CMIX REQUIREMENTS FOR PHD BREADTH AND CANDIDACY

REVISED: MAY 4, 2019

To obtain PhD candidacy, the student must satisfy the breadth requirement and pass a written comprehensive exam.

Breadth requirement: The breadth requirement is satisfied by course work and involves completing six 500-level courses in CACS with a GPA greater than or equal to 3.5.

Part I: Hardware: Computer architecture, Computer design and implementation, Logic design and switching theory, VLSI. (530, 581, 583, 585, 586)
Part II: Software: Operating systems, Compilers, Programming languages, Database systems, Software engineering. (550, 551, 553, 555, 556, 561, 562, 564, 565, 566)
Part III: Theory: Design and analysis of algorithms. (500)
Part IV: Others: Artificial intelligence (520), Combinatorics and geometric algorithms (572), Computer communication networks (513, 613), Computer graphics (515), Image processing (508), Pattern recognition (509), Wireless computing and networking systems (575), Mobile computing and applications (576), Neural networks (588), Deep Learning (598), Parallel processing (531, 631), Software testing and verification (557).

For CS: Two courses from Part II; one course each from Parts I, III, IV; one chosen by student.
For CE: Two courses from Part I; one course each from Parts II, III, IV; one chosen by student.

Written comprehensive exam: Two areas must be passed from the list below. Each comprehensive exam is based on a syllabus available from Nancy Franks. Courses suggested to take in preparation for the exams are listed in parentheses below. Additionally please consult the syllabus for the exam you wish to take.

(1) Algorithms (CSCE 500)
(2) Computer architecture (CMPS 430, CSCE 530)
(3) Programming languages (CMPS 450, CSCE 550, CSCE 551)
(4) Operating systems (CMPS 455, CSCE 555)
(5) Knowledge and data systems (CMPS 460, CSCE 561, CSCE 566)
(6) Deep Learning (CSCE 588, CSCE 598)
(7) Pattern Recognition (CSCE 509)
(8) Artificial intelligence (CMPS 420, CSCE 520)
(9) Software engineering (CSCE 553)
(10) Computer graphics (CSCE 515)
(11) Computer communications and networks (CSCE 513)
(12) Computer design & implementation and VLSI (CSCE 585, CSCE 586)

For CS: One area in {1, 3, 4, 5, 6, 7, 8, 9, 10, 11} and one area chosen by the student.

For CE: One area in {2, 11, 12} and one area chosen by the student.