ECE 753 - FAULT-TOLERANT COMPUTING
(Spring 2013-14)

Syllabus for the examination

Date: April 15, 2014 (Tuesday)
Location: Room 1153 Mechanical Engineering
Time: 7:15 to 8:55 PM (100 Minutes)

The exam will cover all topics covered in class till April 10, 2014. It will be a closed book, closed notes examination. You are allowed to bring in a 8 1/2 × 11 inch two-sided cheat sheet containing your own notes. Calculators are also allowed. The following is the representative (but not exhaustive) list of topics that will be covered in the examination.

• First fifteen papers (up to the material dealing with re-execution based fault-tolerance) in the reading list.

• Fault-tolerant schemes: terminology, fundamental principles, faults and failures.

• Fault modeling: models at different levels, error models, system level models.

• Testing and test generation: basics of testing, test generation algorithms.

• Concepts in fault-tolerance: hardware redundancy, information redundancy, time redundancy, and software redundancy.

• Reliability/Availability modeling: reliability block diagrams, combinatorial model, Markov model

• System level diagnosis.

• Error correcting codes: Hamming codes, SEC-DED codes, SEC-SBD codes, cyclic codes.

• Watchdog techniques

• Checkpointing and error recovery.

• Software Fault Tolerance (very basics, provided covered in class by April 10)

Note this includes all the material covered in the five homework sets. and material on software fault-tolerance.