

# PhD Preliminary Breadth Course Selection Process

- 1) **Each student must take 5 breadth courses**, subject to the following constraints:
- At least one of "CISC 621: Algorithm Design and Analysis" or "CISC 601: Elements of the Theory of Computation" must be included.
  - At least one course from each **breadth area** must be included.

The **breadth areas** and the **breadth courses** included in each area are as follows:

## Area 1: Theory

- CISC601: Elements of the Theory of Computation
- CISC604: Logic in Computer Science
- CISC621: Algorithm Design and Analysis

## Area 2: Systems and Networks

- CISC650: Computer Networks II
- CISC662: Computer Systems: Architecture
- CISC663: Operating Systems
- CISC672: Compiler Construction

## Area 3: Software

- CISC640: Computer Graphics
- CISC675: Object Oriented Software Engineering
- CISC681: Artificial Intelligence

## Area 4: Information

- CISC636: Bioinformatics
- Either CISC 683 Machine Learning or CISC683: Introduction to Data Mining (**i.e., at most one of these two courses can be used to fulfill the breadth requirement**)
- CISC637: Database Systems
- CISC642: Introduction to Computer Vision

*The list of breadth courses is subject to change as approved by the CIS faculty.*

- 2) A student must obtain an average GPA of 3.5 or higher over these 5 breadth courses. Courses that will be counted toward this requirement must be pre-declared as explained below.
- 3) **At the start of every semester, a student will have to declare the courses he/she wishes to take that semester for satisfying the Prelims course component.** This is done by filling the [Breadth Prelims Course Registration Form](#), which must be signed by the student's advisor, and submitted to Chiamesha Carey for filing.

- 4) A student can change courses to be counted for the Prelims course **component during the free drop/add period but not beyond that time**. The student can also drop a course for this component during the free drop/add period. After this period, the course will be counted toward the Prelims course component and the grade in that course will be counted toward the required average of 3.5. A grade of L or W will count the same as an F grade.
  
- 5) None of the courses counted toward the Prelims course component can be a repetition of a course previously taken or of a course previously audited. If a student takes the same course more than once, only the grade on the **first** attempt may be counted towards the Prelims course component. The only exception is as specified in *item 6)* below.
  
- 6) Once the 5 required Prelims courses are completed, a student who has a grade point average of less than 3.5 on these courses may take, with the advisor's approval, at most one additional course from the approved list of Prelims courses or petition the GPC to use a course already taken from that list. In this case, the additional course may be used to substitute one of the original five courses making sure that the five courses used for the Prelims satisfy all the breadth requirements. This additional course may be a repeat of the course being substituted, with approval of the instructor teaching the repeated course. In exceptional situations, with strong advocacy from the advisor and with justifiable reasons, the GPC may allow one extra semester beyond the four semesters to complete this sixth course.