**HAX**

**Health and Rehabilitation Sciences**

**HAX 600: Doctoral Seminar**
Provides a venue for faculty and doctoral students to discuss all aspects of their research. Researchers will present different branches of translational science and discuss linkage between research agendas. Provides opportunity for data to be viewed and analyzed by investigators with different perspectives and tools for analysis. Offered in the Fall, S/F graded
May be repeated 1 times FOR credit.

**HAX 602: The International Classification (ICF) of Health Across the Lifespan**
Introduces the dynamic interaction that takes place between health, disability and contextual factors as identified in the International Classification of Functioning, Disability and Health (ICF) model. This model will be examined from the perspective of clinical and translational science for individuals from the prenatal period through senescence. Offered in the Fall.
3 credits, Letter graded (A, A-, B+, etc.)

**HAX 605: Research Ethics**
Prepares a broad overview of research ethics and regulation. Conveys the moral bases of scientific ethics, the historical evolution of social science and biomedical research ethics, and the development, implementation and limitations of U.S. human subjects regulations. Includes ethics and morality in science; science in society; scientific integrity; misconduct; whistle blowing; conflicts of interest; collegiality; publication and authorship; peer review; history and development of human experimentation ethics and regulations (HHS, FDA); Institutional Review Boards; informed consent, waivers, vulnerable populations; privacy and confidentiality of records; epidemiology; and research using animal subjects.
3 credits, Letter graded (A, A-, B+, etc.)

**HAX 620: Rehabilitation and Disability**
Introduces the Science of Rehabilitation and the Science of Disability. Presents models of rehabilitation and disability research and discusses controversies and commonalities between these areas. Forms the groundwork for future coursework in rehabilitation and movement sciences.
3 credits, Letter graded (A, A-, B+, etc.)

**HAX 626: Outcome Measurement in Rehabilitation Research**
Introduces outcome measures relating to impairments, functional limitations and disability, general health status, and patient/client satisfaction. These outcome measures are used to guide research outcomes. Explores measurement properties and discusses strategies to appropriately assess and select various outcome measurement scales. Critical appraisal of the literature will provide the basis for making research methodological decisions regarding selection of the most effective outcome measures.
3 credits, Letter graded (A, A-, B+, etc.)
May be repeated for credit.

**HAX 629: Evidence Based Pediatric Rehabilitation Research**
Provides students an opportunity to develop an overview of issues related to the health of America’s children and adolescents. Emphasizes chronic disease and disability, nutrition, fitness, educational accommodations, and trends in long term health services and health policy. Explores the growing need for evidence based practice and outcomes assessment necessary for the development of strategies for optimal function of children with disease/disability and their families. Students will review and analyze evidence for interventions for a specific pathology/disability.
3 credits, Letter graded (A, A-, B+, etc.)
May be repeated for credit.

**HAX 630: Exercise Physiology and Physical Activity**
Provides key elements of exercise physiology and instructs students in measurement techniques for the assessment of exercise capacity and physical activity. Reviews normal physiology of the cardiopulmonary system and presents normal immediate response to exercise, and long-term effects of exercise in the healthy individual. Explores foodstuffs for energy production, metabolic pathways for production of ATP, and energy systems used in aerobic and anaerobic activities. Principles of physical activity assessment and body composition and examines qualitative and quantitative measurement techniques across the lifespan and in disability. Assimilates, via lab manual, literature reviews of articles addressing measurement.
3 credits, Letter graded (A, A-, B+, etc.)
May be repeated for credit.

**HAX 631: Electro/Neurophysiology: Topics for Rehabilitation Research**
Introduces basic methodology of clinical electrophysiological measures of EEG, EMG, nerve conduction velocity studies (NCV), H-reflex and evoked potentials. Interpretation of these measures provides access to the physiological basis of disability in peripheral or central nerve damage and potentials for recovery. Examines the interventions using peripheral and central electrical stimulation modalities on muscle, bone, cardiovascular and autonomic systems. Includes lab activities of selected modalities such as E-stim, FES, TMS, EEG, EMG, NCV, and H-reflex.
3 credits, Letter graded (A, A-, B+, etc.)
May be repeated for credit.

**HAX 632: Teaching and Learning**
This course will introduce students to adult learning principles and strategies for effective teaching of cognitive psychomotor and affective skills and behaviors in academia. Individual teaching/learning philosophical orientations, characteristics of the adult learner, learning styles, self-directed learning, and reflective practice will be explored.
3 credits, Letter graded (A, A-, B+, etc.)
May be repeated for credit.

