

Master of Science in Genetic Counseling

The Master of Science in Genetic Counseling is the terminal practice degree for the Genetic Counseling profession. The University of Kansas School of Health Professions offers the only professional degree program leading to a master's degree in genetic counseling in the state of Kansas. The program aims to educate future genetic counselors and guide their development to become insightful, empathic, collaborative, life-long learners who improve the lives of their patients, colleagues and the greater community. Objectives of the program include providing an innovative and diverse curriculum with robust clinical experiences, instilling professionalism and integrity, creating advocates for individuals with genetic conditions and cultivating a passion for clinical research.

The 21 month, full-time program consists of a minimum of 56 credit hours of didactic coursework, ten clinical rotations and a graduate research project. Students must also complete eight supplemental fieldwork activities, 27 supplemental curricular activities and pass a comprehensive exam. Course delivery may include face-to-face, online, and hybrid formats.

The MS in Genetic Counseling curriculum addresses the practice based competencies established for the profession by the Accreditation Council for Genetic Counseling (ACGC).

Admission to the Master of Science in genetic counseling program is a competitive application process. Applications are submitted online.

Applications and supporting materials are reviewed, and qualified applicants are invited for an interview. Detailed instructions on how to apply are posted on the master of science in genetic counseling website. Students are admitted for the fall semester only. Application deadline is December 31st in the year prior to admission.

In order to be considered for admission into this program, the following are required:

Completed prerequisite course work

- Bachelor's degree from an accredited college or university. The degree can be a Bachelor of Science or Bachelor of Arts, and it can be in any field (does not have to be in health or health care).

Grade point average

- Cumulative undergraduate grade point average of 3.00 on a 4.00 scale is required.
- KU's genetic counseling program requires students to have completed the following courses at the undergraduate level, each with a minimum grade of C:
 - Biology (two semesters)
 - Chemistry (one semester)
 - Biochemistry (one semester)
 - Genetics (one semester)
 - Psychology (one semester)
 - Statistics (one semester)

Exposure to the Field

- Prior to admission, applicants are encouraged to gain exposure to genetic counseling to educate themselves about the field. The goal of this exposure is to help the applicant understand the role of a genetic counselor and ensure they can articulate what the profession entails. There are numerous ways to accomplish this, and a strong applicant will demonstrate a wide breadth of experiences. Examples of experiences include the following:

- Shadowing a genetic counselor.
- Informational interviews with a genetic counselor.
- Genetic counseling specific coursework.
- Exposure to media including blogs, podcasts, and webinars about genetic counseling.
- Genetic counseling program open houses/student information sessions.
- Working with a clinical genetics division including as an intern or genetic counseling assistant.
- Attendance at conferences, workshops and journal clubs.
- Viewing videos of genetic counseling sessions.
- Reading literature regarding the role of a genetic counselor.

Advocacy Experience

- One major part of a genetic counselor's role is to help individuals and families understand and adapt to information about genetic disease. Importantly, this is not just about disseminating scientific information; true genetic counseling involves advocacy. Advocacy means providing support to others through empathy, open communication, counseling, problem solving and identification/provision of appropriate resources. We encourage our applicants to have advocacy experience prior to admission. Examples of these experiences include the following:

- Working with individuals who have disabilities.
- Crisis counseling.
- Grief and loss support organizations.
- Patient care experience.
- Reproductive healthcare.
- Mentoring and peer counseling.
- Working with individuals who have genetic conditions.
- Support groups.
- Social service work.

Vaccine and Clinical Site Requirements

- Matriculated students will need to provide an immunization profile prior to participating in curricular and/or clinical experiences required by the program. The University of Kansas Medical Center requires various immunizations for its students. These immunization requirements help promote health and safety and facilitate clinical placement.
- Many, if not all, clinical sites who partner with the University of Kansas Medical Center require proof of these vaccines for students engaged in training or other programmatic experiences at clinical sites. Not being vaccinated may preclude students from participating in activities, potentially impeding their ability to complete all program requirements for degree completion. Applicants with questions should

speak with a representative from the academic program to which they intend to apply.

Background check/drug screening

- Incoming students must provide KU with a background check report (<https://www.kumc.edu/school-of-health-professions/academics/admissions/background-checks-and-drug-screening-for-students.html>). Once accepted into the program, students should start this process. The one-time fee must be paid directly to the company performing the background investigation.

Computer

Students are required to have a computer that meets the minimum software and hardware requirements (<https://www.kumc.edu/school-of-health-professions/academics/admissions/student-computer-requirements.html>).

