Description of Course Offerings

**GENC 610: Seminar in Medical Genetics/Journal Club** (1 credit)
This seminar is a one hour weekly course which includes presentations by genetic counselors, geneticists, primary care physicians, and students. The committed pool of participants and presenters span a wide array of institutions such as Augustana College, Sanford Health (in multiple communities including Sioux Falls, Fargo, Bemidji, and Bismarck), the University of California-San Diego, the greater San Diego community, and other interested academic and healthcare institutions. The intent is to raise the academic interest and scholastic skills of both students and faculty through critical review of the literature and presentations (both case presentations and literature presentations). The series encourages life-long learning, critical analysis of the literature, and development of presentation skills. The format is to alternate weekly between journal club and case presentations (referred to as Genetic conSequences), as well as to alternate between student and faculty presentations. Because of the wide geographic nature of the participants, interactive video will be used.

**GENC 620: Genetic Counseling I** (2 credits)
Genetic Counseling I, II, III, and IV represent a series of sequential courses which provide necessary tools for genetic counselors to excel in their careers. The series also explores contemporary and professional issues in genetic counseling. The focus of GENC 620 Genetic Counseling I is: academic methodologies, library research, pedigree collection & storage, medical documentation, and writing.

**GENC 621: Genetic Counseling II** (2 credits)
Genetic Counseling I, II, III, and IV represent a series of sequential courses which provide necessary tools for genetic counselors to excel in their careers. The series also explores contemporary and professional issues in genetic counseling. The focus of GENC 621 Genetic Counseling II is: service delivery models, emerging fields of practice, risk calculation, and risk communication.

**GENC 622: Genetic Counseling III** (2 credits)
Genetic Counseling I, II, III, and IV represent a series of sequential courses which provide necessary tools for genetic counselors to excel in their careers. The series also explores contemporary and professional issues in genetic counseling. The focus of GENC 622 Genetic Counseling III is: advanced genetic counseling skills, genetic counselors as scholarly professionals, and professional development.

**GENC 623: Genetic Counseling IV** (2 credits)
Genetic Counseling I, II, III, and IV represent a series of sequential courses which provide necessary tools for genetic counselors to excel in their careers. The series also explores contemporary and professional issues in genetic counseling. The focus of GENC 623 Genetic Counseling IV is: diagnostic challenges, genetics in the press, media training, and ABGC Board Preparation.

**GENC 625: Communication & Interviewing Skills for the Genetic Counselor** (2 credits)
This course teaches foundational counseling and psychosocial skills that will continue to be developed through clinical practicum experiences. The course sets the stage for the “counseling” dynamic of genetic counseling. Trainees learn strategies for intentional interviewing and active listening, as well as about topics such as how to effectively read verbal and nonverbal cues. In general, the first half of each class session will focus on content, skills, and theory, often with lectures/guest lectures. The second half of each class session will be used as an opportunity to put into practice the skills and theory covered as the topic for that day.
GENC 630: Genetics in Medicine I (3 credits)
This course provides an overview of human genetic variation, heritable genetic diseases, and the field of medical genetics. The class explores the diagnostic process, including dysmorphology, syndromology, physical assessment, and differential diagnoses. Central principles of genetics will be taught using a combination of disease examples, case studies, student presentations, and presentations from content experts. The course is taught in the fall semester, with Genetics in Medicine II being offered in the spring semester (Genetics in Medicine II is a continuation of Genetics in Medicine I, with the content shifting more toward personalized medicine, complex disease, pharmacogenetics, and adult genetic diseases).

GENC 631: Genetics in Medicine II (3 credits)
Genetics in Medicine II is a continuation of Genetics in Medicine I. While the field of medical genetics has traditionally been one with a strong focus on pediatric and prenatal genetics, a shift in our understanding of adult disease, genetics across the lifespan, and personalized medicine have expanded this historical focus. In addition to exploring single-gene inherited conditions, a major purpose of this class is to examine complex genetics disease, pharmacogenetics, adult genetic disease, and the use of genetic medicine in the primary care setting.

GENC 635: Genetic Diagnosis & Laboratory Methods (3 credits)
Primary topics covered in this course include: fundamental principles of cytogenetics, chromosome abnormalities, test report nomenclature, molecular (DNA) testing including applicability of new laboratory technologies, whole genome sequencing, variant interpretation, reporting, the informatics process, test development, oversight, and lab set-up. The course also instructs students on systematic use of lab testing in the diagnostic process for genetic conditions.

GENC 636: Metabolic Genetics and Newborn Screening (2 credits)
This course focuses on genetic counseling for Inborn Errors of Metabolism, many of which are diseases identified by newborn metabolic screening. The course will also cover newborn hearing screening hemoglobinopathies. Throughout the semester, students will give case presentations about various biochemical disorders and prepare potential genetic counseling case outlines with regard to the specific disorders. They will be graded on their presentations and outlines as well as on quizzes and tests with regard to course content.

