

## **Certificate in Clinical Genetics Course Descriptions**

### **Fundamentals of Human Genetics GENC 401(4 Credits)**

This course provides the knowledge of genetics fundamental to clinical practice. Students taking this course will understand the structure and function of chromosomes and genes, the patterns of inheritance, the causes and consequences of mutation, genetic variation and polymorphism, and the relationship between genotype and phenotype, among other concepts fundamental to the study of genetics and genetic issues in medicine. The course is taught entirely in an online format, with lectures, activities, and discussion designed to provide individualized feedback as well as group learning activities. At the completion of this course students will have a broad understanding of human genetics enabling them to participate in the Medical Genetics Course.

### **Overview of Genetic Counseling GENC 403(4 Credits)**

The course introduces students to the concepts, principles and practices of genetic counseling through on-line lectures, assignments, case presentations, and discussions. The course covers topics including family dynamics, pedigree taking and analysis, genetic risk assessment, interviewing skills, brief counseling theory, and resource identification. By the end of the course students will be able to: interview clients more effectively; document and interpret genetic pedigrees; perform genetic risk assessment; appreciate counseling frameworks used in genetic counseling; make appropriate referrals to genetic services for clients and their families; and identify appropriate genetic resources for clients.

### **Medical Genetics GENC 405(4 Credits)**

This course provides an overview of medical genetics spanning the prenatal, pediatric, and adult disciplines. Topics will include the principles of population screening, clinical evaluation of patients, identification and management of specific genetic disorders, and use and interpretation of genetic testing. Specific attention will be given to the areas of chromosomal abnormalities, hemoglobinopathies, cancer genetics, neurological, and psychiatric genetics. Assignments and case-based discussions will be used to provide interactive learning and to apply material in more practical settings. At the completion of this course, students will have a broad foundation of knowledge in medical genetics. Upon completion of this course, students will have a broad foundation of knowledge in medical genetics. Students will be able to recognize patients at an increased risk of having or developing a genetic disorder, being a possible carrier of a genetic disorder, and be able to discuss these risks with their patients.

### **Ethical, Legal and Social Issues in Clinical Genetics GENC 407(4 Credits)**

Knowledge and information in the field of Genetics is developing rapidly. We hear about the genome project and its implications for society at large on a daily basis. Along with this knowledge explosion come many difficult questions and challenges as clinicians work to integrate this new knowledge into their clinical practices with clients and families. This course will focus on examining the ethical and legal dilemmas inherent in this rapidly growing field with the emphasis on examining these issues from the perspective of current theory in the field of ethics and law. At the completion of this course, students will be able to understand and integrate the complexities of clinical genetics into their work with patients.

### **Independent Study Project GENC 409(2 Credits)**

This course allows each student to integrate the skills and knowledge gained by completion of the previous four courses. The independent study project or internship will be tailored to individual interests and professional goals, allowing for a broader understanding and enhancement of skills in areas of future practice. Students will be assigned a faculty mentor throughout the project to ensure a successful learning experience. Independent projects may include such activities as a comprehensive literature review, creation of a patient education packet for a specific disorder, or other projects relevant to the field of clinical genetics.