

OUTCOMES RESEARCH (ORES)

ORES 2300 - Survey of Epidemiology in Health Services Research **Credit(s): 3 Credits**

This course introduces methods and interpretations of measures of frequency, association, error, bias and health impact. Epidemiological methods are presented within the context of assessing cost, quality, and access of the health care system. Employing mix of lecture, discussion, and computer-based laboratory assignments, students will explore the relationships between policy, medical care practices, and scientific understanding via epidemiology.

ORES 2310 - Introduction to Clinical Medicine **Credit(s): 3 Credits**

This course addresses the fundamentals of diagnosis and treatment related to the practice of medicine for leading diseases. Students will be introduced to the basic science concepts of medicine, including anatomy, physiology, microbiology, and genetics in the context of evidence-based screening and treatment guidelines used by medical subspecialties. Class sessions, taught by medical school faculty, employ a mix of lecture, discussion, hands-on demonstrations, and care simulation. Student assignments include analysis of diagnostic criteria and treatment options available to clinicians and development of patient-directed communications about medication use.

ORES 2320 - Interprofessional Health Outcomes **Credit(s): 2 Credits**

In this course, students will use skills in effective and efficient searching for evidence-based health-care focusing on outcomes of collaborative practice for improving health status. Students will identify outcome variables to be measured and methods used in conducting outcomes research. Students will learn how to search and critically evaluate the literature and develop a plan for evaluating an interprofessional collaboration on health outcome.

ORES 2930 - Special Topics **Credit(s): 3 Credits (Repeatable for credit)**

ORES 2980 - Independent Study **Credit(s): 1 or 3 Credits (Repeatable for credit)**

ORES 4570 - U.S. Health System Reform **Credit(s): 2 or 3 Credits**

This course explores the evolution of the modern U.S. health care system. Students will study and critique strategies employed by communities, states and federal agencies to address cost, quality and access. The major provisions of reform initiatives, such as the Affordable Care Act (ACA), will be examined to assess actual and potential impact on patients, physicians, hospitals and biotech/pharmaceutical companies. Students may choose a 2 or 3-credit version of this course with the latter including the development of a system reform proposal for state government. Offered every summer.

ORES 4930 - Special Topics **Credit(s): 3 Credits (Repeatable for credit)**

ORES 4980 - Undergraduate Readings in Outcome Research **Credit(s): 1-3 Credits (Repeatable for credit)**

This class is for undergraduates wanting to do independent projects such as special problems or special topics with SLUCOR faculty members.

ORES 5010 - Introduction to Biostatistics for Health Outcomes **Credit(s): 3 Credits**

This course is designed to introduce basic principles of descriptive and inferential statistics. The course will cover fundamental concepts and techniques of descriptive and inferential statistics with application to health outcomes research. This course contributes to the First Dimension by preparing students for advanced study in areas related to Outcomes Research and contributes to the Second Dimension by teaching students tools and methods of research.

ORES 5011 - Special Skills Lab **Credit(s): 1 Credit (Repeatable for credit)**

This Special Skills Lab course indicates that a student will be taking the lab course the semester they are registered for ORES 5010 Introduction to Biostatistics.

ORES 5100 - Research Methods in Health & Medicine **Credit(s): 3 Credits**

This online course is designed to provide an introduction to the techniques, methods, and tools used for research in the health sciences. Students will obtain an understanding of the research process and scientific method, specific study designs, methods for data collection and analysis. This is a very applied and hands-on course and is focused entirely on the unique aspects of research in the health sciences. This course will utilize Blackboard for all lectures, online discussions, assignment submission, and examinations.

ORES 5120 - Practical Applications of Statistical Methods **Credit(s): 3 Credits**

ORES 5150 - Multivariate Analysis for Health Outcomes Research **Credit(s): 4 Credits**

The purpose of this course is to introduce the basic principles and methods of multivariate statistics, providing students with a toolbox of statistical methods and the knowledge of when to apply the methods. This course covers advanced concepts and techniques of descriptive and inferential statistics with applications in the medical and public health fields. Multivariate methods including multiple linear regression, logistic regression, MANOVA, survival analysis, and principal components analysis are presented.

