BIOCHEM. AND MEDICAL GENETICS (BGEN)

BGEN 7000 Research Seminar M.Sc. 1 cr
Consists of presentations of the student's current research. For Masters students only.

BGEN 7020 Proteins 3 cr
Three hours per week, one term. Purification, bioinformatics, characterization, expression, structure, folding and engineering of proteins.

BGEN 7040 Seminars in Human Genetics 3 cr
Current research in human genetics will be explored in the context of the evolving genetic counselling profession. Term paper, reflections and presentations.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisites: Enrollment in the M.Sc. Genetic Counselling Program or consent of instructor.

BGEN 7070 Special Topics in Human Genetics 3 cr
An assignment, tutorial and discussions course taken only through consultation with the head of the department. The topics will vary depending upon students' needs and interests, and may include specialized topics not available in regular course offerings.

BGEN 7090 Principles and Practice of Human Genetics 3 cr
Lectures, tutorials and assignments designed to review major topics in human genetics and give practical experience in the analysis and interpretation of human genetics data and critical review of published work.

BGEN 7120 Laboratory Methods in Human and Medical Genetics 3 cr
A seminar and assignment course covering an outline of the methods currently in use in human and medical genetic diagnostic and research laboratories. The principles of cell culture, cytogenetic, molecular and biochemical genetic techniques that are used in the diagnosis of human genetic disease and the study of human variation will be reviewed. Students will undertake a practical assignment and write a report.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisite: consent of instructor.

BGEN 7130 Genetic Epidemiology of Human Populations 3 cr
Lectures, tutorials, and assignments on key concepts, principles, and their applications in mapping the genetic loci/variants for monogenic and complex human diseases/traits.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisite: BGEN 7090 or consent of instructor.

BGEN 7142 Clinical Genetics 1 3 cr
This course lays the groundwork for the development of genetic counselling clinical skills. Concepts include pedigree development and analysis, history taking, and risk evaluation as it relates to the genetic counselling practice. Overviews of human development, prenatal genetics, cancer genetics, carrier screening and hemoglobinopathies are provided.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisite: Enrollment in the M.Sc. Genetic Counselling Program or consent of instructor.

BGEN 7144 Clinical Genetics 2 3 cr
This course builds on the genetic counselling clinical skills developed in BGEN 7142 course. The genetic counselling approach to rare and common genetic/metabolic conditions in the adult and pediatric populations is discussed. The roles of the genetic counsellor, clinical geneticist, other medical specialist and allied health in an interdisciplinary approach to patient care is explored.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisite: BGEN 7142, enrollment in the M.Sc. Genetic Counselling Program or consent of instructor.

BGEN 7160 Theory and Practice of Genetic Counselling 3 cr
Advanced theoretical and practical aspects of genetic counselling. Ethics, grief, and culture will be explored in the context of genetic counselling practice. Active participation component includes role plays/practical case scenarios.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisite: Enrollment in the M.Sc. Genetic Counselling Program or consent of instructor.

BGEN 7180 Clinical and Molecular Cytogenetics 3 cr
Cytogenetic methodology; chromosome architecture; karyotype interpretation; indications for referral; chromosome syndromes and anomalies; prenatal diagnosis; chromosomal basis of oncogenesis; flow cytometry; immunogenetics; fluorescent in situ hybridization; the application of molecular technology to chromosome analysis.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisite: consent of instructor.

BGEN 7200 Topics in Biochemistry 1 3 cr
Advanced study and reading on two topics chosen by the course director in consultation with the student's supervisor. Topics include but are not limited to Neurochemistry, Lipids, Carbohydrates, Biomembranes, Inborn Errors, Cystoskeleton Proteins.

BGEN 7210 Topics in Biochemistry 2 3 cr
Advanced study and reading on two topics chosen by the course director in consultation with the student's supervisor. Topics include but are not limited to Neurochemistry, Lipids, Carbohydrates, Biomembranes, Inborn Errors, Cystoskeleton Proteins.

BGEN 7250 Gene Expression and Epigenetics 3 cr
Three hours per week, one term. Chromatin structure. Epigenetic regulation of transcription. Gene expression regulation. Bioinformatics.

BGEN 7260 Cellular and Molecular Biochemistry 3 cr
Three hours per week, one term. Recent research advances on the study of cellular components, assembly and organization of plasma membrane components, cell signaling, and cell cycle.

BGEN 7270 Introduction to Genetic Counselling Clinic Rotation 4 cr
This rotation will allow students to observe and participate in various genetic counselling settings. Participation will allow for skill development and practical application of genetic counselling fundamentals. Course graded Pass/Fail.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisite: acceptance into the M.Sc. Genetic Counselling program.

BGEN 7280 Advanced Genetic Counselling Clinic Rotation 4 cr
This rotation will provide year two students full participation in various genetic counselling settings. Students will be able to use advance genetic counselling skills, building on their skill set from the previous introduction to genetic counselling clinical rotation course. This course is evaluated on a pass/fail basis.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisite: BGEN 7270.

BGEN 7290 Visiting Genetic Counselling Student Elective 0 cr
A clinical rotation of varying length designed to provide a genetic counselling student not from the University of Manitoba with clinical education and training within a clinical site associated with the University of Manitoba MSc in Genetic Counselling Program (GCP). Course credit is assigned by the student's home institution.Course graded Pass/Fail.

BGEN 8000 Research Seminar Ph.D. 1 cr
Consists of presentations of the student's current research. For Ph.D. students only.