

CDA 6540 - Networks on Chip

Catalog Description: Prerequisite: CDA 4105, Structured Computer Architecture, COP 4364, Computer Network Projects, or Consent of Instructor. The course will focus on a systematic approach to the design of the communication infrastructure as a feasible solution to design complex systems. Networks on Chip (NoC) over the next decade could lead to a fundamental paradigm shift in system modeling, design, and development.

Textbook: Networks on Chip, by A. Jantsch and H. Tenhunen (Eds), Kluwer Academic Publishers, Boston, MA, 2003. ISBN: 1-4020-7392-5; Additional Handouts

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Goals: Thousands of processor cores are expected to be integrated on a chip as the miniaturization continues. NoC architecture is an increasingly popular and feasible alternative to close the productivity gap and achieve the desired performance. This course should help the student gain an appreciation of this new approach.

Studio Time:

Office Hours:

Prerequisite by Topic: (Send email to seek permission if you have not taken these courses)

Computer Architecture and Organization
Network Protocol

Topics:

- I. System Design and Methodology
 - a. Productivity Gap
 - b. Design Methodology
 - c. System Decomposition and Concurrency
 - d. Quality of Service
- II. Basic Infrastructure
 - a. Packet Switched Networks
 - b. Performance Metrics
 - c. Verification
 - d. Synchronization
 - e. Reuse
- III. Software and Application Interface
 - a. Communication Paradigm
 - b. APIs
 - c. Software Validation
 - d. Communication Software

Grading: 2 Paper Reviews (40%) , 2 exams (40%), and 1 term project (20%)