ORES 5160 - Data Management **Credit(s): 3 Credits**

This course will cover the basic skills necessary for maintaining databases as well as ensuring data quality and manipulating data. The course will also introduce an experiential component in data base design and management. The course is designed for health outcomes research masters students and doctoral level students in public health. This course contributes to the First Dimension by preparing students for advanced study in areas related to Outcomes Research and contributes to the Second Dimension by teaching students tools and methods of research.

ORES 5200 - Introduction to Statistics in Biomedical Sciences **Credit(s): 3 Credits**

ORES 5210 - Foundations of Medical Diagnosis and Treatment **Credit(s): 3 Credits**

Taught by medical school faculty, this course is an introduction to clinical medicine for graduate students. Basic science concepts include anatomy, physiology, microbiology/hematology, infectious diseases, genetics, immunology, endocrinology and metabolic pathways. Primary organ systems and their associated diseases will also be covered, with special emphasis on their diagnosis and treatment.

ORES 5260 - Pharmacoepidemiology**Credit(s): 3 Credits**

This course is an introduction to pharmacoepidemiology - the use and effects of drugs in human populations. It provides an overview of the principles of pharmacoepidemiology, sources of pharmacoepidemiology data, and special issues in pharmacoepidemiology methodology. It reviews commonly used study designs, special topics and advanced methodologies for pharmacoepidemiologic studies.

ORES 5280 - Comprehensive Literature Review and Meta-Analysis**Credit(s): 3 Credits****ORES 5300 - Foundations of Outcomes Research I****Credit(s): 3 Credits**

This course will assist students in understanding outcomes research and provide a background in the basic tools used in outcomes studies. The course will enable students to 1) conceptually define the meaning and purpose of outcomes research, 2) understand the role of epidemiology, biostatistics, health economics, and database and information technology in conducting outcomes research, 3) evaluate the usefulness and utility of outcomes measures, 4) recognize the different types of measures used in outcomes research, including clinical, health status, quality-of-life, health care utilization, and patient satisfaction, 5) obtain a basic appreciation of statistical analyses appropriate for outcomes research, and 6) interpret the results of health outcomes research.

ORES 5310 - Foundations of Outcomes Research II**Credit(s): 3 Credits**

This course is a continuation of Foundations of Outcomes Research. This course provides an more in-depth look at study designs pertinent to the field of outcomes research including: comparative effectiveness research, cost-effectiveness research, and the skill-set surrounding risk-adjustment in outcomes research. The course also includes an experiential component in database design and management. This course contributes to the First Dimension by preparing students for advanced study in areas related to Outcomes Research and contributes to the Second Dimension by teaching students tools and methods of research.

ORES 5320 - Scientific Writing and Communication**Credit(s): 3 Credits**

The purpose of this course is to take students step-by-step through the process of writing a journal article appropriate for publication in a scientific journal. We will focus on each section of the article for several weeks as students complete assignments related to successfully writing the section and receive feedback on weekly assignments. The last part of the course will focus on taking the research findings presented in the journal article and preparing a poster that could be presented at a research conference. Overall, students will improve their ability to communicate complex research findings in writing to their peers via publication in the peer-reviewed literature and to the broader scientific community through presentation of a poster.

ORES 5400 - Pharmacoeconomics**Credit(s): 3 Credits**

Pharmacoeconomics is one of the cornerstones of Health Outcomes Research. This course is designed to teach clinicians and new researchers how to incorporate pharmacoeconomics into study design and data analysis. Participants will learn how to collect and calculate the costs of different alternatives, determine the economic impact of clinical outcomes, and how to identify, track and assign costs to different types of health care resources used. This is a required course for the MS in Outcomes Research and Evaluation Sciences but may also be of interest to students in Public Health and Health Administration. This course contributes to the First Dimension by providing students with advanced skills in highly valued research area and contributes to the Second Dimension by developing students' ability to effectively communication complex information.

