HEALTH SCIENCES INTEGRATED PROGRAM PHD

Degree Requirements

The following requirements are in addition to, or further elaborate upon, those requirements outlined in The Graduate School Policy Guide (https://catalogs.northwestern.edu/tgs/academic-policies-procedures/).

PhD

The Health Sciences Integrated Program requires:

- Coursework (see track-specific requirements below).
- Two written Qualifying Exams and an oral defense.
- Teaching experience.
- Written Dissertation Proposal and an oral defense.
- Doctoral Dissertation and an oral defense.

Biostatistics (BIOSTAT) Track

The Biostatistics track within the Health Sciences Integrated PhD Program (HSIP) provides students with comprehensive training in the biostatistical methodology and applications, with emphasis on collaboration in biomedical research, including clinical, translational, and basic sciences. The program prepares students for independent research as methodologists and collaborators. Upon graduation, our students will be well prepared to pursue careers in academia, industry, government, or non-profit organizations.

Total Units Required: 11

Course	Title
Required Courses	
HSIP 400-1 & HSIP 400-2 & HSIP 400-3	Interdisciplinary Health Sciences Doctoral Colloquium and Interdisciplinary Health Sciences Doctoral Colloquium and Interdisciplinary Health Sciences Doctoral Colloquium
0 credit for HSIP 400-1 & HSIP 400-2, 1 credit for HSIP 400-3	
STAT 420-1 & STAT 420-2 & STAT 420-3	Introduction to Statistical Theory & Methodology-1 and Introduction to Statistical Theory & Methodology-2 and Introduction to Statistical Theory & Methodology-3
STAT 350-0	Regression Analysis
or BIOSTAT 402-0	Intermediate Biostatistics
BIOSTAT 521-0	Survival Data Analysis
BIOSTAT 560-0	Statistical Consulting
PUB_HLTH 441-0	Ethical Issues in Clinical Research
PUB_HLTH 445-0	Writing and Peer Reviewing for Scientific Publication
Electives	
Must choose three electives (3 units)	
See Student Handbook for BIOSTAT track Suggested Electives	

Health and Biomedical Informatics (HBMI) Track

Informatics is the study of information: how you collect it, how you organize it, and how you use it to solve problems. Health and Biomedical Informatics is informatics applied to healthcare and biomedical research. This track contains many different sub-fields that use similar techniques and tools but apply them to different problem areas.

Total Units Required: 13.5

Course	Title
Required Courses	
HSIP 400-1 & HSIP 400-2 & HSIP 400-3	Interdisciplinary Health Sciences Doctoral Colloquium and Interdisciplinary Health Sciences Doctoral Colloquium and Interdisciplinary Health Sciences Doctoral Colloquium
0 credit for HSIP 400-1 & HSIP 400-2, 1 credit for HSIP 400-3	
HSIP 401-0	Introduction to Health Measurement Science
HSIP 441-0 & HSIP 442-0 & HSIP 443-0	Health and Biomedical Informatics Methods I and Health Biomedical Informatics Methods II and Health Biomedical Informatics Methods III
or MSCI 330-0	Electronic Health Record Data as a Foundation for Clinical Research
Option to take either HSIP 441 or MSCI 330. HSIP 442 and 443 required.	
BIOSTAT 302-0	Introduction to Biostatistics
BIOSTAT 402-0	Intermediate Biostatistics
HSR 462-0	Topics in Health Services Research: Grant Writing (0.5 credit)
Must choose one Health Care and Biomedical Knowledge (1 unit)	
Must choose one Computation (1 unit)	
See Student Handbook for approved courses under Health Care and Biomedical Knowledge and Computation	
Electives	
Must choose three electives (3 units)	
See Student Handbook for HBMI track Suggested Electives	

Health Services and Outcomes Research (HSOR) Track

This track covers a multidisciplinary field of scientific investigation that studies how social factors, financing systems, organizational structures and processes, health technologies, and personal behaviors affect access to health care, the quality and cost of health care, and ultimately our health and well-being. Its research domains are individuals, families, organizations, institutions, communities, and populations.

