HUMAN-CENTERED TECHNOLOGY, INNOVATION & DESIGN (PHD)

Technology, Culture and Society Department & Technology Management and Innovation Department (https://engineering.nyu.edu/academics/programs/human-centered-technology-innovation-design-phd/)

NYSED: 28541 **HEGIS:** 0599.00 **CIP:** 15.1501

Program Description

Innovations in technologies redefine and reshape people's lives, changing social and cultural practices, norms and values, institutional processes, and economies and infrastructures. Working to develop new applications for existing and emerging human-centered technologies informed through rigorous, interdisciplinary research and managing socio-technical transitions is a fast-growing and highly important area of research across a number of fields and disciplines. The mission of the Tandon School of Engineering's Human-Centered Technology, Innovation & Design (HCTID) PhD program is to educate and train scholars who will produce pioneering research and scholarship at the vanguard of technological practice and theory.

This program fosters student research through its focus on high-quality supervision and training by faculty members with significant research strengths in a diverse range of technology-related fields, including: digital media and creative practice, design and human-computer interaction, science and technology studies, urban and environmental studies, sociotechnical complex systems, and technology management and innovation. Students in the program typically follow an individualized path based in one of four main areas of focus:

- Human-Computer Interaction (HCI)
- Design Research & Practice
- Management Science
- Computational Social Science

The Human-Centered Technology, Innovation & Design program is a unique interdisciplinary PhD program, offering a rigorous and flexible course of study that unites the strengths of the Departments of Technology Management and Innovation and Technology Culture & Society at the NYU Tandon School of Engineering. It is ideal for students who are primarily interested in pursuing teaching and/or research-based careers at higher education institutions. Universities with undergraduate and graduate programs that emphasize the integration of design and technology development with the critical study of society and technology or the management sciences are a primary source of career opportunities for our graduates. Similarly, government agencies, not-for-profit research organization, think tanks, corporate research centers, and research-based design and consulting firms also seek our graduates.

Urban Science Doctoral Track

The optional Urban Science Doctoral Track (https://engineering.nyu.edu/urban-science-sensing-complexity-informatics-doctoral-track/) is specifically designed for students who want to focus on urban science through a cohesive array of in-class and experiential learning activities, while pursuing their PhD at NYU Tandon. Doctoral track students will engage with CUSP's urban science faculty, experts in methodological aspects pertaining to complexity (dynamical systems, multi-agent systems, network science, and risk engineering), informatics (AI, machine learning, and robotics), and sensing (Internet of Things, smart infrastructure, wireless).

Admissions

To apply for admission to any Tandon graduate program, please contact the Office of Graduate Admissions (https://engineering.nyu.edu/admissions/graduate/).

Requirements

Admission to the Doctor of Philosophy in Human-Centered Technology, Innovation & Design program is based on an in-depth evaluation of the applicant's academic record, professional experience, research potential, interest in doctoral study, and overall intellectual and professional qualifications. The GRE is optional, while proof of english language proficiency is required for international students.

Program Requirements

Course	Title	Credits
HCTID Doctoral Seminar (4)		
Each semester for the first two years all students will take a required seminar course. This is a survey of a different research topic each semester with topics reflecting both the interests of the faculty member leading the seminar and the requirements of the program. [1]		12
DM-GY 9003	Doctoral Seminar in Technology, Culture, and Society	
Research Methods Courses (3)		
Students are required to complete a master's level course in both qualitative and quantitative research methods. Students should take a third advanced research methods course appropriate for their individual topic of research, and selected in consultation with advising faculty. Sample courses include, but are not limited to:		9
APSTA-GE 2001	Statistics for the Social and Behavioral Sciences I	
CUSP-GX 7103	Capstone Urban Science Intensive I: Project Management	
DM-GY 9963	MS Pre-Thesis in Digital Media: Research Methods	
MG-GY 6193	Statistics for Data Analysts	
RESCH-GE 2140	Approaches to Qualitative Inquiry	
Elective Courses (5)		
Students and their adviser will select appropriate electives. These can be from the TCS and TMI catalogues, but are not restricted to these choices. Sample classes from the TCS and TMI catalogues that prove popular include, but are not limited to: [2]		15
DM-GY 6043	Theories and Cultural Impact of Media & Technology	
DM-GY 6063	Creative Coding	
DM-GY 6143	Interaction Design Studio	
DM-GY 7033	Media Law	
DM-GY 7053	Developing Assistive Technology	
DM-GY 7133	User Experience Design	
MG-GY 8623	Design Strategies	
MG-GY 8813	Design for Innovation with AI & ML	
MG-GY 8823	Digital Civics for Social Innovation	

MG-GY 8863	From Correlation to Causation: Data Science for Decision Making	
Independent Research (5)		
Students will enroll in the independent research course five times: once per semester for five semesters.		15
MG-GY 9913	Independent Research [3]	
Qualifying Exam		
Students must pass the qualifying exam (QE) before beginning dissertation research. The exam must be passed within 2 years of beginning the PhD program.		
RE-GY 9990	PHD QUALIFYING EXAM	0
PhD Dissertation		
After passing the QE, students will enroll in at 3 credits of dissertation each fall and spring semester until graduation. The PhD requires 24 credits of dissertation.		24
MG-GY 999X	PhD Dissertation in Technology Management [4]	
Total Credits		**75**

[1] These courses provide strong research background required for doctoral studies. These four research seminars should be completed before taking the qualifying exam.

[2] Students will have the opportunity to hone their specialization through selecting courses relevant to their research interests.

