



Syllabus 2017 System Information Sciences High-Performance Computing

Japanese

Basic information

held this year:	yes
instructor(s)	Prof. Hiroyuki Takizawa Assoc. Prof. Hideaki Goto
room	GSIS-middle
schedule	The latter period (Tuesday) 8:50-10:20
begins on:	10/03

Objectives and outline

This course reviews supercomputing systems from both aspects of hardware and software. The course talks about the importance of parallel processing, parallel system architectures, parallel algorithm design, parallel programming, and performance evaluation methodologies.

The course also discusses the memory systems necessary for supercomputing. See the class web page <http://www.sc.cc.tohoku.ac.jp/class/uhsipa/> for more details.
(Contact instructors to have an access ID)

Class plan

- 1 Introduction to Parallel Processing and Programming
- 2 Parallel Architectures
- 3 Parallel Algorithm Design I
- 4 Parallel Algorithm Design II
- 5 Parallel Algorithm Design III
- 6 Message Passing Programming
- 7 Shared-Memory Programming
- 8 High-Performance Memory Design and Memory Management
- 9 Virtual Memory
- 10 Cache Memory I
- 11 Cache Memory II
- 12 Parallel Computers
- 13 Memory Systems for Multiprocessor Systems I
- 14 Memory Systems for Multiprocessor Systems II

Evaluation

Evaluated based on the results of two or three home assignments as mid-term and final exams

Textbook(s)

- 1 Parallel Programming in C with MPI and OpenMP

* Machael J. Quinn
 * McGraw-Hill Companies, 2002
 * ISBN:978-0072822564/ISBN10:0072822562

- 2 Memory Systems : Cache, DRAM, Disk

* Bruce Jacob, Spencer W. Ng, David T. Wang, and Samuel Rodriguez
 * Morgan Kaufmann, 2007
 * ISBN:978-0123797513/ISBN10:0123797519

Web site

<http://www.sc.cc.tohoku.ac.jp/class/uhsipa/>

Office hours

4:00—5:30pm, every Tuesday (An appointment in advance by e-mail or phone is needed)

■ [Other information](#)

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