Bachelor of Science in Biology: Concentration in Physiology – BIOL Associate Degree for Transfer Roadmap

This is a sample pathway for students who transfer to San Francisco State University in the current Bulletin year with an AS-T in Biology. Thirty-two units in the major (BIOL 230/BIOL 240, CHEM 115/CHEM 215/CHEM 216, MATH 226, required PHYS sequence) and 33 units of lower-division GE requirements have been satisfied. Check with a major advisor about the most appropriate course sequence. Degree completion guaranteed in 60 units; see the Associate Degree for Transfer (ADT) section for more information (http://bulletin.sfsu.edu/undergraduate-admissions/transfer-students).

Course | Title | Units
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First Semester | CHEM 130 | General Organic Chemistry (Major Lower-Division) | 3
Select One (Major Lower-Division): | MATH 124 | Elementary Statistics (B4) | 3-4
| MATH 227 | Calculus II | 1
| BIOL 358 | Forensic Genetics: Math Matters | 1
| BIOL 458 | Biometry | 1
US History (bulletin.sfsu.edu/undergraduate-education/graduation-requirements/#USHaGR) or University Elective if US History met before transfer | 3
GE Area C | 3
GE Area D | 3
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Units | 16

Second Semester | BIOL 350 | Cell Biology (Major Upper-Division) | 3
| BIOL 355 | Genetics (Major Upper-Division) | 3
| BIOL 612 or BIOL 630 | Human Physiology (Major Physiology Core) or Animal Physiology | 3
| CHEM 340 or CHEM 349 | Biochemistry I (Major Upper-Division) or General Biochemistry | 3
GE Area UD-C: Upper-Division Arts and/or Humanities | 3
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Units | 15

Third Semester | Select One (Physiology Lab): | 2-4
| BIOL 526 | Plant Molecular Physiology Laboratory | 1
| BIOL 613GW | Human Physiology Laboratory - GWAR | 2
| BIOL 631GW | Animal Physiology Laboratory - GWAR | 2
Physiology Core Courses (6 Units Total) - Take One | 3
| Major Upper-Division Electives (9-11 Units Total) - Take One | 4
| GE Area UD-D: Upper-Division Social Sciences | 3
| University Elective | 3
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Units | 16

Fourth Semester | Physiology Core Courses (6 Units Total) - Take One | 3
| Major Upper-Division Electives (9-11 Units Total) - Take Two | 4
| University Elective | 3
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Units | 13
Total Units | 60

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1 BIOL 355 satisfies GE Area UD-B: Upper-Division Physical and/or Life Sciences.
2 Students must complete at least one GWAR course in order to graduate.
3 Physiology Core Courses (9 units)
Select nine units from the following (one lecture must be BIOL 612 or BIOL 630)
| BIOL 525 Plant Physiology (3 units) |
| BIOL 612 Human Physiology (3 units) |
| BIOL 616 Cardiorespiratory Physiology (3 units) |
| BIOL 617 Environmental Physiology (3 units) |
| BIOL 618 Biology of Aging (3 units) |
| BIOL 620 Endocrinology (3 units) |
| BIOL 621 Reproductive Physiology (3 units) |
| BIOL 622 Hormones and Behavior (3 units) |
| BIOL 630 Animal Physiology (3 units) |
| BIOL 640 Cellular Neurosciences (3 units) |
| BIOL 642 Neural Systems Physiology (3 units) |
Guided Electives (9-11 units)
Select 9-11 units in consultation with an advisor from the following:
Criteria for elective units: one elective must contain a laboratory component, one elective must be chosen from each of the emphases listed below, and additional electives may be selected from the list of Physiology core courses and/or either of the areas listed below.

**Cellular and Molecular**
- BIOL 351GW Experiments in Cell and Molecular Biology - GWAR (4 units)
- BIOL 357 Molecular Genetics (3 units)
- BIOL 382 Developmental Biology (3 units)
- BIOL 435 Immunology (3 units)
- BIOL 615 Molecular Pathophysiology (3 units)
- BIOL 623 Pharmacology (3 units)
- BIOL 652 Science Education Partners in Biology (4 units)
- BIOL 699 Independent Study in Biology (1-3 units)
- BIOL 865 Advances in Physiology and Behavioral Biology (2 units)
- CHEM 343 Biochemistry I Laboratory (3 units)

**Ecological, Anatomical, and Evolutionary**
- BIOL 328 Human Anatomy (4 units)
- BIOL 337 Evolution (3 units)
- BIOL 482 Ecology (4 units)
- BIOL 504 Biology of the Fungi (4 units)
- BIOL 505 Comparative Anatomy of Vascular Plants (4 units)
- BIOL 525 Plant Physiology (3 units)
- BIOL 526 Plant Molecular Physiology Laboratory (2 units)
- BIOL 529GW Plant Ecology - GWAR (4 units)
- BIOL 555 Marine Invertebrate Zoology (4 units)
- BIOL 570GW Biology of Fishes - GWAR (4 units)
- BIOL 585 Marine Ecology (3 units)
- BIOL 586 Marine Ecology Laboratory (2 units)
- BIOL 600 Animal Behavior (3 units)
- BIOL 614 Vertebrate Histology (4 units)
- BIOL 622 Science Education Partners in Biology (4 units)
- BIOL 699 Independent Study in Biology (1-3 units)
- BIOL 865 Advances in Physiology and Behavioral Biology (2 units)

**To Do at SF State:**
- Enough total units to reach 120 minimum for graduation; 40 units minimum at the upper-division level, to include the following:

**University-Wide Requirements: 15 Units**
- Lower-Division GE (6 units) – Area C (3 units in any subarea) and Area D (3 units). D2 courses also satisfy US History; D3 courses also satisfy US/CA Government.
- Upper-Division GE (9 units): Courses may satisfy both American Institutions and Upper-Division GE if approved for multiple areas.
- Students entering this major with the AS-T in Biology are not required to fulfill SF State Studies or Complementary Studies requirements.

**Biology – Physiology Major: 34–40 Units**
BIOL 230/BIO 240, MATH 226, all PHYS,
CHEM 115/CHEM 215/CHEM 216 met in transfer.
- Lower-Division requirements (3–7 units): CHEM 130; MATH 124 or MATH 227 if not met in transfer (BIOL 358 or BIOL 458 may substitute for MATH 124 or MATH 227)

**University Electives: 3 Units or More**
Depends on course choices made at the community college, how transferred units are applied to the requirements above, and course choices at SF State - some courses may meet more than one requirement, e.g. both in UD GE and the major.