GENC 637: Cancer Genetics (2 credits)
The pace of discovery and medical application in the field of cancer genetics has accelerated rapidly in recent years. This course provides its participants with an understanding of the role of genes in acquired, familial, and inherited cancers. After an overview of terminology and statistics, hereditary cancer syndromes are explored by body system, paying special attention to the role of genetic counseling and genetic testing. Additionally, the course explores surgical options, cancer treatment, and genomic tumor profiling.

GENC 638: Reproductive Genetics (3 credits)
This course will provide students with a modern understanding of embryology, teratology, and prenatal genetics. The first part of the course will review normal and abnormal fetal development in combination with teratology. Next, the course will provide an overview of infertility, assisted reproductive technologies, prenatal testing, pre-implantation genetic testing, pregnancy loss, cord blood banking, stem cells, and fetal surgery.
GENC 660: Genetics and the Community I (2 credits)
Genetics in the Community I and II are to be taken sequentially over two semesters. These courses are intended to give students experience working with support groups (local, regional, and national), genetic registries, collaboratives, and community resources. Participants will interact with a family impacted by a genetic disease and provide community education. Additional topics covered in Genetics in the community I include: biobanks, Special Olympics, public libraries, and Birth to Three.

GENC 661: Genetics and the Community II (2 credits)
Genetics in the Community I and II are to be taken sequentially over two semesters. These courses are intended to give students experience working with support groups (local, regional, and national), genetic registries, collaboratives, and community resources. Participants will interact with a family impacted by a genetic disease and provide community education. Additional topics covered in Genetics in the community II include: transition from pediatrics to adult health care, transition from school to work for people with disabilities, the role of the social worker in genetics, adoption, Rare Disease Day, and DNA Day.

GENC 665: Ethics in Genetics and Biomedical Sciences (2 credits)
This course is designed to prepare its students to become educated participants in the issues and debates that surround genomic medicine. The beginning of the course provides an introduction to the histories and theories of biomedical ethics and explains relevant frameworks and terminology. Using this background knowledge, specific biomedical ethics topics are then explored. These topics relative to genetics include: informed consent, genetic testing of minors, duty to warn, sterilization of people with disabilities, return of research findings, sex selection, savior siblings, gene therapy, gene patenting, posthumous paternity, and the moral status of embryos. Case studies are used throughout to encourage discussion and debate.

GENC 670: Genetic Counseling Research I (1 credit)
Research is important to the field of genetic counseling on many levels. It is necessary that genetic counselors ultimately know how to both evaluate other’s research as well as conduct their own. Genetic Counseling Research I provides instruction on critical review of the literature, study design, and developing research questions. In addition to training students to become scholarly genetic professions, class participants will use the knowledge gained from this class to select a Master’s Graduate Project (required for graduation from the genetic counseling graduate program).

GENC 671: Genetic Counseling Research II (1 credit)
This course builds upon the key principles and knowledge gained in Genetic Counseling Research I, and provides instruction in epidemiology, statistical analysis, human subjects, the IRB application process, funding, and ethics. Students will work on the planning, question design, refinement and details of their selected Master’s Graduate Project throughout the semester, and meet regularly with their project advisor.

GENC 672: Genetic Counseling Research III (3 credits)
Following completion of GENC 670 and 671, students in this course will plan and conduct a research project that contributes to the body of knowledge, or an identifiable need, in the field of medical genetics. This will be done under the guidance of an identified Master’s Graduate Project Advisor, working toward the goal of producing a publishable research product.
GENC 673: Genetic Counseling Research IV (3 credits)
Research is important to the field of genetic counseling on many levels and as such, students in the Master or Science in Genetic Counseling Program are required to plan, conduct, present, and write about an original research project under the guidance of an advisor. This individualized scholarly work may consist of a case series, a case study and literature review, a clinical or laboratory research project, or a clinical application. Each student completes their graduate training with a formal oral presentation and a paper of publishable quality. Students are required to take and pass GENC 670, 671, and 672, prior to GENC 673.

GENC 550: Genomics & Business (3 credits)
Health care professionals, including those in the field of medical genetics, have traditionally received an abundance of training regarding the clinical aspects of their field. The business side of medicine, however, is not often well understood. This course provides an introduction to many business and legal topics encountered by working genetic professionals, such as coding, billing, reimbursement, marketing, budgeting, public policy, business development, and working with the media.

GENC 563: Diversity in Genetic Counseling (3 credits)
Genetics professionals need to understand the diverse backgrounds of their clients in order to empathetically and effectively communicate. Cultural competency is important for reducing health disparities and providing health care that meets the needs of diverse groups of people. This course focuses on the genetic needs of underserved, diverse, unique, and sometimes isolated populations. In the context of medical genetics and genetic counseling, groups of individuals studied in the course include Hutterites, Native Americans, Muslims, Hmong, Ashkenazi and Sephardic Jews, dwarfs, and deaf culture. The course also examines genetics services around the world and working with interpreters.