ORES 5410 - Evaluation Sciences**Credit(s): 3 Credits**

This course will examine methods for evaluation of health programs in both organizational and community contexts. Topics include formative research, process evaluation, impact assessment, cost analysis, monitoring outcomes, and evaluation implementation. Strengths and weaknesses of evaluation designs will be discussed. This is a required course for the MS in Outcomes Research and Evaluation Sciences Program but may also be of interest to students in Public Health, Health Administration, and Allied Health. This course contributes to the First Dimension by providing students with advanced skills in the evaluation sciences and contributes to the Second Dimension by developing students' ability to effectively communicate complex statistical information.

ORES 5420 - Clinical Trials Design and Analysis**Credit(s): 3 Credits**

This course is designed to provide students with an understanding of the main concepts and issues in clinical trial design and interpretation. The course will concentrate on the design, conduct, analysis, interpretation, and dissemination of results in clinical trials research. Topics include power analysis, randomization (individual and group), study design, outcomes selection, generalizability, data monitoring, and federal regulations. This course is an elective in the MS in Outcomes Research & Evaluation Sciences program, but may also be of interest to masters and doctoral level Public Health students as well as student in Medicine and Allied Health. This course contributes to the First Dimension by providing students with advanced skills in highly valued research area and contributes to the Second Dimension by developing students ability to effectively communicate complex statistical information.

ORES 5430 - Health Outcomes Measurement**Credit(s): 3 Credits**

This course is designed to introduce students to the principles of health outcomes measurement. Specifically, students will be introduced to the most common measures seen in health outcomes and health services research as well as measure development and assessment of psychometric properties. Topics will include generic vs. disease specific measures, instrument design, scaling, reliability and validity, addressing measurement error, Classical Test Theory, and Item Response Theory. This course contributes to the First Dimension by providing students with advanced skills in a highly valued research area and contributes to the Second Dimension by developing students' ability to effectively communicate complex statistical information.

ORES 5440 - Comparative Effectiveness Research**Credit(s): 3 Credits**

This course is designed to introduce students to the principles of comparative effectiveness research. Specifically, students will be introduced to the concept of comparative effectiveness research, common research methods and statistical analyses, and translation and dissemination. This course contributes to the First Dimension by providing students with advanced skills in a highly valued research area and contributes to the Second Dimension by developing students' ability to effectively communicate complex statistical information.

ORES 5450 - Biomedical Informatics**Credit(s): 3 Credits**

This course provides students with an understanding of the fundamental concepts and activities in biomedical informatics. Topics include clinical classification systems, electronic health records, genomics, decision theory, e-Health, and clinical decision-making. The relationship between health information technology and clinical and outcomes research is emphasized.

ORES 5460 - Drug and Device Development**Credit(s): 3 Credits**

This course provides an overview of the drug and device development process from the laboratory through post-marketing studies. Practical aspects of the drug and device development process as well as regulatory policies and procedures will be discussed. Topics include the steps for gaining approval for a new drug in humans, clinical phases in the development process, use of biotechnology in drug development, preparing investigational new drug applications, and pharmacoeconomic principles for evaluating new treatments.

ORES 5550 - SAS Programming I**Credit(s): 3 Credits**

In the era of big data and outcomes research, skilled scientists can organize, manipulate, and analyze using many different tools. Programming in SAS is an essential skill. This course introduces the SAS environment and programming language. Students will learn data management, descriptive analysis, and statistical inference testing using a hands-on approach. By the end of the course, students will be able to import, organize, and analyze data as well as interpret the results.

