

Genetics (GEN)

Courses primarily for undergraduates:

GEN 110. Genetics Orientation.

(1-0) Cr. 1. F.

Orientation to the area of genetics. For students considering a major in genetics. Specializations and career opportunities. Offered on a satisfactory-fail basis only.

GEN 260. Human Heredity and Society.

(3-0) Cr. 3. Alt. S., offered 2013. *Prereq: One semester of college biology or ANTHR 202*

A survey course in genetics for non-biology majors interested in heredity and its importance, and implications to self and society. Not recommended for those intending to take advanced courses in genetics. Credit for graduation will not be allowed for more than one of the following: Gen 260, 313, 320, Biol 313 and 313L and Agron 320.

GEN 298. Cooperative Education.

Cr. R. F.S.SS. *Prereq: Permission of department cooperative education coordinator; sophomore classification*

Required of all cooperative education students. Students must register for this course prior to commencing each work period.

GEN 308. Biotechnology in Agriculture, Food, and Human Health.

(3-0) Cr. 3. F.S.SS. *Prereq: BIOL 211 and BIOL 212*

Scientific principles and techniques in biotechnology. Products and applications in agriculture, food, and human health. Ethical, legal, and social implications of biotechnology.

GEN 313. Principles of Genetics.

(Cross-listed with BIOL). (3-0) Cr. 3. F.S.SS. *Prereq: BIOL 211, BIOL 211L, BIOL 212, and BIOL 212L*

Introduction to the principles of transmission and molecular genetics of plants, animals, and bacteria. Recombination, structure and replication of DNA, gene expression, cloning, quantitative and population genetics. Students may receive graduation credit for no more than one of the following: Gen 260, Gen 313 and 313L, Gen 320, Biol 313 and 313L, and Agron 320.

GEN 313L. Genetics Laboratory.

(Cross-listed with BIOL). (0-3) Cr. 1. F.S. *Prereq: Credit or enrollment in BIOL 313* Laboratory to accompany 313. Students may receive graduation credit for no more than one of the following: Biol 313 and 313L, Gen 260, Gen 313, Gen 320, and Agron 320.

GEN 320. Genetics, Agriculture and Biotechnology.

(Cross-listed with AGRON). (3-0) Cr. 3. F.S. *Prereq: BIOL 212*

Lee and Salas. Transmission genetics with an emphasis on applications in agriculture, the structure and expression of the gene, how genes behave in populations and how recombinant DNA technology can be used to improve agriculture. Credit for graduation will not be allowed for more than one of the following: Gen 260, 313, 320 and Biol 313 and 313L.

GEN 340. Human Genetics.

(3-0) Cr. 3. Alt. S., offered 2012. *Prereq: BIOL 313 or GEN 313*

Fundamental concepts and current issues of human genetics. Human chromosome analysis, pedigree analysis, gene mapping, the human genome project, sex determination, genetics of the immune system, genetics of cancer, gene therapy, the genetic basis of human diversity, eugenics.

GEN 398. Cooperative Education.

Cr. R. F.S.SS. *Prereq: Permission of department cooperative education coordinator; junior classification*

Required of all cooperative education students. Students must register for this course prior to commencing each work period.

GEN 409. Molecular Genetics.

(3-0) Cr. 3. F. *Prereq: BIOL 313*

The principles of molecular genetics: gene structure and function at the molecular level, including regulation of gene expression, genetic rearrangement, and the organization of genetic information in prokaryotes and eukaryotes. Nonmajor graduate credit.

GEN 410. Analytical Genetics.

(3-0) Cr. 3. S. *Prereq: GEN 409*

The principles and practice of genetic analysis. Mendelian genetic analysis, mutational analysis of gene function, linkage and gene mapping, chromosomal aberrations, aneuploidy and polyploidy, extrachromosomal inheritance, analysis of genetic pathways. Nonmajor graduate credit.

GEN 444. Introduction to Bioinformatics.

(Cross-listed with BCB, BCBO, COM S, CPR E, BIOL). (4-0) Cr. 4. F. *Prereq: MATH 165 or STAT 401 or equivalent*

Broad overview of bioinformatics with a significant problem-solving component, including hands-on practice using computational tools to solve a variety of biological problems. Topics include: database searching, sequence alignment, gene prediction, RNA and protein structure prediction, construction of phylogenetic trees, comparative and functional genomics, systems biology. Nonmajor graduate credit.

GEN 462. Evolutionary Genetics.

(Cross-listed with BIOL). (3-0) Cr. 3. S. *Prereq: BIOL 315*

The genetic basis of evolutionary processes in higher organisms. The role of genetic variation in adaptation, natural selection, adaptive processes, and the influence of random processes on evolutionary change. Nonmajor graduate credit.

GEN 490. Independent Study.

Cr. arr. Repeatable, maximum of 9 credits. *Prereq: GEN 313, junior or senior classification, permission of instructor*

Students in the College of Agriculture may use no more than 6 credits of Gen 490 toward the total of 128 credits required for graduation; students in the College of Liberal Arts and Sciences may use no more than 9 credits of Gen 490 toward graduation.

GEN 490R. Independent Study: Genetics research.

Cr. 1-5. Repeatable, maximum of 9 credits. *Prereq: GEN 313, junior or senior classification, permission of instructor*

Students in the College of Agriculture may use no more than 6 credits of Gen 490 toward the total of 128 credits required for graduation; students in the College of Liberal Arts and Sciences may use no more than 9 credits of Gen 490 toward graduation.

GEN 490S. Independent Study: Attendance and Critique of Genetics Seminars.

Cr. 1. Repeatable, maximum of 9 credits. F.S.SS. *Prereq: GEN 313, junior or senior classification, permission of instructor*

Offered on a satisfactory-fail basis only. Students in the College of Agriculture may use no more than 6 credits of Gen 490 toward the total of 128 credits required for graduation; students in the College of Liberal Arts and Sciences may use no more than 9 credits of Gen 490 toward graduation.

GEN 490U. Independent Study: Laboratory teaching experience.

Cr. 1-2. Repeatable, maximum of 9 credits. F.S.SS. *Prereq: GEN 313, junior or senior classification, permission of instructor*

For students registering to be undergraduate laboratory assistants. Offered on a satisfactory-fail basis only. Students in the College of Agriculture may use no more than 6 credits of Gen 490 toward the total of 128 credits required for graduation; students in the College of Liberal Arts and Sciences may use no more than 9 credits of Gen 490 toward graduation.

GEN 491. Undergraduate Seminar.

(1-0) Cr. 1. F. *Prereq: Junior classification*

The investigation of current issues in genetics. Graduate school and employment opportunities discussed. Practice in resume writing and interview techniques. Required for majors in genetics.

GEN 498. Cooperative Education.

Cr. R. F.S.SS. *Prereq: Permission of department cooperative education coordinator; senior classification*

Required of all cooperative education students. Students must register for this course prior to commencing each work period.