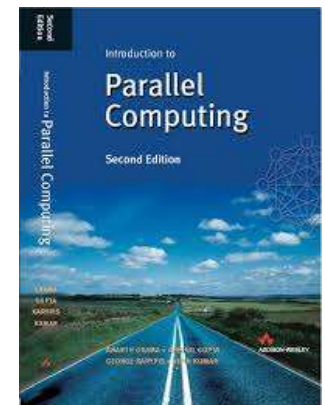
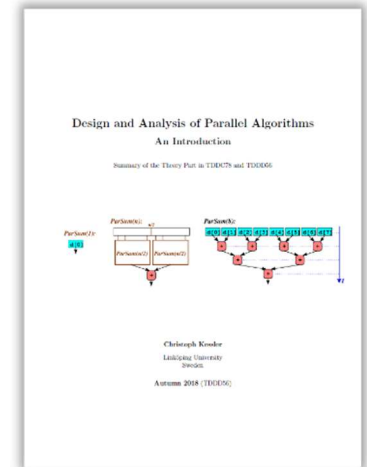


(available in the Campus-Valla library as refcopy and for loan)



# Further Reading

- C. Kessler: ***Design and Analysis of Parallel Algorithms: An Introduction.***  
Compendium (PDF), Sep. 2024 edition,  
see TDDE65 web page handouts
  - <https://www.ida.liu.se/~TDDE65/handouts.shtml>
  - **login:** parallel  
**password:** see *whiteboard*
  - Chapter 2 is about Lectures 3+4
  
- A. Grama, G. Karypis, V. Kumar, A. Gupta:  
***Introduction to Parallel Computing, 2nd Edition.***  
Addison-Wesley, 2003.  
(design and analysis of parallel algorithms)



See also the course homepages of TDDE65 and TDDD56  
for further references and links to web documents