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Department	Course Number	Course Name	Credits	Course Description
BIOS	6601	Applied Biostatistics	3.0	Applied biostatistical methods including: descriptive and statistical inference; odds ratio and relative risk, probability theory, parameter estimation, tests for comparing statistics of two or more groups, correlation and linear regression and overviews of: multiple and logistic regression.
BIOS	6602	Applied Biostatistics II	3.0	A continuation of BIOS 6601 extending the basic principles of descriptive and inferential statistics to modeling more complex relationships using linear regression, logistic regression, Poisson regression, and Cox regression. The statistical package SAS is used extensively.
BIOS	6606	Stat for the Basic Sciences	3.0	This course provides an overview of fundamental concepts in statistics such as hypothesis testing and estimation, and it provides an overview of statistical methods (for example, regression and analysis of variance) that apply to many areas of science.
BIOS	6607	Statistics for Pharmacology	2.0	This course provides an overview of fundamental concepts in statistics such as hypothesis testing and estimation, and it provides an overview of statistical methods (for example, 1- and 2- sample tests and microarray techniques) that apply to pharmacology.
BIOS	6611	Biostatistical Methods I	3.0	This is a first course in applied statistics covering elementary probability, descriptive, parametric and non-parametric methods for one and two sample estimation/testing and some common simple cases of the univariate general linear model. The statistical package SAS used extensively.
BIOS	6612	Biostatistical Methods II	3.0	This is a continuation of BIOS 6611 covering univariate linear modeling and emphasizing multiple regression and analysis of variance. Logistic regression and methods for correlated data are also covered. Matrix algebra and the statistical package SAS will be used.
BIOS	6621	Statistical Consulting	1.0	Students will gain experience with statistical consulting and common statistical problems and techniques encountered in consulting through a combination of real examples and consultations with investigators. Under faculty supervision, advanced students will work on consulting projects with investigators.
BIOS	6623	Advanced Data Analysis	3.0	This course teaches the students how to be effective collaborators. Students will learn to modify project hypotheses to be statistical hypotheses. The students will identify and perform the appropriate data analyses and communicate their analyses both verbally and in writing.
BIOS	6631	Statistical Theory I	3.0	This course presents an introductory coverage of the theory of discrete and continuous random variables and applications to statistical problems. Topics include probability theory, transformations and expectations, common families of distributions, multiple random variables, and properties of a random sample.
BIOS	6632	Statistical Theory II	3.0	This course covers theoretical and applied fundamentals of statistical inference. The course is a continuation of BIOS 6631. The primary topics include point estimation, hypothesis testing, interval estimation and asymptotic methods.

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Department	Course Number	Course Name	Credits	Course Description
BIOS	6643	Analysis of Longitudinal Data	3.0	Theory and application of models appropriate for clustered and longitudinal data are studied. Models for different types of outcome variables (e.g., normal, Poisson, binomial) are covered, with an emphasis on linear mixed models for normal outcomes.
BIOS	6646	Survival Analysis	2.0	This course covers the analysis of time-to-event data with applications to biology, medicine, and public health. Nonparametric methods for group comparisons and semi-parametric regression models will be emphasized. Parametric methods and distribution theory for survival analysis will also be included.
BIOS	6648	Design of Clinical Trials	2.0	The design and conduct of human intervention trials. Specific topics include: specifying the research question, study endpoints, study populations, study treatments, sample size evaluation, and choice of control groups. Common trial designs and issues in trial monitoring are described.
BIOS	6649	Design of Studies in the Health Science	2.0	Statistical design of studies in the health sciences including clinical trials, cross-over trials, epidemiological studies. Designs for continuous, binary, count, longitudinal, and time-to-event outcomes. Designs for two-group comparisons, k-group comparison, and regression analyses. Group sequential designs for study monitoring.
BIOS	6655	Statistical Methods-Genetic Association Study	3.0	This course is designed to give an introduction to statistical methods in genetic association studies. Topics include an introduction to population genetics topics relevant to genetic association studies, design strategies, and analysis methods for case-control and family data.
BIOS	6659	Statistical Methods in Genomics	2.0	This course will give an introduction to statistical methods for analyzing molecular sequences and genomic data. Topics include hidden Markov models for sequence alignment, molecular evolution and gene expression data analysis.
BIOS	6660	Analysis of High-throughput Data	2.0	This course provides students with hands on experience in analyzing full-scale microarray data using the statistical software, R, and its packages from the Bioconductor consortium.
BIOS	6670	Spec Topics- Biostatistics	1.0 - 3.0	Special interest areas of current biostatistics research and practice are presented and analyzed. The course format is lecture and discussion or seminar. Check the CSPH Website for offerings and topics for this course each semester.
BIOS	6680	SAS Database Design/Mgt	2.0 - 3.0	Course introduces students to how SAS can be used to manipulate data and prepare it for analysis: inputting, recoding, reformatting, subsetting, merging data, and simple reports and SAS Macros. Principles and implementation of database design will also be discussed
BIOS	6681	Relational Data Management Systems for Medical Research	1.0	Course provides introduction /experience to build/maintain information systems to facilitate data intensive clinical, epidemiological, health services research in academic health-sciences environment. Course addresses: database design, building data dictionaries, system implementation, maintenance, report writing, exporting data to systems for analyses.

