

HUMAN GENETICS (GS11)

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GS11 1011 Embryology (1 Credit)

Prerequisite: 1st year Genetic Counseling students. This course provides an introduction to normal human embryologic development of the major body systems. The presented topics will create a foundation on which students can receive information on abnormal development relevant to genetic disease. In addition, students are expected to consider how these concepts can be communicated to a patient in a clear, concise manner. This course is coordinated by two board certified genetic counselors with lectures from the McGovern Medical School faculty. Letter Graded

GS11 1012 Cancer Genetic Counseling (2 Credits)

Prerequisite: None. This course is taught by the faculty and staff of UT MD Anderson Cancer Center and includes lectures by experts in basic science cancer research, clinical oncology, pathology and cancer genetic counseling. Some of the topics covered include overview of cancer biology and clinical oncology, hereditary colon cancer syndromes, hereditary breast cancer syndromes, rare cancer syndromes, management of high risk patients, collecting a cancer-focused family history, hereditary cancer risk assessment models and tools, and psycho social aspects of cancer risk assessment and counseling. Students will expand and refine the knowledge and skills learned in this course during their clinical cancer genetics rotation. Letter Graded

GS11 1013 Genetics & Human Disease (3 Credits)

Prerequisites: Consent of Instructor; General knowledge in genetics and statistics is recommended. This course introduces principles and methods of human genetic analysis with special reference to the contribution of genes to our burden of disease. Although molecular, biochemical and morphogenic processes controlled by genes will be briefly surveyed, the aim is to describe the analytical processes whereby genetic mechanisms are inferred and genes located on chromosomes. Letter Graded

GS11 1021 Psychosocial Practicum (1 Credit)

Prerequisites: Enrollment required of all Genetic Counseling MS students. Open only to Genetic Counseling MS students. This is a two-year course focusing on psychosocial issues in genetic counseling comprised of various units focusing on psychosocial issues in genetic counseling. Topics surrounding cultural competency are also included. Students will have the opportunity to participate in various in-class activities, discussions and role-plays. Role-plays allow students to consider different counseling techniques, to learn how personal biases may affect the counseling session, and to practice how to employ empathy, advanced empathy, confrontation, active listening, reflecting, etc. This course is coordinated by two board certified prenatal genetic counselors and is facilitated by the Genetic Counseling Program faculty. Letter Graded

GS11 1031 Contemporary Issues in Genetic Counsel (1 Credit)

Prerequisites: GS11 1182: Psychosocial Issues in Genetics and II; GS21 1181: Biomedical Ethics for the Genetic Counselor. This course provides a platform for exploration of the complex ethical and moral issues that arise in genetic counseling. The format varies weekly and includes presenting and discussing advanced psychosocial topics, debating ethical case scenarios, and participating in seminars for continued professional development. Genetic counseling students in their second year are eligible for this course. Letter Graded

GS11 1082 Psychosocial Issues in Genetic Counseling I (2 Credits)

Prerequisite: None. Psychosocial aspects of genetic counseling combine didactic lectures and role-play to teach psychosocial issues associated with genetic disease. Topics include: basic counseling skills, interviewing skills, giving a family a diagnosis, breaking difficult news, disabilities, multicultural issues, and counseling for chronic disease. This course is taught by the program directors. Letter Graded

GS11 1092 Genetic Epidemiology of Chronic Disease (2 Credits)

Prerequisite: None. This course will expose students to the evidence and logic involved in inferring the contribution of genetic mechanisms to those diseases of public health importance. Emphasis will be on developing a framework for assessing the impact of genes on common disease, but will not include detailed methodological developments or statistical techniques. The format will be a weekly two-hour session in which a single disease will be examined. In this way students will be exposed to a broad spectrum of diseases and see both the uniqueness and the similarities of the problems inherent to each. Letter Graded

GS11 1103 Evolution of DNA and Protein Sequence (3 Credits)

Prerequisites: Calculus, Statistics, and Consent of Instructor. This course will provide basic principles for understanding factors that govern the evolution of DNA and protein sequences. Students will be provided with the opportunity to learn about the formation and evolution of multigene families and other evolutionary phenomena. They will also be introduced to statistical methods and computer programs for analyzing DNA and protein sequence data. There will be computer demonstrations of some topics. The application of these principles and methods to genome-wide epidemiology will be discussed. Letter Graded

GS11 1113 Introduction to Statistical Genetics and Bioinformatics (3 Credits)

Prerequisite: Permission of instructor. This course is designed as an introduction to statistical genetics/computational biology, and serves as the entry point to several courses in this area. It reviews the key statistical concepts and methods relevant to statistical genetics, discusses various topics that have significant statistical component in genetics, particularly in population and quantitative genetics. Topics include estimation of gene frequencies, segregation analysis, test of genetic linkage, genetics of quantitative characters, inheritance of complex characters, forensic science and paternity testing, phylogeny and data mining. This course is cross-listed at School of Public Health (PH 1986L). The venue will be at School of Public Health. Letter Graded

GS11 1123 Population Genetics (3 Credits)

Prerequisite: Permission of instructor. This course will discuss the principles of population genetics and their applications to human populations as well as statistical methods for analyzing genetic samples of individuals from one or more populations. Topics to be covered include random mating, linkage, inbreeding, natural selection, maintenance of polymorphic and deleterious genes, molecular evolution, quantitative genetics and a modern population genetics approach known as coalescent theory, the cornerstone for analyzing DNA sequence samples from populations. Topics may vary from year to year with the background of the students. Studies at the molecular level will be emphasized. This course is cross-listed at School of Public Health (PH 1984L). The venue will be at School of Public Health. Letter Graded

