EEL 6763    Parallel Computer Architecture

1. Catalog Description – (3 credits) Introduction to the fundamental and newly developing hardware and software topics in parallel computer architecture including models, metrics, systems, and applications. For a variety of reasons, parallel computer architecture has recently become one of the most challenging and important areas of ECE, and a dominant theme now in computer architecture, systems, and programming, where we wish to harness the potential of a broad range of new and emerging technologies ranging from multicore CPUs to reconfigurable devices.

2. Pre-requisites – EEL5764 and CDA5155 or consent of the professor

3. Course Objectives - Students will gain fundamental knowledge and understanding of principles and practice in parallel computer architecture and computing, emphasizing both hardware and software challenges and the interactions between them, as well as exposure to research challenges in this field, through class lectures and discussions, reading assignments, homework, and a major research project.

4. Contribution of course to meeting the professional component (ABET only – undergraduate courses) – N/A

5. Relationship of course to program outcomes: Skills student will develop in this course (ABET only undergraduate courses) – N/A

6. Instructor – Dr. Alan George
   a. Office location: 327 Larsen Hall
   b. Telephone: 392-5225
   c. E-mail address: ageorge@ufl.edu
   e. Office hours: MWF period 4th or by appointment

7. Teaching Assistant – Mr. Prashant Prakash
   a. Office location: 331 Larsen Hall
   b. Telephone:
   c. E-mail address: prakash@hcs.ufl.edu
   d. Office hours: TR periods 4th – 5th

   Teaching Assistant – Ms. Vrishali Hajare
   a. Office location: 331 Larsen Hall
   b. Telephone:
   c. E-mail address: hajare@hcs.ufl.edu
   d. Office hours: M period 7th, WF periods 7th – 8th

8. Meeting Times – MWF 3rd period

9. Class/laboratory schedule - 3 class periods consisting of 50 minutes each
10. Meeting Location - CSE Building, Room E107

11. Material and Supply Fees - None

12. Textbooks and Software Required -
   a. Title:
   b. Author:
   c. Publication date and edition:
   d. ISBN number:

13. Suggested Reference Textbooks -

14. Course Outline (provide topics covered by week or by class period) –
   - Basic concepts in PCA
   - Design concepts, methodologies, and strategies
   - Message-passing and shared-memory programming paradigms
   - Parallel programming languages and tools
   - Fixed and reconfigurable device architectures and options
   - Parallel algorithmic complexity
   - Performance prediction and evaluation and tools
   - Shared-memory architectures
   - Distributed-memory architectures
   - Cache coherency and consistency
   - Interconnection networks
   - Research challenges and opportunities
   - Case studies and special topics

15. Attendance and Expectations - Although attendance will not be taken regularly in class, students are advised to attend all lectures and take good notes. Tardiness for
Lectures found to be disruptive will NOT be tolerated. Use of cell phones is strictly prohibited.

Much as you will often experience in your career after graduation, all assignments in this course will be given with a strict deadline, and students are required to submit their assignments on or before that deadline. In case of extenuating circumstances, students are advised to contact the professor immediately or as soon as practical.

16. Grading –
25% from Exam #1 (covers first half of semester)
25% from Exam #2 (covers second half of semester)
45% from Class Research Project (working in pairs or sets)
05% from Homework (working alone)
Final Grade: Overall scores in the course will be sorted and converted into letter grades via a roughly Gaussian or bell-shaped curve, where scores in the upper half equate to a B+ or better.

17. Grading Scale –
A: 93-100
A-: 90-92
B+: 87-89
B: 83-86
B-: 80-82
C+: 77-79
C: 73-76
C-: 70-72
D+: 67-69
D: 63-66
D-: 60-62
E: 0-59

“In order to graduate, graduate students must have an overall GPA and an upper-division GPA of 3.0 or better (B or better). Note: a B- average is equivalent to a GPA of 2.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please visit:

http://gradschool.ufl.edu/catalog/current-catalog/catalog-general-regulations.html#grades

18. Make-up Exam Policy – If you have a University-approved excuse and arrange for it in advance, or in case of documented emergency, a make-up exam will be allowed. For information on UF policies concerning attendance, please visit:
https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx#absences

19. Honesty Policy – All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic
work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others.

20. Accommodation for Students with Disabilities – Students Requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

21. UF Counseling Services – Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:
   · UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, psychological and psychiatric services.
   · Career Resource Center, Reitz Union, 392-1601, career and job search services.

22. Software Use – All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.