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Department	Course Number	Course Name	Credits	Course Description
BIOS	6683	Introduction to Health Information Technology	3.0	Medical Informatics introductory course exposes students to broad spectrum of computer-based applications in clinical medicine/public health areas; with focus on applications that use data/information/knowledge processed by computers to improve quality/efficiency of clinical medicine and delivery of public health services.
BIOS	7659	Statistical Methods in Genomics	3.0	This course will give an introduction to problems in genomics and review the pioneering statistical methods that were developed for analyzing molecular sequences and microarray data.
BIOS	7711	Longitudinal Data Analysis	3.0	The theory and application of univariate and multivariate techniques appropriate for longitudinal data are discussed with emphasis on recently developed growth curve and longitudinal models. Students will be exposed to theoretical developments and will analyze real data.
BIOS	7712	Statistical Methods for Correlated Data	1.0	This course will cover statistical models and methods for serially correlated data, including autoregressive models, Markov models, and Markov Chain Monte Carlo methods.
BIOS	7713	Statistical Methods for Missing Data	2.0	Course covers methodological research being carried out for longitudinal studies with missing data. Topics include missing data mechanisms, non-ignorable missing data, multiple imputation, mixture models and sample size determination. Students complete a project applying methods to real datasets.
BIOS	7731	Adv Mathematical Statistics I	3.0	This course will provide the framework for understanding the formal concepts, models and assumptions in statistical theory. Topics include random variables, parameter estimation, measures of performance, hypothesis testing and asymptotic approximations.
BIOS	7732	Adv Mathematical Statistics II	3.0	The foundations of the theory of point estimation. A basic introduction to measure-theoretic probability, integration, and convergence. Large sample theory, interval estimation, and efficient likelihood estimation.
CBHS	6610	Soc/Beh Factors and Health	3.0	Considers social, behavioral, and cultural factors that affect the health of individuals and populations, and contribute to health disparities. Development, implementation and evaluation of programs and policies to promote and sustain healthy environments and lifestyles are examined.
CBHS	6611	Foundations Health Behavior	3.0	Course will cover basic theories, concepts, models from a range of social/behavioral disciplines used in public health research and practice. Applications of theoretical frameworks in specifying multiple targets and levels of intervention to public health research will be addressed.
CBHS	6612	Methods-Research/Evaluation	3.0	Covers social science research methods, including qualitative/quantitative research designs, data collection and program evaluation (needs assessment, process, outcome), to assess effectiveness of public health programs.

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Department	**Course Number**	**Course Name**	**Credits**	**Course Description**
CBHS	6613	Program Planning/Implementation	3.0	Course examines planning and implementation process with specific focus on health promotion programs. Students will learn about: using results of needs assessments; specifying program objectives; using behavior change theory and evidence-based strategies; developing program, evaluation, adoption, implementation & sustainability plans.
CBHS	6620	Survey Research/Questionnaire Design	2.0	Course examines survey research methodology, including face-to-face, telephone, mail and internet surveys. Includes: methods of data collection; developing and ordering questions; formatting; reliability and validity; sampling; implementation; maximizing response rate; data issues; survey ethics and reporting.
CBHS	6624	Community Hlth Assessment	3.0	Course teaches how to assess the social, cultural, economic, physical and environmental components of population health. Students use national/local demographic and health data. Includes working with community clients and off-campus community-based fieldwork.
CBHS	6626	Public Health and Aging	2.0	Introduces students to 1) factors across the social-ecological spectrum that will affect population patterns of health, disease, and risk factors in older adults; and 2) appropriate responses by public health, aging services and the research community.
EHOH	6614	Environmental & Occupational Health	3.0	Presents an overview of information needed to assess the relationship between the environment, workplace and health. Topics include facets of industrial hygiene, air and water pollution, radiation monitoring, toxicology studies, clinical occupational medicine, and biologic monitoring. The emphasis throughout is on the epidemiologic link between exposure and health with a discussion of study methods and interpretation specific to the areas.
EHOH	6615	Topics in Occupational/Environmental Medicine	2.0 - 3.0	Students presented with series of problems that focus on industries/environmental problems in Denver metropolitan area. The solutions to the problems involve visiting industries, consulting with experts, and learning the principles and practice of toxicology, industrial hygiene, and occupational epidemiology.
EHOH	6616	Environ/Occup Toxicology	3.0	Presents an overview of information needed to assess the relationship between the environment, workplace and health. Topics include facets of industrial hygiene, air and water pollution, radiation monitoring, toxicology studies, clinical occupational medicine and biologic monitoring.
EHOH	6621	GIS for Pub Health Research/Practice	3.0	This course will expose students to the fundamentals of Health Geographic Information Systems (GIS), including hands-on software experience, across a variety of application areas in the health sciences, particularly focusing on integrating GIS technologies appropriately into research design and practice.

