

Masters of Science in Genetic Counseling Program
Sample Class Schedule 2013-2015

Year One

Fall

GENC5091 Intro to Clinical Research	1
CELL5142 Embryology	2
GENC5102 Genomics, Envir, Lifestyle	2
GENC5212 Systems Disorders for GC	2
GENC5011 Topics in Genetic Counseling	1
GENC5021 An Intro to Clinical Skills	1
GENC5002 Human Population Genetics	<u>2</u>
	11

Spring

GENC5191 Research Development	1
GENC5123 Genetics lab rotation	3
GENC5024 Psychosocial Aspects of GC	4
GENC5222 Molecular Genetics	2
GENC5221 Cytogenetics	<u>1</u>
	11

Summer

GENC5202 Cancer Genetics	2
GENC5031 Prenatal Diagnosis & Scrn	1
GENC5213 Prenatal Amniocentesis prac	<u>3</u>
	6

Year Two

Fall

GENC5203 Medical Genetics practicum	3
GENC5313 Prenatal Ultrasound prac	3
GENC5980 Thesis	3
GENC5401 Adult Onset/Com Complex	1
GENC5232 Inborn Errors of Metabolism	<u>2</u>
	12

Spring

GENC5303 Advanced clinic practicum	3
GENC6002 Pharmacogenomics	2
GENC5980 Thesis	<u>3</u>
	8

Total Program Hours	48
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Alternating years

Core Curriculum

CELL 5142 – Human Embryology: Study of the development of the human body at the cellular and organ level, with emphasis on the relation of embryogenesis to adult anatomy and congenital malformations. Course may include lectures, a weekly group discussion on related scientific literature and a research paper.

GENC 5002 – Human Population Genetics: will provide the student with an understanding of population genetics and risk analysis. It will cover the quantitative methods of analyzing genetic data in theoretical and practical terms. The student will be introduced to and gain experience in using online bioinformatics tools.

GENC 5011 – Topics in Genetic Counseling: an introduction to the profession of Genetic Counseling covering a selection of topics. It will provide information on a range of topics necessary for an understanding of genetic counseling. The information will be provided via lecture and demonstration.

GENC 5021 – An Introduction to Clinical Skills: will provide a framework for development of clinical skills in genetic counseling. Major components include recording the family history, recognizing dysmorphic features, developing a differential diagnosis, and the genetics physical examination.

GENC 5024 – Psychosocial Aspects of Genetic Counseling: provides a framework for evaluation and counseling in the context of inherited disorders. Major components include the interview process, assessment, and counseling an individual and/or family with a genetic disorder. The student will be expected to understand the psychological and social impact genetic disease has on patients and families and how counseling techniques can be modified accordingly. The student will be expected to demonstrate skillful assessment of psychosocial needs of patients and families and to provide appropriate counseling intervention during the clinical skills practice segment of the course.

GENC 5031 – Prenatal Diagnosis and Screening: will provide an introduction to prenatal diagnosis and screening from a genetic counseling viewpoint and will prepare students to counsel patients in the prenatal clinical rotation. Major components include an understanding of the normal and abnormal pregnancy, genetics issues, diagnosis vs. screening and related testing methods, teratology, pregnancy loss and infertility, and what can and cannot be seen on ultrasound examination.

GENC 5091 – Introduction to Clinical Research: serves as an introduction to clinical research design and will provide the student with the basic information and skills needed to complete literature searches, formulate research questions, apply ethical principles to and satisfy all regulatory requirements for the conduct of clinical research. During this course, students will complete their CITI and IRB training to prepare them for conducting the research for their thesis projects.

GENC 5102 – Genomics, Environment and Lifestyle: will provide an introduction to the field of Public Health Genetics via an overview of the intersection of environment, lifestyle and genomics across the lifespan, in the context of the US public health system.

GENC 5123 – Genetics Laboratory Practicum: provides the student with practical experience in the Molecular Genetics laboratory, the Cytogenetics laboratory, and the Biochemical Clinical laboratory to enable them to develop an understanding of the laboratory process required for chromosome analysis, molecular cytogenetics testing, molecular testing that will include DNA analysis and array comparative genomic hybridization (CGH), and biochemical diagnostic and management for patients with inborn errors of metabolism. Experiences will include general laboratory methods, sample requirements, DNA isolation, set up, timing, harvesting, and slide preparation for routine cytogenetics, DNA analysis, aCGH, and a genetic counselor's role in the laboratory setting. A review segment at the end of the course provides students with information and practice in the decision making involved in determining appropriate testing for patients, and in the interpretation of results received.

GENC 5191 – Research Development: provides students with the theoretical and applied skills needed to plan, design, and conduct clinical research projects. Students completing this course will be able to meet the programmatic requirement of completing a research thesis in Genetic Counseling.

GENC 5202 – Cancer Genetics: will consist of fourteen lectures covering cancer prevalence, nomenclature, epidemiology, etiology, familial aggregation, molecular basis for neoplasia, preneoplastic syndromes, chromosome breakage syndromes, cancer risk assessment and counseling, ethical, legal and social issues, psychosocial implications, research, and specific topics relevant to the practice of genetic counseling.