International Students

The University of Kansas genetic counseling program hopes to admit and sponsor international students on the F1 visa in the near future, but we are not able to do so for fall 2024 admission.

English Language Proficiency

English language requirements apply to any student who is not currently enrolled in a U.S. college or university. Earning a degree from an institution outside the U.S. where the language of instruction is English may not exempt students from this requirement, except when a bachelor's degree (or higher) is earned from an institution in one of the following countries: United States, Great Britain, Australia, New Zealand or English-speaking provinces in Canada.

To verify English language requirements, official exam results from either the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) must have been obtained within the two years prior to application:

- Internet-based TOEFL minimum requirements: At least 23 or higher on the reading and listening sections; a score of 5.0 or 23 or higher on the writing section; a score of 26 or higher on the speaking section.
- IELTS minimum requirements: Overall band score of 7.5 and no part score lower than 7.0.

Official documentation of test scores must be sent directly from the administering agency to KU Medical Center. ETS school code for KUMC is 6895. Failure to submit official documentation will delay the admission process.

GENC 801. Introduction to Clinical Research. 1 Credits.

This course is designed to introduce students to the clinical research process and build the foundations necessary for their thesis or capstone projects. The course will explore the essential elements of research including topic selection, formulation of a research question, aim, and hypothesis, literature review, identification of a mentor, research design and methodology, research ethics, the protection of human subjects, and the role of the Institutional Review Board (IRB). Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

GENC 802. Fundamentals of Genetic Counseling. 2 Credits.

This course provides a framework for the development of clinical skills in genetic counseling. Major components include completing the intake, recording the family history, recognizing dysmorphic features, developing

a differential diagnosis, identifying counseling aids and resources, medical documentation, and components of the genetics physical examination. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

GENC 803. Human Genetics. 3 Credits.

Topics covered this semester will include gene structure and function, chromosomal abnormalities, single gene inheritance, molecular, cellular and biochemical basis of genetic disease, complex and multifactorial inheritance, genetic diversity, risk calculation in genetic counseling, and population genetics. Techniques of genetic analysis and appropriate nomenclature will be introduced. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

GENC 804. Psychosocial Genetic Counseling. 4 Credits.

Students will develop skills to be able to organize a genetic evaluation/counseling session, conduct a psychosocial assessment, apply basic counseling skills, obtain a history including targeted family history, provide patient education, and make a follow-up plan for a genetics diagnostic evaluation. Additionally, students will examine their own beliefs and backgrounds, and understand how these may impact their ability to provide genetic counseling. The course is organized to provide theory and application in the form of role play and practice with standardized patients at the Clinical Skills Lab. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

GENC 811. Research in Genetic Counseling. 1 Credits.

This course will provide a framework for the development of the student's research topic. Students will identify the members of their research committee, refine specific aims/hypotheses, and learn methods of data collection, basic biostatistics, and manuscript writing used in genetic counseling research. Students will also hear from genetic counselors who work in research. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

GENC 812. Cytogenetic and Molecular Basis of Disease. 2 Credits.

Students will become familiar with cytogenetic and molecular laboratory testing and methodology, components of a test report, variant analysis, genome-wide association studies, polygenic risk scores, emerging technologies, and use of personalized medicine. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

GENC 821. Clinical Fieldwork I. 1 Credits.

This course provides the student with practical experience performing supervised genetic counseling for patients referred for a variety of health concerns. Each student will participate in three clinical rotations each lasting five weeks. Students will begin practicing skills of case preparation, contracting, medical intake, pedigree drawing, describing the natural history of disorders, reviewing testing options, identifying psychosocial concerns, and resource identification. Students are expected to participate in 2-4 cases per week during this course, increasing with each rotation. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

GENC 822. Prenatal Genetics and Teratology. 2 Credits.

This course combines case-based learning, presentations from topic experts and class discussion to prepare students for clinical practice in reproductive genetic counseling. Topics include routine pregnancy care, prenatal screening and diagnostic testing, ultrasound anomalies, evaluation for infertility, recurrent pregnancy loss and stillbirth; assisted reproductive technologies; teratology; fetal treatment and intervention; perinatal loss and bereavement. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

GENC 832. Medical Genetics I. 2 Credits.