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Department	Course Number	Course Name	Credits	Course Description
EPID	6622	Cancer Prevention and Control	2.0	Course provides overview of preventable cancers, epidemiology and contributing factors. Phases of cancer control research and appropriate methodologies are discussed. Basic principles of intervention development are reviewed. Psychosocial issues related to cancer are discussed. Students research topic related to course.
EPID	6624	Public Health Surveillance	2.0	Course focuses on characteristics, development, uses and evaluation of major public health surveillance systems. History, goals, public health authority, analysis, interpretation, dissemination and privacy issues are covered. Key surveillance systems (communicable diseases, vital statistics, injury, cancer) are explored.
EPID	6626	Research Methods in Epidemiology	3.0	Principles, concepts and methods for conducting ethical, valid and scientifically correct observational studies in epidemiological research are the focus of this class. Lectures and practical experience reinforce hypothesis formulation, study design, data collection and management, analysis and publication strategies.
EPID	6629	Clinical Epidemiology	2.0	Course provides an overview of the design, conduct, and appraisal of clinical research. Topics include study design, issues in randomized trials, bias, measurement error, assessment of diagnostic and screening tests, and measurement of health-outcomes, meta-analysis and use of questionnaires.
EPID	6630	Epidemiology	3.0	Introduction to approaches/methods used in describing the natural history of disease in the community and for locating clues to causes of disease and analytical epidemiology used in the study of disease etiology and critical review of the public health literature.
EPID	6631	Analytical Epidemiology	3.0	Course emphasizes analytical foundations of epidemiology and its application to etiologic studies and public health practice. Topics include determining rates of disease occurrence, assessing exposure disease relationships, stratified analysis, measurement error and sampling. Final project requires analysis/interpretation of epidemiologic data.
EPID	6632	Advanced Epidemiology	3.0	This is an advanced course on epidemiologic methods designed to improve the student's ability to conduct and interpret observational epidemiologic studies.
EPID	6635	Epidemiology of Communicable Disease	3.0	This course considers the epidemiology of selected communicable diseases. Methods for their prevention and control, and assessment of these methods will be treated primarily through case studies.
EPID	6636	Chronic Disease Epidemiology	3.0	The major chronic diseases of Western countries will be reviewed including heart disease, cancer, stroke, diabetes, neurological diseases, and selected other conditions. Factual information about epidemiology of these diseases will be provided with the discussion of methodological issues which arise.

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Department	Course Number	Course Name	Credits	Course Description
EPID	6637	Injury Epidemiology and Control	2.0	Major causes of injuries in U.S. will be reviewed. This includes motor vehicle traffic injuries, other unintentional injuries (including occupational injuries) and intentional injuries. The major components of injury control will be discussed – acute care, biomechanics, epidemiology and surveillance, prevention/rehabilitation.
EPID	6638	Cardiovascular Epidemiology	1.0	Course provides practical introduction to current concepts, research methods, unanswered questions in epidemiology of coronary artery disease, stroke/peripheral artery disease. It prepares students for independent work in academic/nonacademic settings in the area of cardiovascular disease surveillance, etiology, and outcome research.
EPID	6639	Genetic Epidemiology	2.0	This course reviews basic genetic principles and teaches epidemiologic methods employed in the investigation of the genetic susceptibility to chronic disease.
EPID	6646	Introduction to Systematic Reviews	1.0	Introduces methods of conducting systematic reviews to identify the best available evidence about health and public health interventions. Topics will include the design and implementation of reviews, publication bias, search strategies, meta-analysis and reporting results through the Cochrane library.
EPID	7615	Pharmacoepidemiology	2.0	This course builds upon fundamental concepts and methods of epidemiology, applied to the study of pharmaceuticals. Topics include: the FDA approval process, mechanisms of adverse drug effects, methods and data systems for studying drug-effect relationships, and evaluating published pharmacoepidemiology studies.
EPID	7911	Epidemiologic Field Methods	1.0 - 4.0	Ph.D. students have the opportunity to work with faculty on current epidemiologic projects to develop skills in field research, proposal writing, budget development, staff hiring and training, protocol and instrument development and implementation, and specific methods topics.
EPID	7912	Developing a Research Grant	3.0	Course instructs students how to prepare quality, successful, research grant applications. It offers students an opportunity to familiarize themselves with the grant writing and review process, enhance critical thinking skills, formulate hypothesis and interpret results, improve quality of scientific writing.
EPID	7915	Analytic Methods in Epidemiology	1.0 - 4.0	Advanced treatment of techniques in the analysis of epidemiological studies, including longitudinal, time-dependent, survival data, causality, missing data, etc. Students will analyze data sets currently on file using contemporary epidemiological methods.
HSMP	6603	Health Systems and Management	3.0	Students are introduced to basic components of current health care system and basic economic principles as applied to selected aspects of the health care system.
HSMP	6604	Health Care Economics	3.0	This course focuses on health care financing and economic issues. A microeconomics framework, including issues of supply, demand, market structure, market failure, price and output are discussed as they apply to the health sector.

