BGE

Genetics

BGE 500: Introduction to News Media Concepts and Institutions
In any age when scientific, medical and environmental issues often make news, this course is designed to familiarize students with how the U.S. news media work. Students will learn how the industry is organized, and why it is undergoing fundamental change; how decisions are made about which stories to cover and how prominently to cover them; how the press weighs such values as freedom, privacy and national security; how the press attempts to deal with issues of scientific uncertainty and conflicting information.

In exploring the culture and practices of American journalism, the course will focus on recent coverage of science, health and environmental developments. This course is intended for graduate students in health and science who seek a better understanding of the media context in which they will work, as well as for journalism M.S. students who do not have a background in journalism.

Offered Fall, Spring, and Summer, 3 credits, Letter graded (A, A-, B+, etc.)

BGE 501: Communicating Science: Distilling Your Message
Current and future scientists and health professionals will learn to communicate clearly and engagingly with different kinds of audiences, at different levels of complexity, using different forms. We'll examine the basics of clear, two-way communication, including knowing and being responsive to your audience, overcoming "the curse of knowledge," having a point, avoiding jargon, using storytelling techniques, being personal, asking questions, and introducing complexity in stages. Students will start by crafting a short, controversial statement about their work and why it matters. We'll expand that to a longer statement, convert it into a brief piece of writing, such as a letter to the editor or a blog post, practice answering questions about it from the public and from the media, plan a public presentation, and learn to apply these skills in the classroom. Skills learned in this course can help scientists and health professionals communicate more effectively with students, potential employers or funders, public officials, family and friends, the press, and colleagues in other disciplines. This is a 1-credit module that meets for 5 consecutive weeks. It is a pre-requisite for almost all other Communicating Science courses.

1 credit, Letter graded (A, A-, B+, etc.)

BGE 502: Communicating Science: Writing for the Public
This course is for graduate students in science, biomedical, engineering, and health disciplines who want to communicate effectively and responsibly with multiple audiences, from peers and professors to potential employers, policymakers and the lay public. Students will focus on speaking about science clearly and vividly in ways that can engage varied audiences, especially those outside their own field. The class will include instruction and practice in connecting and finding common ground with an audience, defining goals, identifying main points, speaking without jargon, explaining meaning and context, using storytelling techniques, and using multimedia elements. The class will include improvisational theater exercises that help speakers pay close and dynamic attention to others, reading nonverbal cues, and responding freely without self-consciousness. As a culminating activity, students will develop and deliver an engaging short oral presentation on a scientific topic. For permission to enroll, please contact: aldacenter@stonybrook.edu

1 credit, S/U grading
May be repeated 2 times FOR credit.

BGE 503: Communicating Science: Improvisation for Scientists
This innovative course uses improvisational theater techniques to help students speak more spontaneously and connect more directly and responsively with their audience and with each other. After warm-up exercises, emphasizing physical freedom and verbal spontaneity, students take part in two- and three-person exercises and situational improvisations that focus on paying attention to your listeners, and altering your approach to meet their needs. At the beginning and end of this course, students will deliver a short oral statement about their research or a scientific topic that interests them, so they can measure their progress. This course is not about acting; it's about helping current and future scientists and health professionals connect with their audiences.

Science graduate students who had several sessions of improvisation training in a pilot session reported communicating better as speakers.

Offered Fall, Spring, and Summer, 1 credit, Letter grading (A, A-, B+, etc.)

May be repeated 2 times FOR credit.

BGE 504: Communicating Science: Using Digital Media
Science and health information increasingly travels by digital media, as new ways emerge for scientists to communicate directly with the public, without the intermediaries of press or public relations. Students will learn how to use blogs, podcasts, Twitter and other forms of social media for two-way communication with different segments of the public, including colleagues in other disciplines. The course will include hands-on instruction in working with digital media, tailored to students' interests and levels of experience. Pre-requisite: JRN 501, JRN 503, or JRN 565.

1 credit, S/U grading
May be repeated for credit.

BGE 505: Communicating Science: Connecting with the Community
Students will learn how to use communication techniques, cultural competency, and health literacy concepts to reach and mobilize the community and key stakeholders on health- and science-related issues related to their research, outreach or community education objectives. The course will incorporate role-playing and community networking skills to help students make connections with key people and groups relevant to their current interests and work. This will require contact with the instructor before the start of the course to discuss students' projects, plans or interests.

Offered Fall, Spring, and Summer, 1 credit, Letter grading (A, A-, B+, etc.)

May be repeated 2 times FOR credit.

BGE 506: Communicating Science: Advanced Writing for the Public
This course is for graduate students in the sciences who have taken JRN 502, Communicating Science: Writing To Be Understood, and want to continue developing and practicing their ability to write about science clearly and vividly for non-expert readers.

Offered Spring, 1 credit, S/U grading
May be repeated for credit.