GS11 1132 Intro to Genetic Counseling (2 Credits)

Prerequisite: Permission of instructor; course is intended for students admitted to the specialized Master of Science program in Genetic Counseling. In this course, students learn the foundation of the genetic counseling profession, including the history of the profession, intake and pedigree skills, ethnic carrier screening, and basic prenatal, pediatric, and cancer genetic counseling concepts. Material is delivered in small group presentation and discussion format, as well as via lecture and practice-based role-play. Multiple genetic counseling faculty contribute to this course. Students in the first semester of the genetic counseling program are eligible for this course. Letter Graded

GS11 1142 Approaches to Genetic Counseling Rsch I (2 Credits)

Prerequisite: Introduction to Genetic Counseling (GS11 1132). This course provides an introduction to basic concepts in epidemiology, statistics and research instruction on how to use STATA to perform univariable statistical analysis. Students will also receive instruction on concepts in human research and rationale for IRB reviews. Group discussions during this course will help students polish their research questions and methodology. Genetic counseling students in their first year of study are eligible for this course. Letter Graded

GS11 1152 Approaches to Genetic Counseling Rsch II (2 Credits)

Prerequisite: Approaches to Genetic Counseling Research I (GS11 1142). This course provides an introduction to advanced concepts in epidemiology and statistics and instruction on how to use STATA to perform advanced multivariable statistical analysis. Genetic counseling students in their second year of study who have passed Approaches to Genetic Counseling Research I (GS11 1142) are eligible for this course. Letter Graded

GS11 1172 Prenatal Genetic Counseling (2 Credits)

Prerequisite: Open only to Genetic Counseling MS students. This course provides an in depth review of current topics in prenatal genetic counseling, including screening and diagnostic testing, ultrasound findings, and teratogens. Students are expected to gain an appreciation for more complex prenatal issues that impact prenatal practice and to work on critical thinking skills. This course is coordinated by two board certified prenatal genetic counselors with lectures by the Genetic Counseling Program faculty. Letter Graded

GS11 1173 Introductory Clinical Rotation in Genetic Counseling (3 Credits)

Prerequisite: Introduction to Genetic Counseling (GS11 1132). This course provides genetic counseling students with the opportunity to become familiar with each clinical setting, including clinical operations, patient population, and other members of the health care team. Students learn how to obtain general and specialty-focused family, pregnancy, and medical histories. They also provide the evaluation and assessment of cases including medical record and literature review. Differential diagnoses are discussed and students observe counseling sessions as well as some diagnostic and medical procedures. As the semester progresses, students begin assuming some of the roles of the genetic counselor during the session, focusing on accurate risk assessment and patient education, and progressing to conducting an entire session. Genetic counseling students in their first year are eligible for this course. Letter Graded

GS11 1174 Advanced Clinical Rotation in Genetic Counseling (4 Credits)

Prerequisite: GS11 1173: Introductory Clinical Rotation - Genetic Counseling. This course provides genetic counseling students with the opportunity to provide the majority of the genetic counseling during sessions, focusing on refining their clinical counseling skills and further developing their psychosocial counseling skills. Students are encouraged to tackle even the most complex cases coupled with appropriate supervisor support. At the conclusion of the advanced rotations, students will be expected to be fully trained genetic counselors. Genetic counseling students in their second year are eligible for this course. Letter Graded

GS11 1182 Psychosocial Issues in Genetic Counseling II (2 Credits)

Prerequisite: GS11 1082: Psychosocial Issues in Genetic Counseling I. This course builds upon the baseline psychosocial issues in genetic counseling taught in the fall semester and is comprised of various units focusing on psychosocial issues in genetic counseling such as cultural competency, mental illness, grief and end of life are included. Students will have the opportunity to participate in various in-class activities, discussions and role-plays. This course is coordinated by the program directors and is facilitated by the Genetic Counseling Program faculty. Enrollment required of all Genetic Counseling M.S. students. Open only to Genetic Counseling M.S. students. Letter Graded

GS11 1622 Topics in Medical Genetics I (2 Credits)

Prerequisite: None, however, Genetics and Human Disease (GS11 1013) may be taken concurrently. The first-semester course focuses on the fundamentals of Medical Genetics. It combines didactic lectures and discussions. The human genetics faculty teach this "state of the art" course. Letter Graded

GS11 1642 Topics in Medical Genetics II (2 Credits)

Prerequisites: GS11 1622: Topics in Medical Genetics I and Consent of Instructor. The second-semester course focuses on individual topics related to the practice of Medical Genetics. Topics include: biochemical conditions, molecular genetics and cytogenetics, evaluation of organ systems with emphasis on genetic pathogenesis of malformations and dysmorphology. This course is a combination of didactic lectures and discussions. The lecturers are experts in their respective fields. Letter Graded

GS11 1711 Sem in Genetics and Population Biology (1 Credit)

Prerequisite: Second year graduate standing or higher. Presentation and analysis of individual topics of research. This class is a series of seminars on a variety of topics in genetics presented by faculty from the School of Public Health and other institutions in the Texas Medical Center, as well as a number of visiting speakers. Pass/Fail