

## **Bachelor of Science - Concentration in Physiology**

Note: All **BIOL & PHYS** prerequisites must be passed with a **C- or better**, unless stated otherwise. All **CHEM & MATH** prerequisites must be passed with a **C or better**, unless stated otherwise.

| Requirement                                                                                                               | if taken | Course                     |                                       | Units | Prerequisites by ID                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------|----------|----------------------------|---------------------------------------|-------|-----------------------------------------------------------------------------------------------------------|
|                                                                                                                           |          | ID                         | Title                                 |       |                                                                                                           |
| Division Courses                                                                                                          |          |                            |                                       |       |                                                                                                           |
| Courses may be transferable from community college; check <a href="http://ASSIST.org">ASSIST.org</a> for more information |          |                            |                                       |       |                                                                                                           |
| All Required                                                                                                              |          | BIOL 230                   | Introductory Biology 1                | 5     | None                                                                                                      |
|                                                                                                                           |          | BIOL 240                   | Introductory Biology 2                | 5     | BIOL 230                                                                                                  |
|                                                                                                                           |          | CHEM 115                   | General Chemistry 1 + Lab             | 5     | see bulletin: <a href="http://bulletin.sfsu.edu/courses/chem/">http://bulletin.sfsu.edu/courses/chem/</a> |
|                                                                                                                           |          | CHEM 215/216               | General Chemistry 2 + Lab             | 3/2   | CHEM 115, CHEM 215 (concurrent OK for lab)                                                                |
|                                                                                                                           |          | CHEM 130 -OR- CHEM 233/335 | General Organic Chemistry             | 3     | CHEM 115                                                                                                  |
|                                                                                                                           |          | MATH 226                   | Calculus 1                            | 4     | see bulletin: <a href="http://bulletin.sfsu.edu/courses/math/">http://bulletin.sfsu.edu/courses/math/</a> |
| <b><u>CHOOSE 1 ONLY</u></b>                                                                                               |          | MATH 124                   | Elementary Statistics                 | 3     | see bulletin: <a href="http://bulletin.sfsu.edu/courses/math/">http://bulletin.sfsu.edu/courses/math/</a> |
|                                                                                                                           |          | MATH 227                   | Calculus 2                            | 4     | MATH 226                                                                                                  |
|                                                                                                                           |          | BIOL 358                   | Forensic Genetics: Math Matters       | 4     | BIOL 230, MATH 199                                                                                        |
|                                                                                                                           |          | BIOL 458                   | Biometry                              | 4     | One college-level Biology course                                                                          |
| <b><u>CHOOSE ONLY 1 SERIES</u></b> (PHYS 111/121 -OR- PHYS 220/230)                                                       |          | PHYS 111/112               | General Physics 1 + Lab               | 3/1   | MATH 198 or MATH 199                                                                                      |
|                                                                                                                           |          | PHYS 121/122               | General Physics 2 + Lab               | 3/1   | PHYS 111, PHYS 112                                                                                        |
|                                                                                                                           |          | PHYS 220/222               | General Physics with Calculus 1 + Lab | 3/1   | Satisfactory score on placement exam, MATH 226, PHYS 222 and MATH 227 (concurrent OK)                     |
|                                                                                                                           |          | PHYS 230/232               | General Physics with Calculus 2 + Lab | 3/1   | PHYS 220, MATH 227                                                                                        |