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Department	Course Number	Course Name	Credits	Course Description
HSMP	6605	Health Policy	3.0	The focus of this course will be the analysis of important US health policy issues, such as access, cost and quality. Analytic concepts, approaches and frameworks will be used to explore specific health policy issues.
HSMP	6608	Ethical/Legal Issues-Pub Health	2.0	Course explores ethical/legal dimensions of various topics of concern in areas of public health, health policy, and epidemiology. Topics: health care reform, medical indigence, screening/genetic screening, epidemiological research, QALYS and health outcomes research, public health/individual rights, public health in developing countries.
HSMP	6609	Cost Benefit/Effectiveness in Health	3.0	This is an introductory course on the theory, methods and application of economic evaluation in health context.
HSMP	6617	Intro Health Services Research	3.0	Course provides an overview of the discipline of health services research (HSR).
HSMP	6625	Methods in Health Services Research II	3.0	This course provides an overview of research methods in health services. This class is designed for individuals who have completed the HSMP 6617.
CHBH	6200	UNC Epidemiology (UNC)	3.0	Epidemiological principles analyzed with an emphasis on selected topical issues, infectious and chronic/degenerative diseases, research design and analysis. Practical applications of statistical and epidemiological methods.
GERO	5550	Grant Development and Administration (UNC)	3.0	Overview of proposal planning and grant development process. Application of skills in identifying funding options, program planning, proposal writing, budgeting and establishing controls for grant administration.
HRSS	6100	Interpretation and Evaluation of Behavioral Research (UNC)	3.0	Understanding of applications of appropriate statistical techniques and necessary skills for interpretation and evaluation of research in human services. Emphasizes basic concepts, design and utilization of behavioral research
SRMS	6170	Biostatatistics and Health Data Analysis (UNC)	3.0	Students will gain an understanding of biostatistical methods. This course enables students to develop the skills and knowledge necessary to manage and analyze health care and biomedical data.
ERHS	5320	Epidemiologic Methods (CSU)	3.0	Method of epidemiologic investigation and study design. Applications to disease control with literature examples.
ERHS	5420	Biostatistics for Qual Data (CSU)	3.0	Statistical analysis of categorical data obtained in epidemiology, toxicology, occupational health, and clinical settings.
JTCM	5000	Comm Res & Evaluating Mthds (CSU)	4.0	Theory and applied communication research and evaluation methodologies for assessing and improving communication in technological environments.
STAS	5110	Design/Data Analysis Research I (CSU)	4.0	Statistical methods for experimenters and researchers emphasizing design and analysis of experiments.
STAS	5200	Intro to Probability Theory (CSU)	4.0	Probability, random variables, distributions, expectations, generating functions, limit theorems, convergence, random processes.
STAS	5400	Data Analysis & Regression (CSU)	3.0	Probability, random variables, distributions, expectations, generating functions, limit theorems, convergence, random process

School of Nursing

Department	Course Number	Course Name	Credits	Course Description
NURS	6022	Health Systems & Policy	3.0	Focuses on the health care system, policy formation and analysis, economics, finance, outcomes, social justice, and the role of leadership. Evaluation of health care provides context for examining partnerships, models of care, emerging ethical, social, political, cultural and legal issues.
NURS	6031	APN Research Methods	4.0	This course focuses on research methods applicable to advanced nursing practice. Quantitative and qualitative methods are presented and discussed in the context of evidence-based practice. Statistics relevant to understanding and evaluating research findings for advanced nursing practice are assessed.
NUDO	6052	6052 CntxPtPop&PractMgmt	6.0	Course explores innovative and integrative population/disease management care models within today's healthcare delivery system. Focus is on the individual's and the agency's accountability, interdisciplinary collaboration, timeliness, continuity of care, and cost effectiveness. Clinical experience in disease or population management included.
NUDO	6055	ApplEvidBasedPractice	3.0	Integrates evidence sources, clinical judgment, and patient preferences for clinical and professional decision-making. Advanced skills in informational retrieval, clinical epidemiology, critical appraisal, EBP models, and program design are emphasized to support implementation of evidence-based decisions by the advanced practice nurse.
NURS	6274	Semantic Representation	3.0	Introduces the concept of classifying nursing phenomena to facilitate data management and retrieval. Topics include: minimum data sets, nursing language, classification systems and vocabularies, and relates each topic to nursing practice, administration, and research.
NURS	6279	Knowledge Management	3.0	The need for knowledge discovery, distribution, and management in clinical settings is examined. Knowledge Management techniques (probabilistic/statistical models, machine learning, data mining, queuing theory, computer simulation) are examined. The specification of a knowledge management comprehensive system for healthcare is developed.
NURS	6284	E-Health	3.0	The focus is on the design and application of e-health principles to the delivery of health care. Evidence-based support for e-health are examined within a context of the legal, ethical, social and public policy challenges of health care delivery system.
NURS	6285	Human Computer Interaction Design Principles	3.0	Examines the relationship of interface design to effective human interaction with computers. This course examines principles, theory and models to design and evaluate optimal interfaces to promote human computer interaction in health care informatics applications.

