PharmD/MS in Clinical and Translational Science

Admission Requirements

In addition to the Graduate College minimum requirements, applicants must meet the following program requirements:

- Students must meet the admission criteria of both programs and are admitted separately to each through their respective applications. All students should contact the MS CTS Program Coordinator who will explain the application process for MS CTS admission.
- For students applying to both programs simultaneously, MS CTS admission will be contingent upon both admission to the PharmD program and the support of the associate dean for student affairs in the College of Pharmacy. Prior to admitting students into the MS CTS degree, HPA will check with the COP to determine whether the student has been accepted into the PharmD program, and to be sure that the applicant has a prior baccalaureate degree or has completed both the P1 and P2 years satisfactorily.
- Admission to the MS CTS program will be determined based on the support of the associate dean for student affairs in the COP, a baccalaureate degree (or successful completion of P1 and P2), previous academic achievement, research potential, and commitment to CTS as evidenced by prior participation in clinical research.
- In addition to other application materials, joint degree applicants are also expected to submit the following:
- **Letters of Recommendation** Two required, one of which must be from a suitable clinical researcher who can attest to the applicant's research abilities. Both letters of recommendation should address:
  i. the applicant's previous achievements in research and/or academics;
  ii. the applicant's potential for successfully completing a clinical/translational research project;
  iii. analysis of the applicant's career plans and commitment to research, and
  iv. how the joint degree would advance these plans.
- **Personal Statement** Applicants will also submit a personal statement detailing accomplishments to date, and career goals and plans. Specifically, applicants should address background information relevant to their interest in clinical and translational research, and how additional training through the PharmD/MS CTS program would help achieve these goals. The applicant should provide any prior or ongoing research experience and explain how this might interface with the joint degree program.

Degree Requirements

In addition to the Graduate College minimum requirements, students must meet the following program requirements:

- Students in the program must satisfy the requirements of the MS CTS program and the PharmD Program.
- For the MS CTS program, students must adhere to all relevant policies of the Graduate College, including minimum GPA and limits on transfer credit.
- **Minimum Semester Hours Required** *School of Public Health* MS CTS 48 semester hours; *College of Pharmacy* PharmD 133 semester hours.

Course Work - College of Pharmacy

Code	Title	Hours
P1 Year (34-36 hours) [a]		
Fall Semester		
PHAR 410	Integrated Physiology	
PHAR 411	Introduction Pharmacy Practice	
PHAR 422	Fundamentals of Drug Action	
PHAR 431	Pharmaceutics I - Pharmaceutics Principles, Drug Delivery Systems, and Calculations	
PHAR 435	Pharmacokinetics	
PHAR 465	Pharmacy Learning, Advising, Mentoring, and Engagement for Students (PhLAMES) 1	
Electives [b]		
MS CTS workshops and seminars		
Spring Semester		
PHAR 412	Introductory Pharmacy Practice (IPPE): Community	
or PHAR 413	Introductory Pharmacy Practice Experience (IPPE): Hospital	
PHAR 423	Biomedicinal Chemistry	
PHAR 432	Pharmaceutics II – Pharmaceutical Dosage Forms and Calculations	
PHAR 438	Introduction to Drug Information	
PHAR 461	Pharmacy and the U.S. Healthcare System	
PHAR 501	Pathophysiology, Drug Action, and Therapeutics (PDAT) 1: Self Care	
PHAR 502	Pathophysiology, Drug Action, and Therapeutics (PDAT) 2: GI/Endocrine	
PHAR 466	Pharmacy Learning, Advising, Mentoring, and Engagement for Students (PhLAMES) 2	
Electives [b]		
MS CTS workshops and seminars		
P2 Year (31-36 hours) [a]		
Fall Semester		
PHAR 412	Introductory Pharmacy Practice (IPPE): Community	
or PHAR 413	Introductory Pharmacy Practice Experience (IPPE): Hospital	
PHAR 433	Pharmaceutics III – Complex Dosage Forms and Calculations	
PHAR 462	Social and Behavioral Pharmacy	
PHAR 463	Personal and Professional Development	
PHAR 464	Patient Safety	
PHAR 503	Pathophysiology, Drug Action, and Therapeutics (PDAT) 3: Renal, Electrolytes, and Nutrition	

