### BACHELOR OF SCIENCE IN BIOLOGY: CONCENTRATION IN ECOLOGY – 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.

Degree completion guaranteed in 60 units; see the Associate Degree for Transfer (ADT) section for more information.

**Course** | **Title** | **Units**
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**First Semester**
BIOL 529GW | Plant Ecology - GWAR | 4
CHEM 130 | General Organic Chemistry | 3
GE Area A: Written English Communication II (A4) | 3
Take University Elective if requirement met in transfer | 1
GE Area C: Arts (C1) or Humanities (C2) or Humanities: Literature (C3) | 3
US History ([bulletin.sfsu.edu/undergraduate-education/graduation-requirements/#USHaGR](http://bulletin.sfsu.edu/undergraduate-education/graduation-requirements/#USHaGR)) or University Elective if US History met before transfer | 3

**Units** | **16**

**Second Semester**
BIOL 355 | Genetics | 2 | 3
BIOL 458 | Biometry | 4
GE Area D: Social Sciences (D1) or U.S. History (D2) or U.S. and California Government (D3) | 3
GE Area UD-C: Upper-Division Arts and/or Humanities (Consider SF State Studies Course) | 3
University Elective | 1

**Units** | **14**

**Third Semester**
BIOL 337 | Evolution | 3
BIOL 525 or BIOL 630 | Plant Physiology or Animal Physiology | 3
Major Upper-Division Requirement – upon advisement (6-8 units) | 3-4
GE Area UD-D: Upper-Division Social Sciences (Consider SF State Studies Course) | 3
Major Upper Division Elective | 4

**Units** | **16**

1. If ENG 214 equivalent not taken before transfer, GWAR course must be taken in a subsequent semester. Timely progress to degree will be affected.
2. BIOL 355 also satisfies GE Area UD-B: Upper Division Physical and/or Life Sciences.
3. **Major Upper-Division Requirement**
   - Select 6-8 units on advisement from the following:
     - BIOL 482 Ecology (4 units)
     - BIOL 490 Ecology of Infectious Diseases (4 units)
     - BIOL 529GW Plant Ecology - GWAR (4 units)
     - BIOL 530 Conservation Biology (3 units)
     - BIOL 532 Restoration Ecology (3 units)
     - BIOL 534 Wetland Ecology (4 units)
     - BIOL 577 Ecological and Environmental Modeling (4 units)
     - BIOL 580 Limnology (3 units)
     - BIOL 582 Biological Oceanography (4 units)
     - BIOL 585 Marine Ecology (3 units)
     - BIOL 586 Marine Ecology Laboratory (2 units)

4. **Major Upper-Division Electives**
   - Select 11-14 units upon advisement from the alternates not used in fulfilling the requirements listed above, or any other upper division biology courses not specifically excluded for major credit, or any graduate course in biology.

To Do at SF State:

- **University-Wide Requirements: 12–21 Units**
  - ENG 214 or equivalent A4 course (0–3 units) if not taken before transfer
  - American Institutions (0–6 units): See next bullet.
  - Lower division GE (6 units) – Area C (3 units in any subarea) and Area D (3 units; D2 satisfies US History if needed; D3 satisfies US/CA Government requirement if needed)
  - Upper division GE (6 units to do): 1) Major course satisfies UD-B. 2) Take UD-C and UD-D courses. See notes.
  - Students entering this major with the AS-T in Biology are not required to fulfill SF State Studies or Complementary Studies requirements.

- **Biology – Ecology Major: 38 Units**
  - Completed: BIOL 230/BIOL 240, MATH 226, all PHYS, and CHEM 115/CHEM 215/CHEM 216.
  - Lower Division requirements (3 units): CHEM 130
  - Major Upper Division Requirements/GWAR (21 units)
  - Major Upper Division Electives (14 units) – upon advisement.

- **University Electives: Three or More Units**
  - 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., in both UD GE and the major.