

## Master of Science in Health Services and Outcomes Research

### One-Year Course Plan

Below is a recommended part-time course plan. The Master of Science in Health Services and Outcomes Research (HSOR) is comprised of 10.5 credits: 10 required credits (12 courses) and 1 elective. Part-time students take about half the courses in the first year and complete the remainder in the second year or later. Customized course plans can be arranged with the program.

	Summer 2022	Fall 2022	Winter 2023	Spring 2023
Residency	July 6-8, 2022	Sept 19-22, 2022	Jan 11-13, 2023	April 24-26, 2023
	<b>HSR 461:</b> Topics in HSR: Methods & Measurement (0.5)  <b>HSR 456:</b> Applied Qualitative Methods & Analysis for Health Researchers (1.0)  <b>HSR 302:</b> Introduction to Biostatistics (1.0)	<b>HSR 425:</b> Intro to Quantitative Methods in HSOR (1.0)  <b>HSR 433:</b> Health Economics and Healthcare Financing (1.0)  <b>HSR 421:</b> Intermediate Biostatistics (1.0)	<b>HSR 465:</b> Intermediate Quantitative Methods in HSOR (1.0)  <b>HSR 460:</b> Ethical Issues in Health Services Research (0.5)  <b>PUB_HLTH 445:</b> Writing for Peer Review and Publication (1.0)	<b>HSR 470:</b> <i>Federal Policy Making and Healthcare Reform (1.0) (elective)</i>  <b>HSR 462:</b> Topics in HSR: Grant Writing (0.5)  <b>HSR 500:</b> Capstone Project (1.0) (Independent Study)

### About the Hybrid Model

The HSOR hybrid model adapts the university's traditional course format to accommodate working clinicians and students living outside Chicago. Instead of 3-hour weekly class meetings, the program's courses deliver instruction through asynchronous online modules and activities, synchronous meetings, and in-person quarterly residencies. Attendance during residencies is required.

Most courses have synchronous meetings, which are live class meetings held between the residency dates above. The HSOR course schedule of residency and synchronous class meetings is published about a year in advance to allow students to arrange their schedules, and is available online on the program's [Student Resources](#) page.

**Master of Science Required Courses**

<b>Course and Term</b>	<b>Course Title</b>	<b>Course Description</b>	<b>Units</b>
<b>HSR 302</b> <i>Summer</i>	<b>Introduction to Biostatistics</b>	This course establishes understanding of the concepts of descriptive and inferential statistics and the application of statistical methods in the medical and health fields. Course topics include: descriptive statistics, basic probability concepts, probability distributions, estimation, hypothesis testing, correlation, and simple linear regression.	<b>1.0</b>
<b>HSR 425</b> <i>Fall</i>	<b>Introduction to Quantitative Methods in Health Services &amp; Outcomes Research</b>	This course introduces descriptive and analytic epidemiology, and how to apply these methods to the study of health services and outcomes research. Key epidemiological concepts such as association, bias and confounding will be covered, as well as the main epidemiologic study designs. Topics include overview of research design; basic measurement of health services data; defining and measuring appropriate health outcomes; constructing research questions; conducting univariate analyses; and interpreting results. Practical computer-lab sessions will provide training in importing data into statistical software; cleaning data; creating new variables; descriptive analysis; and univariate analysis.	<b>1.0</b>
<b>HSR 421</b> <i>Fall</i>	<b>Intermediate Biostatistics</b>	This course builds upon the material learned in Introduction to Biostatistics and complements the Quantitative Methods in HSOR sequence. Specifically, the course will focus on multivariable methods of analysis for epidemiologic and clinical studies including correlation, linear regression, logistic regression, and Cox proportional hazards regression.	<b>1.0</b>
<b>HSR 465</b> <i>Winter</i>	<b>Intermediate Quantitative Methods in Health Services &amp; Outcomes Research</b>	This course provides the student with an opportunity to learn and practice more advanced epidemiologic methods in the context of health services and outcomes research. The following topics will be included: epidemiologic research strategies and how to apply these to various research questions, review of univariate analysis (e.g., odds ratios, chi-sq tests), issues in effect estimation (precision, selection bias, misclassification bias), methods for dealing with covariates (stratified analysis, effective modification, confounding), introduction to multivariate analysis, interpreting research findings to guide decision-making. Includes practical computer-lab sessions in Stata.	<b>1.0</b>
<b>HSR 461</b> <i>Summer</i>	<b>Topics in HSR: Research Methods and Measurement</b>	This course provides an overview of methods for conducting health services and outcomes research. It is intended to complement students' training in epidemiology and biostatistics, and help prepare students to conduct independent research. Topics include: identifying appropriate conceptual models, conducting systematic literature reviews, basic survey design and implementation, approaches to using mixed methods, and navigating popular data sets.	<b>0.5</b>
<b>HSR 456</b> <i>Summer</i>	<b>Applied Qualitative Methods &amp; Analysis for Health Researchers</b>	This course focuses on the qualitative research methods and analytic approaches that are often used in health services research, including in-depth and semi-structured interviews, focus groups, and participant observation. This course prepares the researcher to choose appropriate applications of qualitative methods, to conduct a variety of qualitative studies, and to interpret the meaning of events from the participant's point of view, using multiple methods. In this era of patient-centered care, such insights are vital to our understanding of patients' and providers' experiences, and for identifying factors that affect health outcomes, interventions, and policies.	<b>1.0</b>

