

INSTITUTE FOR SYSTEMS GENOMICS (ISG)

ISG 5091. Internship. (1-3 Credits)

Experiential learning to integrate knowledge and theory from the classroom with practical application and skills development in a professional setting.

Enrollment Requirements: Instructor consent.

May be repeated for a total of 6 credits

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205091>)

ISG 5095. Investigation of Special Topics. (1-3 Credits)

Comprehensive coverage of topic with emerging issues, significant trends, unique perspectives, or major advances.

Enrollment Requirements: Instructor consent.

May be repeated for a total of 9 credits

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205095>)

ISG 5099. Independent Study. (1-3 Credits)

Independent investigation toward scholarship in the discipline.

Enrollment Requirements: Instructor consent.

May be repeated for a total of 9 credits

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205099>)

ISG 5100. Foundations of Genetic and Genomic Medicine. (3 Credits)

Foundational concepts and application of genetics and genomics in the context of human disease.

Enrollment Requirements: Only open to graduate students currently enrolled in the Clinical Genetics and Genomics certificate, others with instructor consent.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205100>)

ISG 5101. Principles of Human Embryology and Teratology. (3 Credits)

Investigation of fundamental mechanisms underlying normal and abnormal development related to embryogenesis and organogenesis. Relates defects in development to congenital anomalies.

Enrollment Requirements: Only open to graduate students currently enrolled in the Clinical Genetics and Genomics certificate, others with instructor consent.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205101>)

ISG 5102. Clinical Applications of Genetic and Genomic Technologies. (3 Credits)

Principles, clinical applications, and interpretation of genetic and genomic testing methods.

Enrollment Requirements: Only open to graduate students currently enrolled in the Clinical Genetics and Genomics certificate, others with instructor consent.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205102>)

ISG 5103. Theories and Methods of Clinical Genetics. (3 Credits)

An Introduction to the theoretical framework, skillsets, and applications necessary to provide scientific communication of genetics and genomics, resources, diagnoses, and counseling in the clinical setting.

Enrollment Requirements: Only open to graduate students currently enrolled in the Clinical Genetics and Genomics certificate, others with instructor consent.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205103>)

ISG 5140. Systems Medical Genetics. (3 Credits)

Focuses on the connections between human development and inherited disease. Includes core principles of development of the body plan and signaling pathways involved in development and differentiation.

Discusses fundamental principles regarding congenital malformations, dysmorphology and syndromes. Discussion of a number of genetic disorders from a systems approach. Discussions include diagnosis, etiology, genetics, prognosis and management. Either semester and summer. Online.

Enrollment Requirements: Instructor consent. Recommended preparation: ISG 5100, 5102, 5103, 5730.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205140>)

ISG 5141. Metabolic and Cardiovascular Genomics. (3 Credits)

Focuses on the connections between human development and inherited disease. The course will include core principles of inborn errors of metabolism and cardiovascular genomics.

Enrollment Requirements: Instructor consent. Recommended preparation: ISG 5100, 5102, 5103, 5140, 5730.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205141>)

ISG 5142. Clinical Cancer Genetics. (3 Credits)

Provides knowledge and skills fundamental to the practice of cancer genetic counseling. Students will apply cancer genetics knowledge to multiple clinical situations. This course will cover hereditary cancer syndromes, cancer risk assessment models, and germline and somatic genomic testing. Either semester and summer. Online.

Enrollment Requirements: Instructor consent. Recommended preparation: ISG 5100, 5102, 5103, 5140, 5730.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205142>)

ISG 5143. Clinical Prenatal Genetics. (1 Credit)

Introduces the genetics specialty focusing on potential risks to pregnancy, including chromosome disorders, genetic conditions, or congenital disabilities. Applying knowledge of genetics and genomics core concepts, selecting screening, diagnostic, and assisted reproductive techniques dependent on clinical indication, family history, and ultrasound findings.

Enrollment Requirements: Open to students in the Genetic Counseling masters program, others with instructor consent.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205143>)

ISG 5144. Clinical Practice for Genetic Counselors I. (1 Credit)

Developing skills necessary to support personal values and client well-being while managing genetic counseling cases. Exploration of professional guidelines and issues related to clinical genetics practice within a framework of inclusivity and according to ethical, legal, and societal guidelines.

Enrollment Requirements: Open to students in the Genetic Counseling masters program, others with instructor consent.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205144>)

ISG 5146. Research Methods. (3 Credits)

Essential skills to propose new research questions, articulate research progress, and evaluate research outcomes. Incorporating history, diversity, equity, inclusion, and justice, prepare a research proposal for genetics/genetic counseling in health care.

