

CURRICULUM WORKSHEET FOR THE MAJOR IN GENETICS

Last Name: _____ First Name: _____

RUID: _____ Email: _____ Class: _____

| Requirement | Course Number | Cr. | Sem & Year | Grade |
|--|--|---------------|------------|-------|
| <input type="checkbox"/> General Biology I ^{*, 1, 2} | 01:119:115 | 4 | | |
| <input type="checkbox"/> General Biology II ^{*, 1, 2} | 01:119:116 | 4 | | |
| <input type="checkbox"/> Gen. Biology Lab ^{*, 1, 2} | 01:119:117 | 2 | | |
| <input type="checkbox"/> General Chemistry I ^{*, 1} | 01:160:161 or 01:160:163 (Honors) | 4 | | |
| <input type="checkbox"/> General Chemistry II ^{*, 1} | 01:160:162 or 01:160:164 (Honors) | 4 | | |
| <input type="checkbox"/> Intro to Experi ¹ | 01:160:171 | 1 | | |
| <input type="checkbox"/> Calculus I ^{*, 1} | 01:640:135 (Calc. I) or 01:640:151 (Calc. I Math/Phys) | 4 | | |
| <input type="checkbox"/> Calc. II or Statistics ^{*, 1, 3} | 01:640:138 or 01:640:152 (4 cr) or 01:960:401 or 01:960:212 (3 cr) | 4 or 3 | | |
| <input type="checkbox"/> Organic Chemistry I ¹ | 01:160:307 or 01:160:315 (Honors) | 4 | | |
| <input type="checkbox"/> Organic Chemistry II ¹ | 01:160:308 or 01:160:316 (Honors) | 4 | | |
| <input type="checkbox"/> Organic Chemistry Lab ¹ | 01:160:311 | 2 | | |
| <input type="checkbox"/> General Physics I ^{1, 4} | 01:750:203 | 3 | | |
| <input type="checkbox"/> General Physics II ^{1, 4} | 01:750:204 | 3 | | |
| <input type="checkbox"/> Gen. Physics Lab I ^{1, 4} | 01:750:205 | 1 | | |
| <input type="checkbox"/> Gen. Physics Lab II ^{1, 4} | 01:750:206 | 1 | | |
| <input type="checkbox"/> Genetic Analysis I ^b | 01:470:384 | 4 | | |
| <input type="checkbox"/> Genetic Analysis II ^b | 01:470:385 | 4 | | |
| <input type="checkbox"/> Lab Course Req. ^b | 01:447:315 or 01:447:302 or 01:447:203 or 01:447:303 or 01:694:214 or 01:694:215 or 01:694:316 (3 cr) | 3 | | |
| <input type="checkbox"/> Mol Bio & Biochem. ⁷ | 01:694:301 or 01:694:407 | 3 | | |
| <input type="checkbox"/> Comm. in Genetics ^{8, 9} | 01:447:430 or 01:447:414 & 01:447:415 (Honors, Thesis Writ.) | 3 1.5, 1.5 | | |
| <input type="checkbox"/> Research & Scholar. ¹⁰ | 01:447:406, 407, 408, 409, 410, 488, 489, 490. Course: _____ | 3-6 | | |
| <input type="checkbox"/> Research & Scholar. ¹⁰ | 01:447:406, 407, 408, 409, 410, 488, 489, 490. Course: _____ | 3-6 | | |
| <input type="checkbox"/> Research & Scholar. ¹⁰ | 01:447:406, 407, 408, 409, 410, 488, 489, 490. Course: _____ | 3-6 | | |
| <input type="checkbox"/> Research & Scholar. ¹⁰ | 01:447:406, 407, 408, 409, 410, 488, 489, 490. Course: _____ | 3-6 | | |
| <input type="checkbox"/> Research & Scholar. ¹⁰ | 01:447:406, 407, 408, 409, 410, 488, 489, 490. Course: _____ | 3-6 | | |
| <input type="checkbox"/> Research & Scholar. ¹⁰ | 01:447:406, 407, 408, 409, 410, 488, 489, 490. Course: _____ | 3-6 | | |
| <input type="checkbox"/> Genetics Elective ^{11, 12, 13} | See attached table. Course: _____ | 3 | | |
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The listed courses are strongly recommended for the major. Any substitutions require the permission of the departmental Vice Chair. A grade of "C" or better is required for graduation for all courses credited towards the major. Genetics major core requirements (i.e., 447:384-385, the lab courses, 694:301, 694:407, 447:430, 447:414-415), electives, and research courses cannot be satisfied by transfer courses.

Students must take a total of 18 credits of (1) Research & Scholarship and (2) Electives, with a minimum of 6 credits of each.