School of Nursing

Department	Course Number	Course Name	Credits	Course Description
NURS	6286	Foundations Informatics	3.0	This introductory course focuses on core concepts, skills, tools that define the informatics field and the examination of health information technologies to promote safety, improve quality, foster consumer-centered care, and efficiency.
NURS	6289	Information Systems Life Cycle	4.0	Course focuses on a structured approach to the selection and implementation of an information system. The five phases of the life cycle (planning, analysis, design, implementation and evaluation) provide the framework for students to work in teams on structured exercises. The role of the information specialist is also highlighted.
NURS	6293	Database Management Systems	3.0	Current knowledge equivalency of upper level division research methods course. This interdisciplinary course focuses on historical, theoretical, and application issues in the design and administration of database management systems. Theories and concepts of file and database structure are explored.
NURS	6303	Epidemiology & Health	3.0	Concepts and methods of epidemiology are applied to advanced nursing practice. Disease causation models and environmental factors are used to examine risks. Issues of environmental justice, models of health promotion, and disease prevention for populations will be examined and evaluated.
NURS	6304	Decision Support	3.0	This course focuses on the identification, acquisition, analysis, interpretation and application of data. Application of decision-making strategies for advanced practice nurses will be emphasized in the areas of quality management and clinical decision support. Information management tools will be explored.
NURS	6493	Interential Statistics	3.0	This is an intermediate level statistics course for nursing graduate students. Topics covered include correlation, prediction and regression, hypotheses testing, t-tests, ANOVA, and ANCOVA. Nursing research studies are used as examples.
NURS	7300	Qualitative Empirical Research	3.0	Empirical qualitative research designs and methods to build knowledge in nursing/healthcare are analyzed and critiqued including traditional and emerging approaches. Designs include: ethnography, grounded theory, narrative, case study, historical, and qualitative descriptive. Qualitative methods are applied to focused student study.
NURS	7310	QualitativeInterpRes	3.0	Introduces a range of qualitative interpretive approaches to research. Selected topics reflect philosophies, strategies and methods faculty use in their own research and student interests. Student papers reflect critical analysis of traditional and emerging qualitative interpretive research approach.
NURS	7410	Adv Quantitative Analysis	3.0	This course focuses on the application of advanced quantitative methods, theories and models. It presents a variety of multivariate statistics designed to answer complex nursing questions. Emphasis is placed on selection of the appropriate test to answer the research question.

School of Nursing

Department	Course Number	Course Name	Credits	Course Description
NURS	7430	ApplAnalLgSecondDatasets	3.0	Seminar with instruction, discussion, and application in the analysis of large secondary datasets for research. This course will include an overview of statistical analyses and software, data sources; conducting descriptive and inferential analyses using instructor or student provided datasets; and interpretation of results.
NURS	7440	Instrument: EvalConstrTest	3.0	This course provides a knowledge base in the process of instrumentation to measure psychosocial and behavioral phenomena. Techniques to evaluate existing instruments will be followed by methods for designing and testing the psychometric properties of new instruments.
NURS	7652	Cost/QualOutcomesMacro	3.0	Conceptual frameworks and methods for measuring outcomes of health and nursing care delivery at macro systems level. Primary emphasis on assessing effectiveness, efficiency and equity of health services delivery. Risk-adjustment and economic analyses. National quality initiatives, report cards, EBP guidelines.
NURS	7653	Cost/QualOutcomesMicro	3.0	Examines phenomena, methods and measurements that deal with clinical outcomes and patient assessments of care from a quality/cost perspective at intra-organizational (individual, unit, organization) levels. Emphasis on: research methods; instrumentation and psychometrics; knowledge development in nursing and health services research.
NURS	7846	RsrchPract&Integrity	3.0	Course combines a 45 hour research practicum with web-based modules designed to facilitate critical thinking in the ethics of inquiry, enhance skills in scholarly writing, and provide a topic for discussion and reflection on the mentored practicum.

Colorado Clinical and Translational Sciences Institute (CCTSI)