**HAX 634: Motor Learning and Motor Control**
This course will introduce the various theories underlying human motor control. Students will actively synthesize and analyze current theory and research related to motor control and skill acquisition through examination of relevant literature. This course places emphasis on determining the implications of this work for future research, educational and/or clinical practice. Includes early and contemporary theory, skill acquisition facilitation, practice, feedback, transfer of training, modeling, part vs whole training, imagery, implicit learning, explicit learning and memory systems.
3 credits, Letter graded (A, A-, B+, etc.)
May be repeated for credit.

**HAX 635: Biomechanics and Movement I**
Introduces students to principles and interrelationships of biomechanics and movement. Includes physical biomechanics of the extremities as a foundation from which to apply biomechanical principles. Involves learning to use mathematical approaches to solving static problems and lay the groundwork for solving dynamic biomechanical problems. Reinforces biomechanical theoretical concepts and mathematical models with lab experiments that involve the manipulation of 3D kinematic, kinetic and EMG data.
HAX 636: Biomechanics of the Musculoskeletal System and Movement II
Provides advanced concepts of kinetics in the field of biomechanics. Explores biomechanical concepts during lecture and reinforces those applications with associated lab experiments. Provides viscoelastic characteristics of biological tissues as a foundation applied to human motion. Includes mathematical models of the musculoskeletal system and analysis of the dynamics of human motion. Collection and analysis of gait and other movement kinematics, kinetics and muscle activation by electromyography (EMG) are components of lab activities.
3 credits, Letter graded (A, A-, B+, etc.)
May be repeated for credit.

HAX 637: Orthopedic and Anatomical Principles I
Provides advanced concepts of orthopedics and anatomy. Focuses on best evidence of examination, evaluation, diagnosis, prognosis, and procedures used for a variety of orthopedic conditions of the spine and pelvis. Requires active engagement in problem solving by identifying research problems, searching for evidence, and evaluating and synthesizing the evidence to answer research questions. Includes examination of select advanced procedures and principles to enhance research investigations
3 credits, Letter graded (A, A-, B+, etc.)
May be repeated for credit.

HAX 638: Orthopedic and Anatomical Principles II
Continues and expands on advanced concepts of orthopedic interventional research. Focuses on best evidence of examination, evaluation, diagnosis, prognosis, and intervention of orthopedic conditions of the extremities. Requires active engagement in problem solving by identifying research problems, searching for evidence, and evaluating and synthesizing the evidence to answer research questions. Student directed pilot study will incorporate knowledge of select advanced techniques and technologies
3 credits, Letter graded (A, A-, B+, etc.)
May be repeated for credit.

HAX 639: Technology and Medical Imaging in Rehabilitation
Examines a range of medical imaging techniques available for use and interpretation in rehabilitation research. Includes radiographs, fluoroscopy, MRI, fMRI, CT, qCT, MEG, TMS and diagnostic US. Synthesizes the technologies and their limitations, the methods of capture and interpretation. Reviews evidence supporting or refuting the sensitivity of these techniques in determining outcomes in rehabilitation
3 credits, Letter graded (A, A-, B+, etc.)
May be repeated for credit.

HAX 643: Healthcare Systems and Policy Analysis
Provides students with an overview of the US healthcare system and major health policy challenges we face. Explores the history and state of the US healthcare system, and circumstances that have given rise to current problems such as employer-based health insurance, challenges in access to and quality of care, and the rising costs associated with the US healthcare model. Discusses ways to improve upon the system, importantly including the Affordable Care Act, and how this legislation was enacted with close attention paid to the policymaking process, roles of political actors, and the importance of policy analysis
3 credits, Letter graded (A, A-, B+, etc.)
May be repeated for credit.

HAX 644: Ethics, Health Disparities and Social Justice
Examines aspects of inequality and health status as an injustice within the context of ethical theories (utilitarian, libertarian, deontological, equalitarian). Determines the influence on case studies of health disparities and inequalities. Discusses cases such as global and U.S. racial, class and gender disparities and in developing countries. Presents ethical issues relative to different methods of measuring health inequalities and related policies.
3 credits, Letter graded (A, A-, B+, etc.)
May be repeated for credit.

HAX 645: Organizational Theory, Management and Leadership
Examines theoretical and conceptual framework for understanding leadership and management styles of health and human services organizations and how they operate in a broader community. Identifies and applies strategic models to analyze organizational problems, organizational behaviors and processes, formulate strategic solutions, and make sound decisions. This knowledge is critical for the behavioral and community health field to understand how individuals influence and are influenced by organizations.
3 credits, Letter graded (A, A-, B+, etc.)
May be repeated for credit.

HAX 646: Social Behavior and Community Health Change
Examines the nature of the behavior that takes place within social systems and how to effectuate change in these systems. Analysis of behavior and possibilities for change will be placed in the context of health and public health questions and will draw upon theories of organizational behavior, leadership, and mechanisms for action.
3 credits, Letter graded (A, A-, B+, etc.)
May be repeated for credit.

