MEDICAL GENETICS AND GENOMICS, MS

The Hayward Genetics Center offers a 1-year, post-baccalaureate Master in Medical Genetics and Genomics. This multidisciplinary program gives graduates an in-depth understanding of the rapidly advancing field of clinical human genetics. It is designed to prepare qualified individuals for careers in the health sciences, and to provide an educational experience that will enhance the opportunity of being admitted into a postgraduate professional school such as medical school or PhD programs.

- Most of our students are pre-med, and while it varies from year to year, we estimate that over 90% of our graduates who apply to medical school or osteopathy school have been accepted in subsequent years.

- In addition to medical school, graduates from our program have also gone on to other careers including dental school, PhD programs, genetic counseling masters programs, and working with biomedical technology companies.

- The curriculum includes courses that cover the same material as the Tulane Medical School's first year Genetics course and first year Medical Biochemistry course.

- We offer clinical shadowing opportunities in the Tulane Genetics clinics

Requirements

The program begins every year in the fall semester and is a non-thesis degree. Students must complete a total of 30 hours of coursework and have a cumulative GPA of 3.0 to receive their Master's degree. Students are required to write an extensive paper on a subject in the field of human genetics during their second semester for their Special Topics course. Because our program is intradepartmental, all students will take the same courses and follow the same schedule.

Fall (https://medicine.tulane.edu/masters-medical-genetics-genomics/curriculum/)

HMGN 7010 - Seminar in Human Genetics (1 credit hour): This class meets weekly for one hour. Human Genetics faculty, other Tulane faculty and guests from other institutions, as well as graduate students, and medical residents are invited to speak on topics of interest. Topics include basic, applied, and clinical research and reviews to canvass the latest developments in the field of genetics.

HMGN 7020 - Intro to Human Genetics (3 credit hours): This class is an overview of basic disciplines and content areas within human genetics. The emphasis is clinical application of this knowledge within selected topic areas in biochemical, molecular, and population genetics as well as cytogenetics.

HMGN 7030 - Clinical Aspects of Human Genetics (3 credit hours): This is a class taught by genetic counselors that reviews the clinical aspects of genetic disorders seen in clinic, and provides tools for assessing patients with these conditions. The class is meant to convey to the student the problems of diagnosing and managing genetic disease from the physician's and patient's standpoint. Students are also allowed to attend a limited number of genetics clinics as observers.

HMGN 7040 - Human Cytogenetics (3 credit hours): This course provides the student an overview of the field of cytogenetics. Topics include laboratory diagnostic procedures, mechanisms of chromosomal rearrangement, loss, and duplication, classical and recently described chromosomal abnormalities leading to disease, and molecular cytogenetics including fluorescent in situ hybridization techniques (FISH) and other molecular techniques.

HMGN 7060 - Molecular Genetics and Genomics (4 credit hours): This course will take a detailed look at molecular genetics in humans. It will cover the structure and organization of the human genome; DNA replication, DNA mutation and repair; current molecular techniques used in research; the details of gene expression including transcription, RNA processing, translation and how expression is regulated at the various levels; and the molecular basis of human disease.

Spring (https://medicine.tulane.edu/masters-medical-genetics-genomics/curriculum/)

HMGN 7010 - Seminar in Human Genetics (1 credit hour): This class meets weekly for one hour. Human Genetics faculty, other Tulane faculty and guests from other institutions, as well as graduate students, and medical residents are invited to speak on topics of interest. Topics include basic, applied, and clinical research and reviews to canvass the latest developments in the field of genetics.

HMGN 7030 - Clinical Aspects of Human Genetics I and II (3 credit hours): This is a class taught by genetic counselors that reviews the clinical aspects of genetic disorders seen in clinic, and provides tools for assessing patients with these conditions. The class is meant to convey to the student the problems of diagnosing and managing genetic disease from the physician's and patient's standpoint. Students are also allowed to attend a limited number of genetics clinics as observers.
HMGN 7050 - Medical Biochemistry (3 credit hours): This course is an overview of genetic metabolic diseases. It concentrates on inborn errors of metabolism and lysosomal storage diseases. The student is presented with the clinical phenotypes, current methods of treatment, diagnostic procedures, and the biochemical defects resulting in the specific clinical presentation of selected metabolic diseases.

HMGN 7100 - Population Genetics (3 credit hours): This class will acquaint the student with the various theories and methods used in population genetics and genetic epidemiology. Topics include Hardy-Weinberg theory, Bayesian theory, forensics, paternity testing, segregation, linkage and association analyses.

HMGN 7950 - Advanced Topics in Genomics (3 credit hours): This course will focus on familiarizing students with the current, published scientific literature. It will include introductory lectures by faculty on the research methods used in various fields of Genetics. Students will be required to read current literature articles and present the research findings to the class in the form of short seminars.

HMGN 7980 or HMGN 7990 - Special Topics (depends on course): Credit hours for writing a 20 to 30 page literature research thesis-type paper.