Department	Course Number	Course Name	Credits	Course Description
CLSC	6060	Analysis, Modeling, and Design	3.0	This course emphasizes information requirements analysis, logical system specification, and detailed system design. Topics include structured system development methodologies, prototyping, file design, systems architecture, systems testing and software design strategies. Students will normally use a case tool to develop system specifications.
CLSC	6080	Database Management Systems	3.0	This course focuses on the development and management of database systems to support business operations. Important topics include semantic data modeling, normalization, SQL, fourth generation languages, and client-server database applications.
CLSC	6120	Data Communications	3.0	This course introduces the basic concepts of data transmission, principles governing the design and administration of both wide and local area networks and technical issues pertaining to client server computing and open system interconnection.
CLSC	6251	Assistive Technology: Advanced Practices in AT Assessment	3.0	Students will learn to use family-centered, trans-disciplinary methods of assistive technology assessment for individuals with low-incidence disabilities. Observations, videotaped learning activities, and supervised assessment sessions will facilitate understanding of best practice in this field.
CLSC	6260	Conducting Clinical Trials for Investigators	2.0	This course is designed for investigators involved in the operations of conducting clinical trials. The course will cover good clinical practices and regulations that surround setting up and running clinical trials. Clinical studies and popular press articles highlighting what can go wrong in clinical trials will be reviewed and discussed.
CLSC	6270	Critical Appraisal Seminars in Clinical Science	1.0	This course provides an overview of the approaches for the critically appraising common study designs published in the clinical and translational sciences literature, as well as other sources of information.
CLSC	6271	Assistive Technology: Advanced Fieldwork Experience in AT	2.0	Students will participate in fieldwork that offers tailored opportunities to engage in AT assessments and implementation in various settings. A peer-reviewed submission must be coordinated before a grade is assigned for this course.
CLSC	6300	Scientific Grant Review Process - Masters	1.0	Students will understand and participate in the process of scientific review of human subject research protocols submitted to the University of Colorado Denver Clinical Translational Research Centers at University Hospital and The Children's Hospital.
CLSC	6550	Applications of Biostatistics to Clinical Research Questions	1.0	An introduction to allow clinician-scientists to be critical consumers of the medical literature by improving their ability to discuss statistical issues about their own research and the research of others. A familiarity will be gained with commonly used statistical methods and terms.
CLSC	6653	Key Concepts in Neuro-developmental Disabilities 1	2.0	This interdisciplinary graduate course focuses on systems, issues, and service provision related to children, youth, and young adults with autism or with neurodevelopmental and related developmental disabilities and their families. Key Concepts I is an interdisciplinary examination of research in neurodevelopmental and related disabilities, emphasizing development of critical thinking skills necessary for evaluating scientific findings and integrating research into practice.
CLSC	6654	Key Concepts in Neuro-developmental Disabilities 2	2.0	This interdisciplinary graduate course focuses on systems, issues, and service provision related to children, youth, and young adults with autism or with neurodevelopmental and related developmental disabilities and their families. Key Concepts II is an interdisciplinary examination of research in neurodevelopmental and related disabilities, emphasizing development of critical thinking skills necessary for evaluating scientific findings and integrating research into practice.
CLSC	6658	An Interdisciplinary Approach to Promoting Early Parent Child Relationships Part I/ Theory	2.0	This is Part 1 of a two-part course series which examines the theory and research relevant to the assessment of early parent-child relationships as well as the clinical application for interventions across disciplines intended to promote and improve child health outcomes.

Colorado Clinical and Translational Sciences Institute (CCTSI)

Department	Course Number	Course Name	Credits	Course Description
CLSC	6659	An Interdisciplinary Approach to Promoting Early Parent Child Relationships Part 2/ Measurement	3.0	This is Part 2 of a two-part course which examines the research relevant to the assessment of early parent-child relationships, identifies intervention strategies by analyzing observational findings, and evaluates the effectiveness of interventions across disciplines that promote and improve child health outcomes.
CLSC	6661	Leadership Dialogues I	1.0	This two-semester interdisciplinary course cultivates the leadership competencies required by MCH and child health professionals, as articulated in the Maternal and Child Health Leadership Competencies Version 2.0. The curriculum is public health oriented, directly providing content on the field of public health and emerging public health issues, and will integrate public health principles and practices throughout. Students will meet individually with the instructor for an hour long individual consultation about personal leadership goals and challenges. They will be coached on reflection and on planning their life-long leadership development.
CLSC	6662	Leadership Dialogues II	1.0	This two-semester interdisciplinary course cultivates the leadership competencies required by MCH and child health professionals, as articulated in the Maternal and Child Health Leadership Competencies Version 2.0. The curriculum is public health oriented, directly providing content on the field of public health and emerging public health issues, and will integrate public health principles and practices throughout. Students will meet individually with the instructor for an hour long individual consultation about personal leadership goals and challenges. They will be coached on reflection and on planning their life-long leadership development.
CLSC	6664	Leadership Dialogues III	1.0	This two-semester interdisciplinary course cultivates the leadership competencies required by MCH and child health professionals, as articulated in the Maternal and Child Health Leadership Competencies Version 2.0. The curriculum is public health oriented, directly providing content on the field of public health and emerging public health issues, and will integrate public health principles and practices throughout. Students will meet individually with the instructor for an hour long individual consultation about personal leadership goals and challenges. They will be coached on reflection and on planning their life-long leadership development.
CLSC	6665	Leadership Dialogues IV	1.0	This two-semester interdisciplinary course cultivates the leadership competencies required by MCH and child health professionals, as articulated in the Maternal and Child Health Leadership Competencies Version 2.0. The curriculum is public health oriented, directly providing content on the field of public health and emerging public health issues, and will integrate public health principles and practices throughout. Students will meet individually with the instructor for an hour long individual consultation about personal leadership goals and challenges. They will be coached on reflection and on planning their life-long leadership development.
CLSC	6800	Introduction to Health Information Technology	3.0	This course is intended as an overview to the dynamic environment of healthcare informatics and to prepare healthcare professionals to better utilize and manage emerging communication technologies. A brief introduction to e-health, telehealth, electronic medical records, telecommunications, and bio-informatics is provided.
CLSC	6820	Fundamentals of Health Information Technology Management	3.0	This course will provide an introduction to the management of information technology in healthcare. A description of information processing, the origin, content and evolution of healthcare information systems and the methodologies deployed to acquire and manage information requirements will be discussed.
CLSC	7101	Grant Writing 1	1.0	This course prepares students to write research grant submissions. Topics covered include writing the various sections of grants: background, specific aims, hypotheses, methods, analysis, potential problem, and the summary. A fully prepared grant submission is required at the end of the course.

