CS 162: Advanced Computer Architecture: 4 units

(http://www.cs.ucr.edu/~bhuyan/cs162/index.html)

Hours per week: Lecture, 3 hours; Laboratory, three hours.

Prerequisite(s): CS 161 with a grade C or better

Instructor: Prof. L.N. Bhuyan, E-mail: bhuyan@cs.ucr.edu, Tel: (909) 787-2347
Office Time: W, Th: 1.30-3.00 pm or by appointment, 319 Surge Bldg.

Course Syllabus:

- Advanced processor design: CPU pipelining, Datapath and Control Design, Data and Control Hazards: The topics will be covered from Chapter 6 of the text

- Instruction level parallelism, Dynamic scheduling of instructions, Branch Prediction and Speculation – From reference book and papers

- VLIW, Multithreading, and Network processor architectures – From papers

- Basic multiprocessor design: Shared memory and message passing; Network topologies. The topic will be covered from Chapter 9 of the text.

Main Text: Patterson and Hennessy, *Computer Organization and Design*, Morgan Kaufman Publisher

Reference: Hennessy and Patterson, Computer Architecture: A Quantitative Approach, Morgan Kaufman Publisher

Laboratory Assignments:

(1) Design of ILP-based processor using SimpleScalar
(2) Simulating Intel IXP 1200 network processor
(3) Performance measurement of IXP 1200-based router

Grading: Test1: 25 points, Test 2: 30 points, Lab: 30 points, Project: 15 points