<b>HSR 433</b>  <i>Fall</i>	<b>Health Economics and Healthcare Financing</b>	This course examines selected topics in health economics that have major implications for healthcare delivery, healthcare financing and clinical and public health research. Essential economic theories and methods for exploring each topic will be discussed along with examples drawn from the existing research literature on the application of these theories and methods. Specific topics include: consumer behavior and health demand with a special focus on the analysis of secondary data; principles of price and quality competition; principles of health insurance; and methods for economic evaluations.	<b>1.0</b>
<b>PUB_HLTH 445</b>  <i>Winter</i>	<b>Writing for Peer Review and Publication</b>	Writing for Peer Review and Publication is an intensive, hands-on, advanced course in writing for publication in biomedical journals and how to be successful peer reviewer. The student will be expected to prepare an article, respond to two (2) peer review cycles, and at the conclusion of the course, be ready to submit to a journal.	<b>1.0</b>
<b>HSR 460</b>  <i>Winter</i>	<b>Applied Ethical Issues in Health Services Research</b>	This course provides an overview of core ethical concepts relevant to researchers conducting health services research. Ethical research issues related to working with large data sets, quality improvement, safety, electronic data sources and comparative effectiveness are examples of topics that will be discussed.	<b>0.5</b>
<b>HSR 462</b>  <i>Spring</i>	<b>Topics in HSR: Grant Writing</b>	The course consists of lectures and discussions on a variety of topics related to grant writing, including development of various components of a grant proposal and identifying potential funders.	<b>0.5</b>
<b>HSR 500</b>  <i>Usually taken in Spring</i>	<b>Capstone Project</b>	The Capstone Project serves as a culminating experience and summative product of students' experiences in the Master's program. By completing the Capstone Project, students will: (1) develop, conduct, and complete an original and independent health services and/or outcomes research study, and (2) report the results in a completed manuscript that is ready to submit for publication. Students work on their project independently with guidance from faculty during their time in the program. Students should enroll in HSR 500 when they are ready to prepare their manuscript.	<b>1.0</b>

**Elective Courses (List not exhaustive)**

<b>Course and Term</b>	<b>Course Title</b>	<b>Course Description</b>	<b>Units</b>
<b>HSR 470</b>  <i>Spring</i>	<b>Federal Policy Making and Health Care Reform</b>	This course has three objectives: (1) to improve students' knowledge of current health policy issues, (2) to introduce students to the policy making process and the roles of various policy actors, and (3) to prepare students to participate in the policy process.	<b>1.0</b>
<b>PUB_HLTH 431</b>  <i>Winter</i>	<b>Decision Analysis and Medical Decision Making</b>	This course will focus on the core areas underlying decision analysis and medical decision making: the use of probabilities in medicine, choice and interpretation of diagnostic tests, decision tree construction and analysis, quantifying patient preferences, and cost-effectiveness analysis. Students will learn methodologies for dealing with complex decisions both on an individual patient level and at a policy level, and will have hands-on experience in applying these to a problem of their choice.	<b>1.0</b>

<b>PUB_HLTH 438</b>  <i>Fall</i>	<b>Survey Design and Methodology</b>	This course focuses on methodological issues regarding the design, implementation, analysis, and interpretation of surveys and questionnaires in health research. Various types of self-report data will be discussed, including knowledge, attitudes, behaviors, and patient-reported outcomes such as general health status, pain, fatigue, etc. Design issues will include formatting and layout, wording of items and response scales, multilingual translations, sampling, timing of assessments, interviewer training, participant recruitment, data analysis, and respondent and staffburden.	<b>1.0</b>
<b>HSIP 401</b>  <i>Spring</i>	<b>Introduction to Health Measurement Science</b>	This course will focus on methodological issues regarding the design, implementation, analysis, and interpretation of health measures. Various types of measurement approaches will be discussed, including physiologic, psychometric, and economic approaches. Students will learn and understand the principles of measurement of clinical data, including information from performance-based tests, biomarkers, clinical interview, and self-report.	<b>1.0</b>

Additional courses may be chosen from other programs in the Center for Education in Health Sciences. These courses can be found on the following web pages:

Public Health and Biostatistics:

[http://www.publichealth.northwestern.edu/current-students/course\\_descriptions.html](http://www.publichealth.northwestern.edu/current-students/course_descriptions.html)

Healthcare Quality and Patient Safety:

<http://www.feinberg.northwestern.edu/sites/cehs/masters-programs/healthcare-quality-patient-safety/course-descriptions.html>

It is also possible to take an elective from another Northwestern program with permission.