The Medical Genetics course series offers an overview of concepts in medical genetics including natural history, cardinal features, management, and treatment of pediatric and adult genetic syndromes. Therapeutic approaches and treatment modalities including gene therapy and clinical trials will be reviewed. Guest lecturers with relevant clinical expertise will be invited to speak. A special focus on disability and advocacy will include presentations from families and patients affected by genetic conditions. This course utilizes case-based learning supplemented by lectures, quizzes, and jeopardy-style reviews. Sections I, II and III can be taken in any order. Topics in Medical Genetics I will include: Cardiovascular Genetics, Neurogenetics, Kidney, GI, Lung and Liver disorders, Neurocutaneous disorders, RASopathies, and syndromes associated with brain malformations, seizures and microcephaly. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

GENC 833. Clinical Fieldwork II. 3 Credits.

This course provides the student with practical experience performing supervised genetic counseling for patients referred for a variety of health concerns. Each student will participate in one clinical rotation lasting seven weeks. Students will continue to improve upon skills learned in Clinical Fieldwork I including case preparation, resource identification, contracting, medical intake, pedigree drawing, reviewing testing options, presenting research opportunities, and identifying psychosocial concerns with the goal of becoming competent at performing these skills independently. Students will practice skills of risk assessment, risk counseling, describing the natural history of disorders, results disclosure, follow-up, documentation, and advanced psychosocial counseling. Students will attempt to perform basic psychosocial counseling. Students are expected to participate in 4-6 cases per week during this course. Prerequisite: Clinical Fieldwork I. Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

GENC 842. Biochemical Genetic Counseling. 2 Credits.

Examine the biochemical basis of human disease with emphasis on the role of the genetic counselor, including recognition of various biochemical diseases, including phenotypes, inheritance patterns, diagnostic methods, biochemical signatures, and treatments. Students will also explore the concepts of newborn screening and the various roles of the genetic counselor in the metabolic clinic. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

GENC 852. Cancer Genetic Counseling. 2 Credits.

This course will cover topics including cancer nomenclature, epidemiology, etiology and hereditary cancer predisposition syndromes. It will address risk assessment, molecular testing, screening and risk management recommendations. Discussions will include psychosocial implications of diagnosis. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

GENC 862. Laboratory/Industry. 2 Credits.

In this course students will become familiar with the role of genetic counselors and other professionals in non-patient facing roles with a significant focus on laboratory settings (e.g., commercial, academic, research, and/or public health screening laboratories), including their involvement in the performance and interpretation of genetic/genomic tests, test development and implementation, customer liaison and support, and sales and marketing. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

GENC 902. Advanced Psychosocial Genetic Counseling. 2 Credits.

Builds on GENC 804; This course will focus on advanced psychosocial and genetic counseling skills and will cover topics including delivering

difficult news, grief and loss, recognizing and managing a crisis and genetic counseling related to a variety of patient affects. The course is organized to provide theory and application in the form of role play and practice with standardized patients at the Clinical Skills Center. Prerequisite: GENC 804; Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

GENC 903. Genetic Counseling Thesis/Capstone. 3 Credits.

This faculty guided, student-directed course provides credit for the implementation and completion of genetic counseling student thesis or capstone projects. Prerequisite: GENC 801; GENC 811; Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

GENC 912. Professional Development I. 2 Credits.

The course will provide information on a range of topics related to professional development as a Genetic Counselor including CV development, interviewing skills, licensure, insurance and reimbursement, and developing familiarity with the healthcare system as it relates to genetic counseling. Students will also present a journal club article. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

GENC 913. Clinical Fieldwork III. 3 Credits.

This course provides the student with practical experience performing supervised genetic counseling for patients referred for a variety of health concerns. Each student will participate in three clinical rotations each lasting five weeks. Students will continue to improve upon skills learned in Clinical Fieldwork II including documentation and advanced psychosocial counseling. Students will become competent or proficient in the core roles of genetic counseling sessions. Students are expected to participate in 4-6 cases per week during this course. Prerequisite: Clinical Fieldwork I and II. Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

GENC 922. Medical Genetics II. 2 Credits.

The Medical Genetics course series offers an overview of concepts in medical genetics including natural history, cardinal features, management, and treatment of pediatric and adult genetic syndromes. Therapeutic approaches and treatment modalities including gene therapy and clinical trials will be reviewed. Guest lecturers with relevant clinical expertise will be invited to speak. A special focus on disability and advocacy will include presentations from families and patients affected by genetic conditions. This course utilizes case-based learning supplemented by lectures, quizzes, and jeopardy-style reviews. Sections I, II and III can be taken in any order. Topics in Medical Genetics II will include: Neuromuscular disorders, skeletal dysplasias, bone disorders, ciliopathies, psychiatric disorders, pharmacogenetics, adult-onset disorders and syndromes associated with hearing loss, limb anomalies, craniosynostosis, arteriovenous malformations, and overgrowth. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

GENC 932. Social, Ethical and Legal Issues in Genetics. 2 Credits.