GENC 5203 – Medical Genetics Clinic Practicum: provides the student with practical experience performing supervised genetic counseling for patients referred for a variety of health concerns. The student will attend the General Genetics Clinic at OUHSC and will have increasing independent responsibility for patient care and genetic counseling as the semester progresses. The student is responsible for a minimum of 2-3 patients per weeks. For this rotation, students can expect to see patients referred for common genetic indications: short stature, developmental delay, connective tissue disorders, hemihypertrophy, etc. In previewing each patient, the student will research the diagnosis/referral reason and management plan. The student will present patient summaries at case conference the week prior to the appointment. During the appointment, the student will obtain medical, pregnancy, and developmental histories and construct a three-generation pedigree. The student will present the case to the physician, provide patient education and counseling for the family regarding diagnosis, recurrence risk, test results, and other pertinent information---all under the supervision of a board-certified genetic counselor. The student is responsible for chart documentation, the genetic counseling summary letter, and all follow-up communication. Grades are assigned based on post-clinic evaluations, overall professionalism, practice-based competencies, and a written examination. Students are expected to attend and present at a weekly Journal Club, attend Grand Rounds, and maintain office hours throughout the rotation.

GENC 5212 – Systems Disorders for Genetic Counselors: will consist of 15 units covering genetic basis of disorders in various body systems and specific topics relevant to the practice of genetic counseling.

GENC 5213 – Amniocentesis Clinic Practicum: provides the student with practical experience performing genetic counseling for patients referred for prenatal diagnosis. The student will attend the Amniocentesis clinic for a minimum of one day per week and see as many patients as possible. They will have increasing responsibility for counseling, including follow up. A full performance evaluation with the supervising GC will be performed for 2-4 of those patients seen each week.

GENC 5221 – Cytogenetics and Molecular Cytogenetics: provides a comprehensive introduction to Cytogenetics, Molecular Cytogenetics, and clinical laboratory techniques in the genetics laboratory. The course will introduce topics of chromosomal structure and function, chromosome abnormalities and clinical presentations, chromosomal basis of cancer, and cytogenetic laboratory techniques. The laboratory techniques will provide a basis of understanding that will prepare the students for their practical rotations in the genetics laboratory.

GENC 5222 – Molecular Genetics: will consist of lectures covering basic genetics, DNA technology, genetic abnormalities, clinical aspects of molecular genetics, and specific topics relevant to the practice of genetic counseling. Each lecture will consist of required reading, and discussion. Current literature will be reviewed in addition to reading assigned from the text.

GENC 5232 – Inborn Errors of Metabolism: provides a comprehensive introduction to biochemical genetic disorders, and clinical laboratory testing employed in the diagnosis and management of inborn errors of metabolism. The course will introduce topics of metabolic pathways, clinical presentations and diagnostic methods, patient metabolic management, and reproductive issues. There will be a tour of the state newborn screening laboratory that will provide a basis of understanding regarding the public health issues around metabolic disorders.

GENC 5303 -- Advanced Clinical Practicum: provides the student with practical experience performing supervised genetic counseling for patients referred for more complex indications. The student will attend the Genetics Clinic at OUHSC with an emphasis on cases that suggest complex psychosocial counseling opportunities such as: family or personal history of cancer, Huntington's disease, recurrent pregnancy loss, adult onset disorders, mitochondrial disorders, etc. The student will also counsel patients with a personal or family history of cancer at the OU Breast Institute, Breast Imaging of Oklahoma (BIO), and the telemedicine cancer genetics clinic. During this rotation, students will see patients at various multi-disciplinary clinics which include: Hemophilia clinic, MDA clinic, Cleft/Craniofacial clinics, Neurogenetics clinic, Sickle cell clinic, and Turner Syndrome Clinic. Students will provide counseling for newborn screening patients who screen positive for Cystic Fibrosis or sickle cell trait. The student will also provide inpatient genetic counseling for hospital consultations. The Advanced Clinical Practicum builds upon the skills mastered in the General Clinical Practicum with increasing independent responsibility for in-depth education and counseling.

GENC 5313 – Prenatal Ultrasound Clinic Practicum: provides the student with practical experience performing genetic counseling for patients referred for prenatal diagnosis of fetal anomalies and teratogen exposure. The student will attend the Prenatal Ultrasound clinic and will have increasing responsibility for counseling and case management as appropriate.

GENC 5401 – Genetic Basis of Adult Onset and Common Complex Disorders: provides the student with an understanding of the genetic component of adult onset and common complex disorders. It will cover the etiology and diagnosis of disorders that have both genetic and environmental components. Many of this group of conditions can be observed as reoccurring in families more frequently than would be expected by chance as well as being sporadic in nature.

GENC 6002 – Pharmacogenomics: will provide students with an understanding of the influence of genetic variation among individuals and their contribution to differences in drug response. In this course, students will learn basic principles of genetics and pharmacology and how genetic, environmental, lifestyle, and nutritional factors affect drug response.