PHAR 504	Pathophysiology, Drug Action, and Therapeutics (PDAT) 4: Immunology/ Respiratory
PHAR 467	Pharmacy Learning, Advising, Mentoring, and Engagement for Students (PhLAMES) 3
Electives [b]	
MS CTS workshops and seminars	
Spring Semester	
PHAR 414	Introductory Pharmacy Practice (IPPE): Introduction to Patient Care
PHAR 434	Pharmaceutics IV – Drug Delivery Systems Design and Calculations Competency
PHAR 439	Pharmacoepidemiology and Biostatistical Reasoning
PHAR 440	Evidence-Based Medicine
PHAR 505	Pathophysiology, Drug Action, and Therapeutics (PDAT) 5: Cardiovascular
PHAR 506	Pathophysiology, Drug Action, and Therapeutics (PDAT) 6: Infectious Diseases
PHAR 468	Pharmacy Learning, Advising, Mentoring, and Engagement for Students (PhLAMES) 4
Electives [b]	
MS CTS workshops and seminars	
P3 Year (27-36 hours) [b]	
Fall Semester	
PHAR 507	Pathophysiology, Drug Action, and Therapeutics (PDAT) 7: Neurology, Psychiatry, and Pain
PHAR 508	Pathophysiology, Drug Action, and Therapeutics (PDAT) 8: Special Topics
PHAR 515	Patient Care: Institutional/Hospital
or PHAR 516	Patient Care: Ambulatory Care/Community
PHAR 520	Applied Pharmaceutics, Pharmacokinetics, and Pharmacogenomics
PHAR 565	Pharmacoeconomics and Payment
PHAR 469	Pharmacy Learning, Advising, Mentoring, and Engagement for Students (PhLAMES) 5
Electives [b]	
MS CTS seminars and workshops and opportunity for shared hours [c]	
Spring Semester	
PHAR 509	Pathophysiology, Drug Action, and Therapeutics (PDAT) 9: Hematology and Oncology
PHAR 510	Pathophysiology, Drug Action, and Therapeutics (PDAT) 10: Advanced Disease Management
PHAR 515	Patient Care: Institutional/Hospital
or PHAR 516	Patient Care: Ambulatory Care/Community
PHAR 566	Management and Informatics
PHAR 567	Pharmacy Law and Ethics
PHAR 470	Pharmacy Learning, Advising, Mentoring, and Engagement fo Students (PhLAMES) 6
Electives [b]	
MS CTS seminars and workshops and opportunity for shared hours [c]	
P3 Year (summer) and P4 Year (28 hours)	
Advanced Pharmacy Practice Experiences—APPE (7 x 6-week APPEs, 4 credit hours each) [e]	
PHAR 471	Pharmacy Learning, Advising, Mentoring, and Engagement for Students (PhLAMES) 7
PHAR 472	Pharmacy Learning, Advising, Mentoring, and Engagement for Students (PhLAMES) 8
Four APPE courses are required (Community, Hospital, Ambulatory Care, and Medicine). The remaining three APPE courses are selected from a list of APPE options in consultation with program advisors.	
MS CTS seminars and workshops and opportunity for shared hours [f]	

a ***Note:*** *Students may also take* MHPE 512 *(1) and an MS CTS elective during the summer following the P1 or P2 year.*

b *Students are required to take a total of 13 semester hours of didactic electives during the P1 to P3 years.*

c *With proper planning and prior approval by the associate dean for academic affairs at the College of Pharmacy and the School of Public Health, joint degree students may apply up to 4 hours of approved advanced public health elective course work toward PharmD elective course requirements and/or up to 4 semester hours of MS IPHS 598 Research Hours toward pharmacy elective requirements.*

d *Modular course. 1-hour course: 3 hours/week x 5 weeks (15 hours/ semester). 2-hour course: 3 hours/week x 10 weeks (30 hours/ semester).*

e *Students must provide transportation to and from pharmacy practice experience. Some pharmacy practice experience sites may not be in the Chicago area or accessible by public transportation.*

f *With proper planning and prior approval by the associate dean for academic affairs at the College of Pharmacy, up to 4 hours of P4 Clerkship time may be used to complete the IPHS 598 Research Hours for the PharmD degree.*

- No more than 12 total hours will consist of shared course work.

Course Work - School of Public Health

Code	Title	Hours
Required Core Courses		
21 core course semester hours consisting of:		
BHIS 509	Informatics for the Clinical Investigator	
BSTT 400	Biostatistics I	
BSTT 401	Biostatistics II	
EPID 403	Introduction to Epidemiology: Principles and Methods	
GC 501	Scientific Integrity and Responsible Research	

HPA 522	Empirical Methods for Health Research II
HPA 526	Leadership and Diversity in Clinical Research
HPA 590	Grant Writing
Electives	
11 semester hours	

- Joint degree students take HPA 590, which focuses on developing an answerable question, conducting a literature review, drafting specific aims, and understanding the components of a grant application. A draft NIH Small Research Grant (R03) will be the product of the course.
- *Electives*: 11 semester hours. With proper planning and prior approval by the School of Public Health and College of Pharmacy, joint degree students may receive up to 4 hours toward the MS in CTS elective requirement by taking an approved nonclinical pharmacy elective.
- **Mentored Research Component** 16 semester hours of required mentored research (IPHS 598), producing a paper that is a scholarly contribution to the field in the form of a journal article, pilot data for a grant application, and a thesis-defense of the paper/research and data. A maximum of 8 hours of the required 16 hours of mentored research (IPHS 598) may be applied toward pharmacy electives and P4 Clerkship credit.
- No more than 12 total hours will consist of shared course work.
- All students in the PharmD/MS CTS program pursue the joint degree at a full-time pace.