Prerequisite(s): (ORES 5010, BST 5000, or BST 5020)

ORES 5560 - R Programming**Credit(s): 3 Credits**

This course will teach students how to use the R statistical programming language to perform data analytics. We will start with an overview of the environment and an introduction to how data is represented in R (vectors and dataframes). We will then quickly move into actual data analysis. We will cover importing data from different source files. We will then go over typical initial data management tasks and exploratory data analysis, including both numerical and visual approaches. We will cover more complex operations on dataframes, including aggregation by clusters and various data merges. In the second half of the course, we will cover the implementation of various statistical techniques in R, including group comparisons (typical scientific table one), linear regression, and the creation of reproducible reports in R. (Offered in summer.)

ORES 5570 - U.S. Health System Reform**Credit(s): 2 or 3 Credits**

This course explores the evolution of the modern U.S. health care system. Students will study and critique strategies employed by communities, states and federal agencies to address cost, quality and access. The major provisions of reform initiatives, such as the Affordable Care Act (ACA), will be examined to assess actual and potential impact on patients, physicians, hospitals and biotech/pharmaceutical companies. Students may choose a 2 or 3-credit version of this course with the latter including the development of a system reform proposal for state government. Offered every summer.

ORES 5580 - Qualitative Research Methods**Credit(s): 3 Credits**

Investigators conducting outcomes research seek to inform the development of clinical practice guidelines, to evaluate the quality of medical care, and to foster effective interventions to improve the quality of care. Outcomes research has traditionally used quantitative sciences and experimental designs to examine the utilization, cost, and clinical effectiveness of medical care. However, despite the utility of quantitative methods for measuring these important outcomes, these methods are not well suited to measure other complex aspects of the healthcare delivery system, such as organizational change, clinical leadership in implementing evidence-based guidelines, and patient perceptions of quality of care, which are also critical issues in outcomes research. These more nuanced aspects of healthcare delivery may be most appropriately examined with qualitative research methods. Qualitative research is a form of scientific inquiry that spans different disciplines and subject matter and utilizes many approaches including interview, observation, and focus group discussion, just to name a few. Qualitative studies are often exploratory in nature and seek to generate novel insights using inductive (starting with observations and developing hypotheses) rather than deductive (starting with extant hypotheses and testing them with observations) approaches. Such research is important in clinical outcomes research because it can illuminate aspects of organizational context and healthcare delivery that influence organizational performance and quality of care. Offered every summer.

ORES 5590 - Advanced R Programming**Credit(s): 3 Credits**

The advanced R course will provide students who are familiar with R the opportunity to delve deeper into the language. Students will learn about S3 and S4 classes, creating packages, managing memory, parallel processing, and vectorizing computations. We will also delve into some of the Hadleyverse packages, including dplyr and ggplot2, and create interactive web-based dashboards using shiny. Offered in summer.

ORES 5930 - Special Topics**Credit(s): 3 Credits (Repeatable for credit)****ORES 5960 - Health Outcomes Research Capstone****Credit(s): 3 Credits**

This course is designed to allow students to integrate the knowledge and skills developed over the course of the MS in Health Outcomes Research and Evaluation Sciences Program. Students will design and complete an outcomes study or program evaluation over the course of the semester culminating in a formal presentation of the study and results. The overarching goal is to incorporate and utilize research skills in a real-world setting. This course contributes to the First Dimension by providing students with advanced skills in a highly valued research area and contributes to the Second Dimension by developing students' ability to effectively communicate complex statistical information.

ORES 5970 - Research Topics in Outcomes Research**Credit(s): 0-3 Credits (Repeatable for credit)**

ORES 5980 - Graduate Readings in Outcomes Research

Credit(s): 0-3 Credits

ORES 6930 - Special Topics

Credit(s): 3 Credits (Repeatable for credit)

ORES 6950 - Special Study for Exams

Credit(s): 0 Credits (Repeatable for credit)

This Special Study for Exams course indicates that a student will be taking the exams the semester they are registered for.

ORES 6970 - Advanced Research Topics in Outcomes Research

Credit(s): 1-3 Credits

ORES 6980 - Advanced Graduate Readings in Outcomes Research

Credit(s): 0-3 Credits

ORES 6990 - Dissertation Hours in Outcomes Research

Credit(s): 0-6 Credits (Repeatable for credit)