

# Doctor of Philosophy in Clinical Translational Science

## Admission Requirements

The application process occurs through the School of Graduate Studies. Information is available from the UND School of Graduate Studies website (<http://www.und.edu/dept/grad/>) (<http://graduateschool.und.edu/>).

If further advice or help would be beneficial to an applicant's decision-making process, we encourage her or him to contact our Director of Graduate Education.

1. Completion of a four-year degree from an accredited university. We are particularly interested in students who have completed an undergraduate degree within the state of North Dakota.
2. Coursework: Admission into the graduate program offered through our department is dependent upon the applicant's demonstration of effective academic skills and appropriate undergraduate training.

Generally, the applicant will have completed successfully the following coursework:

- General Biology or Zoology (one year sequence)
- General Chemistry (one year sequence)
- Organic Chemistry
- College Algebra

Coursework in Physics, Molecular Biology, or Genetics is strongly recommended.

Preference for admission may be given to applicants who have completed coursework in at least one of the following areas: Biology, Cell Biology, Chemistry, Biochemistry, or Medical Laboratory Sciences.

Applicants must have a cumulative undergraduate GPA of at least 2.75 and a cumulative GPA of 3.00 in graduate level course work, if applicable. Since the Graduate School requires a 3.0 for admission, those individuals with GPA less than 3.0 would have to be admitted under provisional status.

1. Graduate Record Examination Scores: Applicants must submit Graduate Record Examination (General Test) scores. Preference for admission will be given to applicants whose test scores fall at or above the reported national averages or 50th percentiles.
2. Satisfy the School of Graduate Studies' English Language Proficiency requirements as published in the graduate catalog.
3. Admission to the Clinical and Translational Science Graduate Program can be made either through the MS degree program or by application directly to the PhD degree program. A MS degree is **not** required for admission into the PhD degree program.
4. Students who elect to begin the MS degree program and later decide they wish to pursue the PhD degree may choose to attempt to bypass the MS degree by taking the comprehensive examination. By passing it and meeting the other requirements, such as a GPA of 3.0 or higher in graduate level coursework, a student may be admitted to the PhD program without completing the MS program. Otherwise, a student admitted to the MS program must complete the degree as listed.

## Degree Requirements

The graduation requirements for the Ph.D. degree in the Clinical and Translational Sciences Program consist of required and elective coursework and research leading to the preparation of a dissertation and scholarly tools.

1. Minimum of 90 semester hours of graduate credit.
2. Completion of the following graduate level courses (90 credits):

Foundational Coursework to be completed by all CTS graduate students:

Code	Title	Credits
BIMD 510	Basic Biomedical Statistics	2
BIMD 516	Responsible Conduct of Research	2
PATH 500	Biochemistry and Cell Biology	6
PATH 505	Seminar in Clinical and Translational Science	1
PATH 590	Readings	1-3
PATH 591	Special Topics	1-12
PATH 593	Research	1-6
PATH 999	Dissertation	1-15

For the Pathogenesis of Human Disease Specialization, the following are required core courses:

Code	Title	Credits
MBIO 509		3
ANAT 517		3
PATH 575	Molecular and Pathological Basis of Human Disease	4
PATH 591	Special Topics	1-12

Students in the Pathogenesis of Human Disease Specialization are required to take a minimum of 4 hours of elective courses:

Examples:

- Breast Disease, 1 cr
- Urinary Disease, 1 cr
- Human Population Genetics, 2 cr
- Metals, 2 cr
- Other available, 1-4 cr

For the Bioinformatics and Human Population Genetics Specialization, the following are required core courses:

Code	Title	Credits
MPH 531	*	3
MPH 532		3
MPH 534		3
MPH 535		3

\* MPH 531 can be substitute for the required foundational course BIMD 510 Basic Biomedical Statistics.

Students in the Bioinformatics and Human Population Genetics Specialization are required to take a minimum of 5 hours of elective courses from the following:

Code	Title	Credits
PATH 591	Special Topics	1-4
MPH 533		3
PATH 590	Readings	1-3
PATH 591	Special Topics	1-4

1. Other graduate level courses may be selected or substituted if approved by the graduate student's Faculty Advisory Committee. Elective courses chosen should be appropriate to the student's area of interest.
2. Scholarly Tools: All candidates for the PhD degree must demonstrate competence in the scholarly tools for study and research in the Clinical and Translational Science Graduate Program. Each department at UND is responsible for setting up its own "Scholarly Tool" requirements. These requirements must be completed before the student is permitted to take the comprehensive examination or becomes a candidate for the PhD degree. For the CTS program BIMD 510 Basic Biomedical Statistics meets the scholarly tool requirement.
3. Research and Dissertation: The PhD degree in Clinical and Translational Sciences requires completion of a dissertation based on the results of a

research project completed by the graduate student under the guidance of a faculty advisor. The project must represent an original and independent investigation by the student. It is expected that the results of the research will be published in a refereed scientific journal before graduation or at least accepted for publication. The candidate must make a significant contribution to the advancement of knowledge in the field. The dissertation prepared by the candidate must be presented and defended before the Advisory Committee and the Clinical and Translational Sciences Graduate Faculty