BGE 510: Graduate Genetics
This course investigates fundamental aspects of the transmission and expression of genetic information in prokaryotic and eukaryotic systems. The course is organized in a way that allows the students to appreciate the breadth of genetics research, while also gaining an in-depth understanding of selected important topics. Students explore the use of both classical and molecular genetic approaches to understand biological processes in genetics.
model systems including yeast, flies, worms, mouse, and man.  
Spring, 3 credits, Letter graded (A, A-, B+, etc.)

**BGE 530: Laboratory Rotation**
The student rotates through laboratories of four different genetics program faculty members during the first year. The selection of the laboratories is made by the student, in conjunction with individual faculty, and with the approval of the program director. By taking part in ongoing projects, the student will learn experimental procedures and techniques and become acquainted with research opportunities in the participating programs. Prerequisite: Permission of instructor
Fall and Spring, 0-1 credits, S/U grading
May be repeated 2 times FOR credit.

**BGE 531: Graduate Student Seminar in Genetics**
Students have the opportunity to present their research to other students and faculty on an annual basis. Students in the first or second year will present brief seminars as part of a one-day symposium with all of their classmates. Advanced students present research seminars as part of a weekly research seminar series that is attended by faculty and students. Although the first and second year students do not present in this weekly seminar series, they should attend these seminars as it provides an excellent mechanism for learning about current areas of research interest.
Fall and Spring, 0-1 credits, S/U grading
May be repeated for credit.

**BGE 534: Introduction to Systems Biology**
This course is geared towards teaching essential concepts and computational skills in Systems Biology. The course is centered upon two key programming languages: Matlab for modeling applications and the R language for statistical analysis and sequence manipulation.
Spring, 3 credits, Letter graded (A, A-, B+, etc.)

**BGE 550: Genetics Outside Seminar**
Outside seminars and special topics courses in areas relating to genetic studies.
1-4 credits, Letter graded (A, A-, B+, etc.)
May be repeated for credit.

**BGE 599: Graduate Research**
Original investigation undertaken with the supervision of a member of the program.
Fall and Spring, 1-9 credits, S/U grading
May be repeated for credit.

**BGE 657: Principles of Development**
This course deals with developing systems at all levels from the morphological to the molecular. Illustrative material from both animal and plant kingdoms is used. Special attention is given to gametogenesis, genetic control of early development, transcriptional and translational control of protein synthesis, the role of cell division and cellular movements, and cell-to-cell interactions in defining developing systems.
Prerequisite: MCB 656, matriculation in graduate program or permission of instructor.
Fall, 3 credits, Letter graded (A, A-, B+, etc.)

**BGE 691: Readings in Genetics**
Journal Club on thematic topics in different areas of current genetics research
Prerequisite: Permission of instructor
Fall and Spring, 1 credit, Letter graded (A, A-, B+, etc.)
May be repeated for credit.

**BGE 693: Research Proposal Preparation in Genetics**
A course, based upon literature in the broad field of Genetics, to instruct in scientific writing and the preparation of research proposals. The course will be organized in three parts. In the first section of the course, students will become familiar with the components of the research proposal and will read and evaluate proposals written by the training faculty. Lectures given by the course co-directors will cover the basics of scientific writing, research proposal preparation and the problems and concerns commonly voiced by reviewers of research proposals. In the second section, students will develop two short proposals for the study of genetics which are unrelated to their graduate research. One of these short proposals will be selected for development into a full proposal. In the third section, students will develop and write the full proposal. The students' skills in proposal preparation will be enhanced by critiquing the short and full proposals presented by other students in the second and third sections of the course. Offered:
Spring, 1 credit, Letter graded (A, A-, B+, etc.)

**BGE 700: Dissertation Research off Campus - Domestic**
Prerequisite: Must be advanced to candidacy (G5). Major portion of research will take place off-campus, but in the United States and/or U.S. provinces. Please note, Brookhaven National Labs and the Cold Spring Harbor Lab are considered on-campus. All international students must enroll in one of the graduate student insurance plans and should be advised by an International Advisor.
Fall, Spring, 1-9 credits, S/U grading
May be repeated for credit.

**BGE 701: Dissertation Research off Campus - International**
Prerequisite: Must be advanced to candidacy (G5). Major portion of research will take place outside of the United States and/or U.S. provinces. Domestic students have the option of the health plan and may also enroll in MEDEX. International students who are in their home country are not covered by mandatory health plan and must contact the Insurance Office for the insurance charge to be removed. International students who are not in their home country are charged for the mandatory health insurance. If they are to be covered by another insurance plan they must file a waiver by second week of classes. The charge will only be removed if other plan is deemed comparable.

All international students must received clearance from an International Advisor.
Fall, Spring, 1-9 credits, S/U grading
May be repeated for credit.

**BGE 800: Summer Research**
May be repeated for credit.