



## DEPARTMENT OF MATHEMATICS

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.