

**Ph.D. Preliminary Examination
Department of Computer Science
Kent State University
Effective Fall 2015**

1. Goals and Definitions

The *Ph.D. Preliminary Examination* is in place to assess a student's understanding of the basic *prerequisite concepts* for entrance into the Doctoral program in Computer Science. It is also in place to assure that all incoming Ph.D. students have the ability to effectively reason with and integrate the underlying knowledge and concepts in the broad field of Computer Science. This ability is necessary to continue the student's studies in the degree program. The goals of the Ph.D. Preliminary Examination:

- Assess a student's general ability and background to enter the Doctoral program
- Give the student a positive learning experience that benefits their academic career
- Cover only required prerequisite breadth knowledge for the degree program
- Be consistent, uniform, and fair for students

This new Preliminary Examination format (i.e., definitions, rules, and guidelines) *completely replaces* the preliminary examination format that was in place prior to Fall 2015. This new format was adopted in Spring 2015 and will be in effect starting in Fall 2015.

2. Exam Topics

Below is a set of topics, (referred to as the *Exam Topics*) which are considered prerequisite knowledge for incoming students applying for entrance to the Ph.D. degree program in Computer Science. Any doctoral student conducting research in Computer Science must have a basic knowledge of the following three areas: 1) Design and Analysis of Algorithms; 2) Data Structures and Fundamentals of Programming; 3) Computer Operating Systems. These areas are aligned with the areas of the *ACM/IEEE Computer Science Body of Knowledge* namely, Programming Fundamentals (PF), Algorithms and Complexity (AL), and Operating Systems (OS).

A complete and detailed list of the topics covered will be published with ample time for students to prepare for the exam. A reading list will also be provided and will be manageable and focused for the student's benefit. The reading list will reference a text book(s) and associated chapters that reflect the topics covered on the exam. See the *Preliminary Examination Reading List* for a complete and detailed list of topics and suggested reading list. The reading list is the official description of the exam topics.

3. Exam Format

The format will be a *written examination*. There will be one exam with three sections corresponding to the exam topics:

1. Design and Analysis of Algorithms
2. Data Structures & Fundamentals of Programming
3. Computer Operating Systems

There will be three questions for each section of the exam for a total of nine questions. Students must answer all questions. The student must attempt all sections of the exam (unless it is a second attempt).

The exam will be administered during the last part of the semester: November in the Fall and April in the Spring. The exam will not be offered in the summer. Students will have a total time period of 4 hours in duration to complete the entire exam (i.e., all three sections).

Previous versions and/or sample questions of the exams will be made available to students to assist in preparation. The reading list and topics will be published at least one term in advance.

The student must register to take the exam at least two months prior to the examination date. The student should inform the Graduate Secretary and Graduate Coordinator.

4. Exam Policies & Grading

The student **must** take the Preliminary Examination during the first semester of entering the Ph.D. program. For a student to continue enrollment in the Ph.D. program they must successfully pass the Preliminary Examination requirement during their first three terms within the program. Students not meeting this requirement will be recommended to the Graduate School for *dismissal* from the program.

Each section of the exam is graded and passed individually. Each question is graded on a 100 point scale.

For each section all three questions will be graded. Of the three questions, the two best scores will taken and averaged. This averaged score must be a minimum of 75% to pass the section. Any score for a section less than 75% will be a failing grade for that section.

If the student passes all three sections of the exam they have completed the Ph.D. Preliminary Examination requirement. If a student fails one or more sections they have two options to continue in the doctoral program. The student must submit in writing, to the graduate coordinator, which option they intend to take.

Option 1: The student must re-take the section(s) not passed the next time the exam is offered and receive a passing grade on those section(s). If the student does not pass a section in their second attempt, the student will be recommended for *dismissal* from the program. There will be no exceptions to this rule and no more attempts of the exam will be allowed.

Option 2: The student must *officially* enroll in the course(s) below for each section failed. These courses must be taken the first opportunity they are offered (excluding summer). Courses must be taken within the Computer Science Department at Kent State University (Kent Campus).

Exam Section Failed	Required Course
1. Design and Analysis of Algorithms	CS 46101 Design & Analysis of Algorithms
2. Data Structures and Fundamentals of Programming	CS 23001 CS2: Data Structures & Abstraction
3. Computer Operating Systems	CS 33211 Operating Systems

The student must receive an A- (3.70) or better in each course in order to complete the Ph.D. Preliminary Examination requirement. If the course is not taught by a graduate faculty, then the instructor must ask a graduate faculty member to oversee the grading for that student. The student has one (1) attempt to receive the required grade in each course. If the student does not take the course in the first possible offering or does not receive the required grade, the student will be recommended for *dismissal* from the program. There will be no exceptions to this rule and no additional attempts at course work or the exam will be allowed.

5. Management of Exam

A Preliminary Examination Committee (PEC) will be formed each year and be comprised of tenure track Graduate Faculty. The Graduate Coordinator, in consultation with GSC, will select the members of PEC. PEC must be composed of at least three Graduate Faculty members, one for each section of the exam. The Graduate Coordinator is Chair of the PEC and can be a grader.

PEC responsibilities:

- Administration and grading of the exam
- Consistency and quality of the exam
- Publication of examination dates
- Publication of the reading list and additional study materials
- Creation of exam questions – PEC can solicit questions/answers from entire faculty
- Timely grading of the exam

Each question will be graded by at least one member of PEC. In the case of a grade appeal, the student may request a second grader in *writing*. The Graduate Coordinator, in consultation with PEC, will select the additional grader. The average of the two grades will be calculated and assigned to any question(s) under dispute. The normal rules and policies will then be applied to these new scores.

The PEC must have at least two meetings for each time the exam is administered. The two meetings will have the following agendas:

1. Go over and agree upon the examination questions. While each section of the exam will developed by the PEC member in charge of that area, all PEC members must check over each question in all sections. This is to help assure consistency of the difficulty level across the three sections. The PEC members must also agree on the general guidelines for grading the questions.
2. After the exam is graded the PEC will check over the grading of each section and verify no errors have been made. Final PASS/FAIL for each section will be assigned for each student.

PEC will give examination results and recommendations to GSC for final approval. The Graduate Coordinator, PEC, and the Graduate Secretary will maintain the Preliminary Examination data. Changes to reading list and exam format can be recommended by PEC to GSC for consideration.

It is the official responsibility of the Graduate Coordinator to inform a student of examination results. No other member of GSC or PEC may inform a student(s) of examination results or discuss the results with a student(s) prior to official notification by the Graduate Coordinator.