



**TDDE35**

# Short Introduction to Parallel Computing

Information and overview

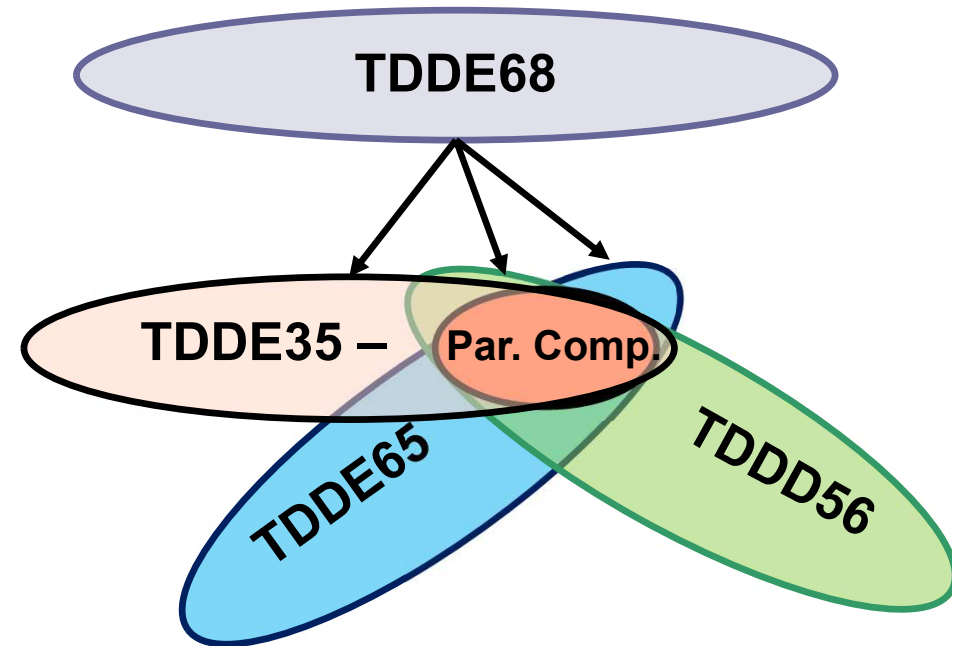
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# Setup and Objectives

- 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

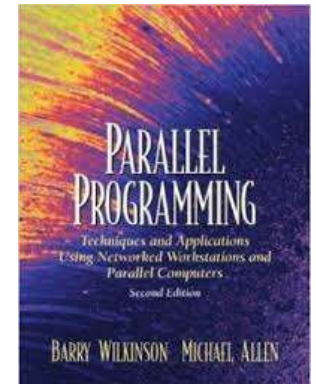
- **Lecture 1:** Organization, Overview.  
Motivation, Parallel computer architecture concepts
  - **Lecture 2a:** Parallel programming with threads
  - **Lecture 2b:** Parallel programming with message passing
  - **Lectures 3-4:** Design and analysis of parallel algorithms
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- 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:

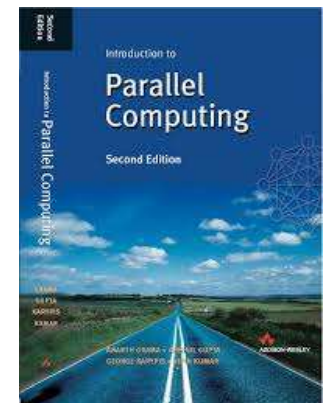
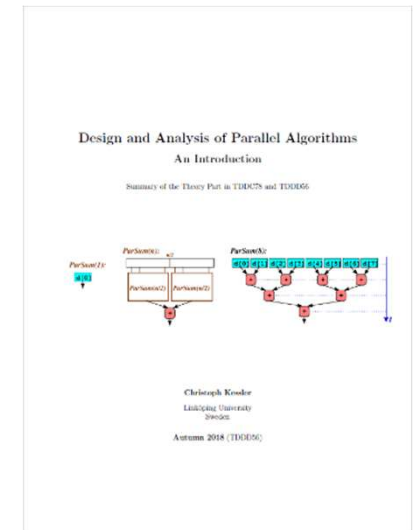
- B. Wilkinson, M. Allen:  
***Parallel Programming, 2e.***  
Prentice Hall, 2005.  
(general introduction; pthreads, OpenMP, MPI)
    - Recommended book for TDDE65
  - C. Lin, L. Snyder:  
***Principles of Parallel Programming.***  
Addison Wesley, 2008.  
(general introduction; Pthreads)



(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), Aug. 2025 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, Appendix chapter B is about Lecture 1
- 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 IDA course webpages of TDDE65 and TDDD56 for further references and links to web documents