CS 5170: INTRODUCTION TO PARALLEL COMPUTING

Semester Hours: 3.0
Coordinator: Hassan Rajaei
Text: Parallel Programming
Author(s): WILKINSON & ALLEN
Year: 2005

SPECIFIC COURSE INFORMATION

Catalog Description:
Principles and practice of parallel computing. Parallel program design, implementation and evaluation of parallel programs for shared memory, local memory and vector architectures. Prerequisite: CS 3270.

Course type: ELECTIVE

SPECIFIC COURSE GOALS

• I can design, implement, test and debug a parallel application program using MPI
• I can design, implement, test and debug a parallel application program using OpenMP
• I can parallelize an existing application using an appropriate parallel programming paradigm
• I can develop and analyze a parallel algorithm using the PRAM model
• I can analyze relevant research and communicate my findings

LIST OF TOPICS COVERED

• Introduction and overview of parallel programming (1 week)
• Performance measures (2 weeks)
• Parallel architectures (1 week)
• Programs amenable to parallel programming solution (1 week)
• Programming languages for parallel programming (2 weeks)
• Program portability issues (1 week)
• Operating system issues (1 week)
• Tools for parallel programming (1 week)
• Parallel Algorithms (1 week)
• Parallelizing serial programs (1 week)
• Term project (4 weeks)