Enrollment Requirements: Open only to students in the Genetic Counseling and Health Care Genetics master's programs, others with instructor consent.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205146>)

ISG 5200. Communication and Counseling Skills for Effective Health Care Conversations. (3 Credits)

Theoretical knowledge and practical communication, counseling and support skills for the benefit of connecting practitioners and consumers within the context of health care and genomics.

Enrollment Requirements: Only open to Clinical Communication and Counseling certificate students. Students in the Health Care Genetics or Genetic Counseling programs may enroll with respective Program Director consent.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205200>)

ISG 5201. Cultural Awareness: Working with Diverse Populations in Health Care. (3 Credits)

Connecting the impact of cultural differences with the delivery of counseling services and health care discussions.

Enrollment Requirements: Only open to Clinical Communication and Counseling certificate students. Students in the Health Care Genetics or Genetic Counseling programs may enroll with respective Program Director consent.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205201>)

ISG 5202. Creating a Therapeutic Alliance. (3 Credits)

Critical concepts and application of health literacy, health communication, and provider-consumer communication models.

Enrollment Requirements: Only open to Clinical Communication and Counseling certificate students. Students in the Health Care Genetics or Genetic Counseling programs may enroll with respective Program Director consent.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205202>)

ISG 5203. Death, Dying, Grief, and Coping. (3 Credits)

Critical concepts of death, loss, and grief and their impact on consumer-provider discussions of death, within a health care setting.

Enrollment Requirements: Only open to Clinical Communication and Counseling certificate students. Students in the Health Care Genetics or Genetic Counseling programs may enroll with respective Program Director consent.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205203>)

ISG 5301. Concepts in Genomic Data Analysis I. (2 Credits)

Fundamentals of genomic data analysis, high throughput sequencing technologies, and computational tools and infrastructure used to analyze and communicate results from genomic data.

Enrollment Requirements: Corequisite: ISG 5311. Recommended preparation: Undergraduate degree in biology or related discipline. Background in genetics.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205301>)

ISG 5302. Concepts in Genomic Data Analysis II. (2 Credits)

In-depth introduction to genome assembly, variant detection, functional genomics, and tools to manage bioinformatic code-bases and ensure reproducibility, git and nextflow.

Enrollment Requirements: ISG 5301 and 5311. Corequisite: ISG 5312. Recommended preparation: Undergraduate degree in biology or related discipline. Background in genetics.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205302>)

ISG 5311. Genomic Data Analysis in Practice I. (4 Credits)

Practical introduction to genomic data analysis. Introduction to coding using Linux/bash, R/tidyverse and SLURM on a high performance computing cluster through the use of real data.

Enrollment Requirements: Corequisite: ISG 5301. Recommended preparation: Undergraduate degree in biology or related discipline. Background in genetics.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205311>)

ISG 5312. Genomic Data Analysis in Practice II. (4 Credits)

Practical instruction in how to accomplish various genomic workflows including genome assembly, variant detection, differential expression using RNA-seq.

Enrollment Requirements: ISG 5301 and 5311. Corequisite: ISG 5302. Recommended preparation: Undergraduate degree in biology or related discipline. Background in genetics.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205312>)

ISG 5496. Laboratory Rotation. (1-3 Credits)

Introduction to research questions and techniques within a specialized discipline of systems genomics.

Enrollment Requirements: Instructor consent.

May be repeated for a total of 9 credits

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205496>)

ISG 5601. Interpreting Clinical Genomic Data. (3 Credits)

Interrogation of database resources for the identification and interpretation of genetic variation in the context of clinical case management. Accurate communication of genetic information in an accessible format according to established guidelines. Either semester and summer. Online.

Enrollment Requirements: Instructor consent. Recommended preparation: ISG 5100, 5102, 5103, 5730.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205601>)

ISG 5715. Journal Club. (1 Credit)

Using knowledge of clinical genetics and genomics, students will evaluate the accuracy, impact, and outcomes of primary research. Producing effective presentations for delivering complex science at an audience-appropriate level.

Enrollment Requirements: Open only to students in the Genetic Counseling and Health Care Genetics master's programs, others with instructor consent.

May be repeated for a total of 3 credits

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205715>)

ISG 5730. Professional Skills and Competencies. (1-2 Credits)

Career skills development toward effective practice in health care research, diagnostic and/or clinic settings. May be repeated with a change in topic for a total of 10 credits.

May be repeated for a total of 10 credits

View Classes (<https://catalog.uconn.edu/course-search/?details&code=ISG%205730>)