In this course students will discuss topics including ethical principles, ethics cases, cultural awareness, newborn screening, GINA, and various DEI topics including assessing our own biases, self-reflection, strategies for reducing microaggressions, and issues related to GC admissions. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

GENC 933. Clinical Fieldwork IV. 3 Credits.

This course provides the student with practical experience performing supervised genetic counseling for patients referred for a variety of health concerns. Each student will participate in three clinical rotations each

lasting five weeks. Students will continue to build upon skills learned in Clinical Fieldwork I, II, and III. Students will become proficient in all roles of genetic counseling sessions. Students are expected to participate in 6 cases per week during this course. Prerequisite: Clinical Fieldwork I, II and III. Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

GENC 942. Medical Genetics III. 2 Credits.

The Medical Genetics course series offers an overview of concepts in medical genetics including natural history, cardinal features, management, and treatment of pediatric and adult genetic syndromes. Therapeutic approaches and treatment modalities including gene therapy and clinical trials will be reviewed. Guest lecturers with relevant clinical expertise will be invited to speak. A special focus on disability and advocacy will include presentations from families and patients affected by genetic conditions. This course utilizes case-based learning supplemented by lectures, quizzes, and jeopardy-style reviews. Sections I, II and III can be taken in any order. Topics in Medical Genetics III will include: common microdeletion/microduplication syndromes, FLNA-related disorders, blood disorders, mosaicism syndromes, ophthalmologic disorders, diabetes, and syndromes associated with craniofacial anomalies, sexual development, chromosome breakage, telomere length, bone marrow failure, skin findings, immune dysfunction, and intellectual disability. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

GENC 952. Professional Development II. 2 Credits.

This course will provide information on a range of topics related to professional growth as a Genetic Counselor including supervision, program development, self-care, professional organizations, opportunities for professional growth and identifying a professional mentor. Students will also present journal club articles. Prerequisite: Professional Development I; Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

21 month, 56 credit hour program. Courses will be taught in-person, though will have hybrid options to allow for flexibility of guest lecturers and/or students off-site for rotations. Please see attached for course numbers, names and credit hours.

Code	Title	Hours
GENC 802	Fundamentals of Genetic Counseling	2
GENC 803	Human Genetics	3
GENC 812	Cytogenetic and Molecular Basis of Disease	2
Students will take Embryology through another institution.		2
EPSY 740	Counseling and Interviewing Skills	3
GENC 801	Introduction to Clinical Research	1
GENC 804	Psychosocial Genetic Counseling	4
GENC 822	Prenatal Genetics and Teratology	2
GENC 832	Medical Genetics I	2
GENC 842	Biochemical Genetic Counseling	2
GENC 852	Cancer Genetic Counseling	2
GENC 811	Research in Genetic Counseling	1
GENC 821	Clinical Fieldwork I	1
GENC 862	Laboratory/Industry	2
GENC 813	Clinical Fieldwork II	3
GENC 902	Advanced Psychosocial Genetic Counseling	2
GENC 912	Professional Development I	2
GENC 922	Medical Genetics II	2
GENC 932	Social, Ethical and Legal Issues in Genetics	2

GENC 903	Genetic Counseling Thesis/Capstone (This course will be taken twice for a total of 6 credit hours.)	6
GENC 952	Professional Development II	2
GENC 913	Clinical Fieldwork III	3
GENC 942	Medical Genetics III	2
GENC 933	Clinical Fieldwork IV	3
Total Hours		56

To complete the program and obtain the master's degree, a student must successfully complete a minimum 56 hours of didactic coursework, ten clinical rotations and a graduate research project. Students must also complete eight supplemental fieldwork activities, 27 supplemental curricular activities and pass a comprehensive exam.

Students must achieve a minimum "B" grade in all courses, with an overall GPA of at least 3.0.

Year 1

Fall	Hours	Spring	Hours	Summer	Hours
GENC 802	2	GENC 804	4	GENC 862	2
GENC 803	3	GENC 822	2	GENC 833	3
GENC 812	2	GENC 832	2		
Embryology ^{Cours} taken externally	2	GENC 842	2		
EPSY 740 (course taken on Lawrence campus)	3	GENC 852	2		
GENC 801	1	GENC 811	1		
		GENC 821	1		
		13	14		5

Year 2

Fall	Hours	Spring	Hours
GENC 902	2	GENC 952	2
GENC 912	2	GENC 942	2
GENC 922	2	GENC 933	3
GENC 932	2	GENC 903	3
GENC 903	3		
GENC 913	3		
		14	10
Total Hours 56			