

## CS 5170 : INTRODUCTION TO PARALLEL COMPUTING

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<i>Semester Hours:</i>	3.0	<i>Contact Hours:</i> 3
<i>Coordinator:</i>	Hassan Rajaei	
<i>Text:</i>	Parallel Programming	
<i>Author(s):</i>	WILKINSON & ALLEN	
<i>Year:</i>	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: Full Admission to MS in CS or consent of department.

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
- Performance measures
- Parallel architectures
- Programs amenable to parallel programming solution
- Programming languages for parallel programming
- Program portability issues
- Operating system issues

- Tools for parallel programming
- Parallel Algorithms
- Parallelizing serial programs