Guide to Notes:

* Prerequisite courses required to declare the Genetics major

1. Appropriate AP credits or transfer courses approved by OUGI may be substituted.
2. Students who previously received credit for the General Bio series 01:119:101-102 will have satisfied the General Biology and Laboratory requirement (i.e., 01:119:115-117).
3. Several substitutions for the mathematics requirement are possible but not recommended. All require the permission of the departmental Vice Chair:
 - a. 01:640:136 (Calc II, 4 cr) may be substituted for 01:640:138.
 - b. 01:640:192 (Honors Calc II, 4 cr) may be substituted for 01:640:152.
 - c. 01:960:379 (Basic Prob Stat, 3 cr) may be substituted for 01:960:401.
4. Several substitutions for General Physics are possible but not recommended. All require the permission of the departmental Vice Chair:
 - a. 01:750:193-194 (Physics for Sciences, 4,4 cr) or 01:750:201-202 (Extended Gen Physics, 4,4 cr) may be substituted for 01:750:203-204 (3,3 cr) and 01:750:205-206 (1,1 cr). These are two-semester courses, with a combination of lecture and lab.
 - b. 01:750:271-272 (Honors Physics 3,3 cr) may be substituted for 01:750:203-204 (3,3 cr).
 - c. 01:750:275-276 (Classical Physics Lab, 1,1 cr) may be substituted for 01:750:205-206 (1,1 cr).
5. 01:447:380 (Genetics) may not be substituted for either 01:447:384 or 01:447:385 (Genetic Analysis I & II).
6. 01:694:214 and 01:694:215 are only offered to first-year students with AP Biology credit and AP General Chemistry credits (or taking General Chemistry concurrently). 01:447:203 is only offered to first-year students in the SAS Honors Program or the Honors College. Students cannot receive credit for both 01:447:203 and 01:447:302.
7. 11:115:403-404 (General Biochem, 3,3 cr.) may be substituted but are not recommended. Requires the permission of the departmental Vice Chair
8. 01:447:430 must be taken after completing at least one semester of independent research.
9. Students doing an Honors thesis in Genetics will take the 01:447:414-415 series in their Senior year (concurrent with Honors in Genetics 01:447:408-409) instead of 01:447:430.
10. Research & Scholarship courses are listed more than once because they can be taken more than once.
 - a. Genetics major research and scholarship must be mentored by a Rutgers faculty member to count towards the requirement.
 - b. Research & scholarship courses must be taken with a single advisor over two semesters or more.
 - c. No more than 6 credits of 01:447:489-490 may count towards the Genetics major.
 - d. 01:447:410 can be combined with one of the other research courses listed above. This course can be taken only once.
 - e. 01:447:488 can be taken only once and is combined with one of the other research courses listed above to satisfy the research requirement.
 - f. A minimum of 6 credits of 01:447:408-409 and a total of 12 credits of combined research (01:447:406-407, 01:447:408-409, 01:447:410, or 01:447:488) is required to graduate with departmental Honors.
11. At least 50% of the courses taken to satisfy a Genetics Elective must be taken within the Genetics Major (i.e., 447 courses): 203, 216, 302, 303, 354, 370, 451, 460, 465, 479, 481, 484, 486, 495.
12. An additional Genetics Core Lab Course can be used as an elective.
13. Students may not receive credit for both 01:447:245 and 01:447:495.

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ELECTIVES

6 to 12 credits minimum; *students must take a total of 18 credits of (1) Research & Independent Scholarship and (2) Electives combined.*

| <i>Elective Course</i> | <i>Course Number</i> | <i>Cr.</i> | <i>Typically Offered</i> |
|--|----------------------|------------|--------------------------|
| Introduction to Computer Science ¹¹ | 01:198:111 | 4 | Both |
| Data Structures ¹¹ | 01:198:112 | 4 | Both |
| Honors Computational Genetics ¹² | 01:447:203 (Honors) | 3 | Fall |
| Analysis of Sci Literature | 01:447:216 (Honors) | 3 | Spring |
| Quant Biology & Bioinformatics ¹² | 01:447:302 | 3 | Spring |
| Computational Genetics for Big Data ¹² | 01:447:303 | 3 | Spring |
| Introduction to Research in Genetics ¹² | 01:447:315 | 3 | Spring |
| Soc., Leg., Ethic. Issues Genetics | 01:447:354 | 3 | Fall |
| Developmental Genetics | 01:447:370 | 3 | Spring |
| Genomes | 01:447:451 | 3 | Fall |
| Genetics of Compulsive Behavior | 01:447:460 | 3 | Spring |
| Mutant Isolation & Analysis | 01:447:465 | 3 | Fall |
| Special Topics in Genetics, Fall | 01:447:478 | 3 | Fall |
| Special Topics in Genetics, Spring | 01:447:479 | 3 | Spring |
| Topics in Human Genetics | 01:447:481 | 3 | Fall |
| Behavioral & Neural Genetics | 01:447:484 | 3 | Spring |
| Evolutionary Genetics | 01:447:486 | 3 | Fall |
| Cancer ¹³ | 01:447:495 | 3 | Fall |
| Molecular Pathways & Sig Trans ¹¹ | 01:694:411 | 3 | Fall |
| Chromatin and Epigenomics ¹¹ | 01:694:413 | 3 | Fall |
| Spec. Top. Mol. Bio. & Biochem. ¹¹ | 01:694:421 | 3 | Spring |
| Mol Bio of Gene Reg & Develop. ¹¹ | 01:694:492 | 3 | Spring |
| Methods & Applications Mol. Bio. ¹¹ | 11:126:427 | 4 | Fall |
| Advanced Tech in Biosciences ¹¹ | 11:126:444 | 3 | Spring |
| Nucleotide Sequence Analysis ¹¹ | 11:126:483 | 3 | Both |
| Bioinformatics ¹¹ | 11:126:485 | 3 | Spring |
| Microbial Genetics & Genomics ¹¹ | 11:680:480 | 3 | Spring |
| Human Genetics ¹¹ | 16:681:535 | 3 | Fall |