Total Units Required: 14.5

Course	Title
Required Courses	
HSIP 400-1 & HSIP 400-2 & HSIP 400-3	Interdisciplinary Health Sciences Doctoral Colloquium and Interdisciplinary Health Sciences Doctoral Colloquium and Interdisciplinary Health Sciences Doctoral Colloquium
0 credit for HSIP 400-1 & HSIP 400-2, 1 credit for HSIP 400-3	
HSIP 401-0	Introduction to Health Measurement Science
HSR 425-0	Introduction to Quantitative Methods in Health Services & Outcomes Research
HSR 433-0	Health Economics and Healthcare Financing
HSR 456-0	Applied Qualitative Methods and Analysis for Health Researchers
HSR 460-0	Applied Ethical Issues in Health Services Research
HSR 462-0	Topics in Health Services Research: Grant Writing (0.5 credit)

HSR 465-0	Intermediate Quantitative Methods in Health Services & Outcomes Research
PUB_HLTH 302-0	Introduction to Biostatistics
PUB_HLTH 421-0	Intermediate Biostatistics
PUB_HLTH 438-0	Survey Design & Methodology
PUB_HLTH 445-0	Writing and Peer Reviewing for Scientific Publication
Electives	
Must choose three electives (3 units)	
See Student Handbook for HSOR track Suggested Electives	

Social Sciences and Health (SSH) Track

The educational mission of this track is to prepare its graduates for scholarly and research careers in four thematic areas, with an overarching foundation of training in track-relevant research theory and methods. *Outcome and measurement science* provides training in measuring health from the perspective of people directly affected by a range of physical and mental disorders (i.e., patient-reported outcomes or PROs) and applying these measures in practice to improve health and healthcare delivery. *Determinants of Health and Disease* provides training needed to investigate the impact of developmental, stress-related, and contextual factors on the onset and course of health and disease, emphasizing malleable factors that may be harnessed for disease prevention and health promotion. *Intervention Science* provides training in the development of evidence-based interventions to prevent and manage health conditions, including innovative uses of technology to engage target populations, methods for personalizing interventions based on individual factors, and application of cultural tailoring to improve quality of life and health outcomes in diverse populations. And *Implementation Science* provides training in methods for moving interventions and practice innovations to clinical settings and communities where they can have their intended impact on individual and public health, including the design and conduct of implementation trials, multilevel mediation and mechanistic work, and methods for applying social and behavioral science methods to implementation science.

Total Units Required: 14.5

Course	Title
Required Courses	
HSIP 400-1 & HSIP 400-2 & HSIP 400-3	Interdisciplinary Health Sciences Doctoral Colloquium and Interdisciplinary Health Sciences Doctoral Colloquium and Interdisciplinary Health Sciences Doctoral Colloquium
0 credit for HSIP 400-1 & HSIP 400-2, 1 credit for HSIP 400-3	
HSIP 401-0	Introduction to Health Measurement Science
BIOSTAT 301-0	Introduction to Epidemiology
or HSR 425-0	Introduction to Quantitative Methods in Health Services & Outcomes Research
BIOSTAT 302-0	Introduction to Biostatistics
or PUB_HLTH 302-0	Introduction to Biostatistics
BIOSTAT 402-0	Intermediate Biostatistics
or PUB_HLTH 421-0	Intermediate Biostatistics
HSR 460-0	Applied Ethical Issues in Health Services Research
HSR 462-0	Topics in Health Services Research: Grant Writing (0.5 credit)
PUB_HLTH 301-0	Behavior, Society & Health
PUB_HLTH 445-0	Writing and Peer Reviewing for Scientific Publication
Must choose one approved SSH Track Following Theory course (1 unit)	
PUB_HLTH 415-1	Contemporary Issues in Disease Prevention
PUB_HLTH 351-0	Introduction to Implementation Science
PSYCH 428-0	Overview of Health Psychology
or CLIN_PSY 476-0	Health Psychology
Must choose one approved SSH Track Following Methodological course (1 unit)	
STAT 348-0	Applied Multivariate Analysis
HSR 456-0	Applied Qualitative Methods and Analysis for Health Researchers
or PUB_HLTH 439-0	Qualitative Research Methods
BIOSTAT 446-0	Design, Conduct and Analysis of Clinical Trials
Electives	
Must choose four electives (4 units) in areas in which they will focus their research. Please be sure to check with the course instructor to ensure the topics covered in a course will meet your needs and to verify that you able to join the course. The program can help with obtaining approvals if needed. Psychology courses (PSYCH) may be offered in Evanston and may require additional steps for approval. Please ask the SSH track leader for examples of possible elective courses.	
Confirm with SSH track advisor & Course Instructor for Approved Electives	