Colorado Clinical and Translational Sciences Institute (CCTSI)

Department	Course Number	Course Name	Credits	Course Description
CLSC	7102	Grant Writing 2	1.0	This course builds on CLSC 7101 and further prepares students for subsequent grant submissions. Strategies for preparation (including hypothesis generation, experimental design, statistical considerations, and potential problems) will be discussed. At the end of the course, a KO8, R23, or equivalent national grant application will be completed for submission. A fully prepared grant submission is required at the end of the course.
CLSC	7150	Ethics and Regulation in Human Subjects Review	1.0	This course will provide an overview of the field of ethics in clinical research and is designed for students who will be conducting research involving human subjects.
CLSC	7151	Lectures in Ethics and Regulation in Human Subjects Review	1.0	This course provides an overview of the field of ethics in clinical research and is designed for non-clinical science degree students and investigators who will be conducting research involving human subjects. Topics include historical background, current regulations, and IRB requirements.
CLSC	7200	Clinical Outcomes Assessment	2.0	This course provides an overview of the field of clinical outcomes assessment and prepares students to identify patient risk factors and to select appropriate outcomes based on current literature.
CLSC	7300	Scientific Grant Review Process – Doctoral	1.0	Students will understand and participate in the process of scientific review of human subject research protocols submitted to the University of Colorado Denver Clinical Translational Research Centers at University Hospital and The Children's Hospital.

Downtown Campus

Department	Course Number	Course Name	Credits	Course Description
BUSN	6530	Data Analysis for Managers	3.0	Provides an overview of techniques for data analysis, including multiple regression, sampling theory and applications of probabilistic inference from sample data. The emphasis is upon the applications of these techniques to management problems. Students are required to analyze data sets, present their analyses in written or oral form and defend their conclusions.
BUSN	6621	Applied Economics for Managers (Health Section)	3.0	After taking this course, students should be able to apply economic principles to make optimal decisions given firm cost, demand and market circumstances. Also, they should be able to analyze the firm's interactions with its competitive market environment. Students should understand basic aspects of federal macroeconomics policy designed to achieve stable prices and economic growth. Also, they should understand basic aspects of government regulation of business. The emphasis is on healthcare issues and is intended for healthcare students.
BUSN	6828	Business Applications of Data Mining	3.0	Addresses statistical approaches to the very large data sets increasingly common in business applications such as internet-based business, fraud detection, credit scoring and market segmentation. Topics include limitations of classical statistical when applied to large data sets, alternative approaches and applications of key data mining algorithms such as logistic regression, decision trees and cluster analysis. Emphasis is placed on proper choice of method, interpretation of the results and understanding of the strengths and limitations of the methods. Students are expected to analyze and report on a variety of data sets drawn from business applications areas.
BUSN	6834	Simulation Modeling	3.0	Students learn to model and analyze complex dynamic systems using state-of-the are software such as Arena. Illustrative application areas include production systems, service systems, distribution systems and health care systems. Topics include creating reliable simulation models, analyzing the input and output from the model and managing simulation projects. a substantial part of the course will be devoted to projects where students define, model and analyze a significant system of their choosing.
ECON	5030	Data Analysis with SAS	3.0	Covers techniques for handling and interpreting economic data and conducting econometric analyses using SAS programming. Provides hands-on data management and analyses with large data sets with applications to business and economics, and prepare students for SAS Base Programmer certification exam.
ECON	5051	Data Analysis and Research Methodology	1.5	Consists of a series of lectures on the nature of conducting research, and discussions of the ways professional economists approach research problems. A review of spreadsheet applications and statistical packages are conducted.
ECON	5052	Data Analysis and Research Methodology 2	1.5	Develops student skills in data analysis and applications to economic issues and policy evaluation. Hands-on demonstration and student participation in empirical strategies using statistical packages in the social sciences (i.e. SAS). Emphasis on programming, research strategies and interpretation of results.
ECON	5073	Microeconomic Theory	3.0	Fundamental features of partial equilibrium theory of the firm, consumer and market. General equilibrium and welfare economic topics are examined. Features of the models that have empirical applications are accented.
ECON	5083	Macroeconomic Theory	3.0	Examines the major macroeconomic models within a common framework. Differences in the foundations, structure, and policy implications of the competing models are analyzed.
ECON	5150	Economic Forecasting	3.0	Teaches forecasting techniques used in business and government to project trends and short-term fluctuations. Actual data are employed in instruction and labs. State-of-the-art spreadsheet and algorithms are introduced as part of the course work.
ECON	5660	Health Economics	3.0	Introduces students to analytical skills and economic methods, and demonstrates how these methods can be applied to issues in health policy and management. Topics include: demand for health and medical care; health care costs, health reform, medical technology; market for health insurance; physicians, hospitals, and managed care; pharmaceuticals; regulations in the U.S. health care sector; demand for addictive substances; infant and maternal health; international comparisons of health care systems.
ECON	5803	Mathematical Economics	3.0	Introduces the use of mathematics in advanced micro- and macro-economic analysis. Emphasis on model-building techniques, solution methods, and economic interpretations.
ECON	5813	Econometrics I	3.0	Theory and application of statistical techniques used to analyze economic problems. Topics include simple and multiple regression models, simultaneous equation models, and the problems encountered in their application. Students formulate models, obtain data, estimate models, interpret results and, forecast.
ECON	5823	Econometrics II	3.0	Second course in the econometrics sequence, covering intermediate topics in cross-section and time series analysis. Topics include limited dependent variables, autoregressive and distributed lag models, longitudinal data analysis and unit roots, co-integration and other time-series topics.

