To: CSE Graduate Students  
From: Steven A. Demurjian, Graduate Program Director  
Subj: Ph.D. Breadth Areas Approval Form  

Please submit the attached form below when you have satisfied all three areas. Recall that to pass you must obtain a minimum of two areas with an A and the third area with an A or A-. Please attach an unofficial copy of your transcript that shows all of the grades for the areas and courses selected below. Only courses from Fall 2010 and subsequent semester are eligible.

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<tr>
<th>Name: ___________________</th>
<th>PeopleSoftID: ___________</th>
<th>Major Advisor: _______________</th>
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<td>Result: __________</td>
<td>Graduate Program Director:__________________________</td>
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<th>Term Grade (Term means FAXX or SPYY)</th>
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### AREA I. Theory and Algorithms
- 5095 Spec Topics in CSE  
- 5500 Adv Seq & Parallel Algs  
- 5502 Fundamentals of Automata  
- 5510 Distributed Computing and Fault Tolerance  
- 5512 Intro to Quantum Computing  
- 5514 Computational Geometry  
- 5840 String Algorithms and Applications in Bioinformatics  
- 5852 Crypto: Foundations  
- 5860 Computational Problems In Evolutionary Genomics  
- 6504 Linear Algebraic Queueing Theory  
- 6510 Fault-Tolerant Parallel Comput  
- 6512 Randomization in Computing  
- 6514 Computational Topology  
- 6800 Computational Genomics  

### AREA II. Systems (Networks, Distributed, Architecture, and Databases)
- 5095 Spec Topics in CSE  
- 5300 Adv Computer Ntwrks & Distrib  
- 5302 Computer Architecture  
- 5303 Introduction to High-Performance Computing  
- 5304 High-Performance Parallel Computing  
- 5306 Advanced Operating Systems  
- 5504 Probabilistic Methods  
- 5701 Advanced Database Topics  
- 5705 Advanced Artificial Intelligence  
- 5711 Distributed Database Systems  
- 5715 Semantic Data Models  
- 5870 Advanced Course on Reliability of Distributed Systems  
- 6300 Res Topics in Computer Networks  

### AREA III. Programming, Software, Applications
- 5095 Spec Topics in CSE  
- 5101 Advanced Software Engineering  
- 5102 Advanced Programming Languages  
- 5103 Software Performance Engr  
- 5105 Software Reliability Engineering  
- 5107 Distributed Component Systems  
- 5703 Advanced Computer Graphics  
- 5705 Adv. Artificial Intelligence  
- 5713 Data Mining  
- 5800 Bioinformatics  
- 5810 Introduction to Biomedical Informatics  
- 5820 Machine Learning for Biomedical Informatics  
- 5850 Information & Data Security  
- 5854 Crypto: Primitives/Protocols  
- 6705 Natural Language Processing
## Special Topics Courses Since Fall 2010 Semester

### Fall 2010
- **CSE 5095**  Res Topics in Biomedical Info.  Area III

### Spring 2011
- **CSE 5095**  Biomedical Informatics  Area III
- **CSE 5095**  Adv. Methods in Bio Data Mining  Area III

### Fall 2011
- **CSE 5095**  Intro to Quantum Computing  Area I
- **CSE 5095**  Research Topics in Computer Architecture  Area II
- **CSE 5095**  Reliability of Distributed Systems  Area II

### Spring 2012
- **CSE 5095**  Algorithms in Bioinformatics  Area I
- **CSE 5095**  Computational Medical Informatics  Area I
- **CSE 5095**  Ubiquitous Computing  Area II
- **CSE 5095**  Biological/Biomedical Data Mining  Area III
- **CSE 5095**  Computing Issues in Soc Networkin  Area III

### Fall 2012
- **CSE 5095**  Computational Biomedical Informatics  Area I
- **CSE 5095**  Reliability of Distributed Systems  Area II

### Spring 2013
- **CSE 5095**  String Algorithms and Apps in BioInformatics  Area I
- **CSE 5095**  Knot Art Analysis and Algorithms  Area I
- **CSE 5095**  Machine Learning Biomedical Informatics  Area I
- **CSE 5095**  Computational Genomics  Area I
- **CSE 5095**  Sensing and Ubiquitous Computing  Area II
- **CSE 5095**  Compute Architecture/Organization  Area II
- **CSE 5095**  Biomedical / Biological Data Mining  Area III

### Fall 2013
- **CSE 5095**  Fault Tolerant Distributed Computing  Area I
- **CSE 5095**  Intro to Computational Geometry  Area I
- **CSE 5095**  Approximation, Randomized, and Fixed Parameter Algorithms  Area I
- **CSE 5095**  Network Embedded Systems  Area II
- **CSE 5095**  Hardware Security  Area II
- **CSE 5095**  Machine Learning  Area III

### Spring 2014
- **CSE 5095**  Research Topics in Big Data Analytics  Area I
- **CSE 5095**  Research Topics Combinatorial Optimization  Area III

### Fall 2014
- **CSE 5095**  Data Visualization  Area I
- **CSE 5095**  Network Embedded Systems  Area II
- **CSE 5095**  Hardware Security  Area II