HAX 653: Research Methods: Design and Statistics
This course presents process and skills needed to develop independent research studies, including but not limited to, formulating a research question or hypothesis, conducting literature searches, critically appraising scientific literature, and selecting appropriate research designs and methods. This information will be presented in the context of protecting human subjects and health information based on the policies and procedures of the Committee on Research Involving Human Subjects (CORIHS) and IACUC.
3 credits, Letter graded (A, A-, B+, etc.)
May be repeated for credit.

HAX 656: Qualitative Research
Students will learn the basic principles and techniques of effective analysis and interpretation of the merits of qualitative data. Examines how qualitative research captures complex phenomena that span the international classification of function (ICF) and impact on quality of life, illness/injury experience and recovery. Students will learn the strengths and limitations of qualitative analysis and how it complements quantitative analysis. Emphasizes several methods to represent data, such as the mixed method approach, and students will apply a range of analysis techniques through research exercises.
3 credits, Letter graded (A, A-, B+, etc.)
May be repeated for credit.

HAX 664: Conceptual Foundations of Disability Studies 1890s-1990s
Present conceptual foundations of disability studies beginning with the 19th and early 20th century theories and scholarships. Theorists from the 1960s and 1970s who influenced the theoretical development of the new field of disability studies will be discussed. The course will explore foundational disability studies scholarship of the 1980s and 1990s as the field established itself first in the social sciences and then the humanities.
HAX 665: Disability, Participation and Justice
Explores concepts of "Participation" and "Justice" as they relate to disability experience. Introduces research strategies, participatory methods and methodologies for disability studies research in the applied social and health sciences. Discusses ethical issues in disability research and what it means to disabled people in daily life. Examines social analysis, healthcare discourse, and research on the evolution of healthcare practices, cultural beliefs, and social structures influencing the treatments, services, and opportunities available to disabled people in the United States and internationally.
3 credits, Letter graded (A, A−, B+, etc.)
May be repeated 1 times FOR credit.

HAX 668: Emerging Topics in Disability Studies
Focuses on the intersections of disability with other emerging area studies such as gender, class, sexuality, race and global studies. Encompass study of different emerging disciplinary areas of disability studies in the social sciences, health sciences, humanities, business, and technology. Explores the connections between disability activism, art, and scholarship in the 21st century. Traces emerging regional distinctions in disability studies research and scholarship, especially between Northern and Southern Countries.
3 credits, Letter graded (A, A−, B+, etc.)
May be repeated for credit.

HAX 690: Independent Study in Health and Rehabilitation Sciences
Independent study proposals in health and rehabilitation sciences. Approval of independent study proposal and credit hours required prior to registration.
1-3 credits, Letter graded (A, A−, B+, etc.)
May be repeated for credit.

HAX 693: Directed Readings
Provides faculty directed readings and guided discussion to synthesize selected content related to the current course curriculum and/or to the students' research interests. Through the guided readings, the students will learn foundational and advanced theoretical constructs that will be important underpinnings of their future studies and doctoral research. Specifically, studies may focus in the concentration areas of rehabilitation and movement science, disability studies or behavioral and community health. A critical analysis of readings may include theoretical constructs, methodologies, and/or interpretation of results. The course will include analytical writings and a summative paper.
3 credits, Letter graded (A, A−, B+, etc.)
May be repeated for credit.

HAX 699: Dissertation Research On Campus
Dissertation research under direction of advisor. Prerequisite: Advancement to candidacy (G5). Major portion of research must take place on SBU campus.
1-9 credits, S/U grading
May be repeated for credit.

HAX 700: Dissertation Research Off Campus- Domestic
Dissertation research under direction of an advisor. Prerequisite: Advancement to candidacy (G5). Major portion of research will take place off-campus, but in the United States and/or U.S. provinces. All international students must enroll in one of the graduate student insurance plans and should be advised by an International Advisor.
1-9 credits, S/U grading
May be repeated for credit.

HAX 701: Dissertation Research Off Campus International
Dissertation research under direction of an advisor. Prerequisite: Must be advanced to candidacy (G5). Major portion of research will take place outside of the United States and/or U.S. provinces. Domestic students have the option of the health plan and may also enroll in MEDEX. International students who are in their home country are not covered by mandatory health plan and must contact the Insurance Office for the insurance charge to be removed. International students who are not in their home country are charged for the mandatory health insurance. If they are to be covered by another insurance plan they must file a waiver by the second week of classes. The charge will only be removed if other plan is deemed comparable. All international students must receive clearance from an International Advisor.
1-9 credits, S/U grading
May be repeated for credit.