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ECON	6010	Advanced Microeconomic Theory	3.0	Recent and contemporary literature on fundamentals of economic theory. Consideration of value theory with particular emphasis on methodology, theory of demand, theory of the firm, and theory of distribution.
ECON	6020	Advanced Macroeconomic Theory	3.0	Considers general equilibrium and aggregative analysis in economic theory, with particular emphasis given to the theory of employment, consumption and investment.
ECON	6801	Advanced Mathematical Economics	3.0	Addresses economic dynamics, formal mathematical modeling in economics, and optimization in economic theory.
ECON	6810	Econometrics and Forecasting	3.0	Covers advanced topics in cross-sectional and time-series analysis. Emphasizes important theoretical and empirical issues encountered in applied work in economics and business. Topics include problems of structural change and model misspecification, instrumental variables, simultaneous equations models, distributed lags, maximum likelihood estimation, qualitative and limited dependent variables, Arima models, vector-autoregressions, issues on exogeneity and causality. Through the use of econometric software programs and actual data, students learn to execute estimation and forecasting projects soundly.
HBSC	6320/7320	Human Genetics: Legal, Ethical and Social Issues	3.0	Examines legal, ethical, and social issues that have come about with advances in human genetics. Topics include privacy, informed consent, discrimination, forensics, medical malpractice, and property rights.
HBSC	7041	Research Design and Methods in the Health and Behavioral Sciences I	3.0	This course has four principal aims: (1) to provide students a working knowledge of research methodology as applied to field research efforts; (2) to enable students to apply research methodologies to areas of particular interest in the health and behavioral sciences; (3) to expose students to data manipulation techniques common to social science quantitative research; and (4) to teach basic research proposal development techniques.
HBSC	7051	Qualitative Research Design and Methods	3.0	Much of the data collected in the social sciences is interview- and text-based. This course explores methods for collecting and analyzing these data and theoretical paradigms that underlie these methods.
HBSC	7061	Quantitative Methods in the Health and Behavioral Sciences	3.0	This course introduces students to multivariate regression methods - a set of statistical models that relate an outcome variable to a set of predictor variables. The course emphasizes understanding and applying regression models to address social science research questions.
HBSC	7061	Social Statistics	3.0	This course covers the theory and application of basic and advanced statistical methods for social and health research.
HLTH	6010	Health Care Systems	3.0	Introduces the structure and function of the medical care delivery system. Includes basic concepts and measures of health, disease, quality, values, needs and utilization; issues in health care manpower, institutions and system organization; general issues in policy, reimbursement and regulation; broad community, and organizational considerations in medical care organizations. The student is introduced to the principles of epidemiology and environmental health and demonstrates the application of epidemiology concepts to planning for the healthcare service needs of a population.
HLTH	6071	Introduction to Health Information Technology	3.0	Examines what needs transforming in healthcare to improve value, safety, and appropriateness of care, and what the role of IT is in that transformation. IT also examines the challenges of cultural change and IT strategy in succeeding with clinical information projects. Differences between installation, implementation, transition and actual transformation are suggested, and methods for managing subcultures in healthcare (IT, clinical, administrative) are reviewed. Cross-listed with ISMG 6071.
HLTH	6072	Fundamentals of Health Information Technology Management	3.0	Provides an introduction to the management of information technology in healthcare. A description of information processing, the origin, content, evolution of healthcare information systems, and the methodologies deployed to acquire and manage information requirements are discussed.