Texas Christian University's Department of Mathematics offers The Doctor of Philosophy in Pure Mathematics.

**THE DOCTOR OF PHILOSOPHY (Ph.D.)**

The Ph.D. program consists of 72 hours of full-time graduate study or 39 hours beyond the Master's degree, as specified below.

**I - Core Coursework**
- 27 hours (nine courses)
  - Abstract Algebra I and II
  - Real Analysis I and II
  - Applied Linear Algebra
  - Topology
  - Algebraic Topology I
  - Advanced Complex Analysis
  - Measure Theory

**II - Preliminary Examinations**
- The student must pass 3 of the following 4 preliminary written exams:
  - Real Analysis Exam
  - Algebra Exam
  - Topology Exam
  - Complex Analysis Exam

**III - Research-specific Coursework**
- After passing the preliminary examinations, the student decides on a direction of research and thesis advisor.
- Areas of research specialization include real analysis, complex analysis, functional analysis, algebraic geometry, differential geometry, number theory, topology, global analysis, and K-theory.

The student must take at least one semester of Graduate Student Seminar, providing training in the presentation of research-level mathematics.

The student and advisory committee agree on a detailed plan of study to prepare the student for mathematical research, and a syllabus of qualifying topics.

**IV - Qualifying Examination**
- After due preparation, the student takes an oral qualifying exam on these topics, administered by the advisory committee.

The student advances to candidacy after passing the qualifying examination.

**V - Research**
- The student writes original research in his/her area of specialization, which leads to a dissertation, if successful.

**VI - Dissertation**
- Admission to candidacy is the prerequisite to enrollment in dissertation research, consisting of an original research project directed by a graduate faculty member at TCU.
- The time allowed to complete the dissertation is at most six years after advancement to candidacy. At the completion of the dissertation, a final oral examination is required, which is open to the public.

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