- Can be in any subfield(s)
- Courses may be taken at Tandon or any school of NYU, except the School of Professional Studies. Courses taken outside of Tandon must be graded and not taken as pass/fail.

[3] Students will build their research experience through independent study courses where they will conduct research under a faculty member. Students must complete 15 credits of this course before registering for their dissertation, and enroll with at least two different TCS faculty.

[4] The dissertation is evaluated in two parts: Proposal Defense and Final Defense. For details, contact the PhD HCTID Program academic director.

Qualifying Exam

Students must successfully pass the qualifying exam (QE) before starting the dissertation. The exam is given in two parts:

- Part One: This examination includes material covered in the methodology courses. It can be taken after completing 30 graduate credits.
- Part Two: This examination includes material from the thematic elective and associated thematic research courses, doctoral seminars and research methods courses. It can be taken after completing required course work.

Students can take both parts of the QE together. Results are provided within one month of the examination. Students have only two chances to pass each part of the exam, and we recommend they start during their second year.

Research Training and Interaction With Faculty

Students are expected to work actively with one or more faculty each year, and focus on completing research. Students are strongly encouraged to present research in progress once a year and work towards publishable papers, usually with a faculty as co-author.

Every student participates in formal research seminars with departmental faculty and visitors.

Advising and Evaluating

The HCTID doctoral program faculty director advises all first-year doctoral students. During their first-year students have many opportunities to get to know the research interests of all departmental faculty. By the beginning of the second year, students have selected an intermediary adviser who will guide them through the comprehensive exam process and up to the dissertation stage. By the middle of the third-year students will have selected a dissertation adviser. Each year every student submits a statement of intellectual progress to their adviser.

All faculty meet to review the progress of all students in a day-long meeting each year. At this time, the student's intellectual progress is reviewed and plans for the following year are considered. The results of this review include a formal letter to the student assessing the previous year's work and offering guidance for the following year's work.

Students who have a master's degree or who are transferring from other institutions (or other departments within Tandon) are admitted based on the same qualification standards that apply to new students. For each required MS or PhD level course, if students have taken a similar course, they may transfer credits for the course. However, students still have to take and pass both qualifying exams. A minimum of 30 credits, including all dissertation credit, must be taken at Tandon. No dissertation credits from other institutions can be transferred.

All students must take the required coursework as assigned and follow the stipulated curriculum. The course work must be finished within the first three years and the dissertation thesis within the next three years, so all students complete the doctorate within six years.

Sample Plan of Study

Course	Title	Credits
1st Semester/Term		
DM-GY 9003	Doctoral Seminar in Technology, Culture, and Society (I)	3
Research Methods Course I		3
TCS/TMI or Extra-Departmental Elective I		3
	Credits	**9**
2nd Semester/Term		
DM-GY 9003	Doctoral Seminar in Technology, Culture, and Society (II)	3
Research Methods Course II		3
TCS/TMI or Extra-Departmental Elective II		3
	Credits	**9**
3rd Semester/Term		
DM-GY 9003	Doctoral Seminar in Technology, Culture, and Society (III)	3
MG-GY 9913	Independent Research (I)	3
Research Methods Course III		3
	Credits	**9**
4th Semester/Term		
DM-GY 9003	Doctoral Seminar in Technology, Culture, and Society (IV)	3
MG-GY 9913	Independent Research (II)	3
TCS/TMI or Extra-Departmental Elective III		3
	Credits	**9**

5th Semester/Term		
RE-GY 9990	PHD QUALIFYING EXAM (Summer Term: End of May, June or July)	0
	Credits	**0**
6th Semester/Term		
MG-GY 9913	Independent Research (III)	3
MG-GY 999X	PhD Dissertation in Technology Management (I)	3
TCS/TMI or Extra-Departmental Elective IV		3
	Credits	**9**
7th Semester/Term		
MG-GY 999X	PhD Dissertation in Technology Management (II)	3
MG-GY 9913	Independent Research (IV)	3
TCS/TMI or Extra-Departmental Elective V		3
Proposal Defense and Full Advisory Committee Convened		
	Credits	**9**
8th Semester/Term		
MG-GY 999X	PhD Dissertation in Technology Management (III & IV)	6
MG-GY 9913	Independent Research (V)	3
Students engaged in creative practice or field research		
	Credits	**9**
9th Semester/Term		
MG-GY 999X	PhD Dissertation in Technology Management (V & VI)	6
Students engaged in creative and practice or field research		
	Credits	**6**
10th Semester/Term		
MG-GY 999X	PhD Dissertation in Technology Management (VII & VIII)	6
September-Dissertation Workshops		
September to December - Student should begin writing their dissertation		
	Credits	**6**
	Total Credits	**75**

[1] RE-GY 9990 PHD QUALIFYING EXAM is the prerequisite for MG-GY 999X PhD Dissertation in Technology Management and is taken in the summer of the second year.

Learning Outcomes

Upon successful completion of the program, graduates will:

1. Be exposed to advanced design skills modulated by understanding of the ways in which society and technology deeply influence design and development.
2. Develop advanced qualitative and quantitative research skills in the social sciences, as a basis for designing, making, and evaluating new technologies in the service of society.
3. Gain in-depth knowledge in a focused thematic area related to designing and making in domains including Human-Computer Interaction, disability, media, and governance based on grassroots input, as well as a deep intersectional understanding of the interplay between technology, race, class, gender, and ability.

Policies

NYU Policies

University-wide policies can be found on the New York University Policy pages (https://bulletins.nyu.edu/nyu/policies/).

Tandon Policies

Additional academic policies can be found on the Tandon academic policy page (https://bulletins.nyu.edu/graduate/engineering/academic-policies/).