### **Total Units for Lower Division**

|                                                                                                          |  |                   |                                |   |                                                   |
|----------------------------------------------------------------------------------------------------------|--|-------------------|--------------------------------|---|---------------------------------------------------|
| <b>Division Courses</b>                                                                                  |  |                   |                                |   |                                                   |
| <i>Courses do not need to be taken in order, only requirement is taking the prerequisites</i>            |  |                   |                                |   |                                                   |
| All Required                                                                                             |  | <b>BIOL 350</b>   | Cell Biology                   | 3 | BIOL 230, BIOL 240, CHEM 115                      |
|                                                                                                          |  | <b>BIOL 355</b>   | Genetics                       | 3 | BIOL 230, BIOL 240, CHEM 115 (C- or better)       |
| <b><u>CHOOSE 1 ONLY</u></b>                                                                              |  | <b>CHEM 340</b>   | Biochemistry 1                 | 3 | CHEM 215, CHEM 233, CHEM 335                      |
|                                                                                                          |  | <b>CHEM 349</b>   | General Biochemistry           | 3 | CHEM 215, (CHEM 130 -OR- CHEM 335 (C- or better)) |
| Physiology Core Classes: <b><u>CHOOSE 3 classes</u></b> (1 course must be either BIOL 612 -OR- BIOL 630) |  | <b>BIOL 525</b>   | Plant Physiology               | 3 | BIOL 230, BIOL 240, CHEM 130                      |
|                                                                                                          |  | <b>BIOL 612</b>   | Human Physiology               | 3 | BIOL 230, BIOL 240, CHEM 130, PHYS 121            |
|                                                                                                          |  | <b>BIOL 616</b>   | Cardiorespiratory Physiology   | 3 | GE A2, (BIOL 612 -OR- BIOL 630), PHYS 121         |
|                                                                                                          |  | <b>BIOL 617</b>   | Environmental Physiology       | 3 | BIOL 612 -OR- BIOL 630                            |
|                                                                                                          |  | <b>BIOL 618</b>   | Biology of Aging               | 3 | (BIOL 212 -OR- BIOL 612), BIOL 350, BIOL 355      |
|                                                                                                          |  | <b>BIOL 620</b>   | Endocrinology                  | 3 | BIOL 230, BIOL 240                                |
|                                                                                                          |  | <b>BIOL 621</b>   | Reproductive Physiology        | 3 | BIOL 230, BIOL 240, BIOL 330, CHEM 130            |
|                                                                                                          |  | <b>BIOL 622</b>   | Hormones and Behavior          | 3 | BIOL 230, BIOL 240                                |
|                                                                                                          |  | <b>BIOL 630</b>   | Animal Physiology              | 3 | BIOL 230, BIOL 240, (CHEM 130 -OR- CHEM 233)      |
|                                                                                                          |  | <b>BIOL 640</b>   | Cellular Neurosciences         | 3 | BIOL 230, BIOL 240, CHEM 130, PHYS 121            |
| Physiology Lab: <b><u>CHOOSE 1 ONLY</u></b>                                                              |  | <b>BIOL 526</b>   | Plant Molecular Physiology Lab | 2 | BIOL 230, BIOL 240, CHEM 130                      |
|                                                                                                          |  | <b>BIOL 613GW</b> | Human Physiology Lab           | 3 | GE A2, BIOL 230, BIOL 240, CHEM 130, PHYS 121     |
|                                                                                                          |  | <b>BIOL 631GW</b> | Animal Physiology Lab          | 4 | GE A2, (BIOL 612 -OR- BIOL 630)                   |

| <div> <div>Upper Division Electives</div> <div> Choose 3 courses total: at least 1 course from each emphasis + a LAB course from either emphasis (indicated by *)<br/> -OR-<br/> 2 courses total (1 from each emphasis) and add a 4th Physiology Core class </div> </div> |                     |                                               |     |                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------------------------------------|-----|----------------------------------------------------------|
| Cell and Molecular Emphasis:<br><b>CHOOSE 1 ONLY</b>                                                                                                                                                                                                                      | <b>BIOL 351GW*</b>  | Experiment in Cell & Molecular Biology        | 4   | GE A2, BIOL 350, BIOL 355                                |
|                                                                                                                                                                                                                                                                           | <b>BIOL 357</b>     | Molecular Genetics                            | 3   | BIOL 355                                                 |
|                                                                                                                                                                                                                                                                           | <b>BIOL 382</b>     | Developmental Biology                         | 3   | BIOL 350, BIOL 355                                       |
|                                                                                                                                                                                                                                                                           | <b>BIOL 401</b>     | General Microbiology                          | 3   | BIOL 230, BIOL 240, CHEM 233 (C- or better)              |
|                                                                                                                                                                                                                                                                           | <b>BIOL 435</b>     | Immunology                                    | 3   | BIOL 350 -OR- BIOL 401                                   |
|                                                                                                                                                                                                                                                                           | <b>BIOL 615</b>     | Molecular Pathophysiology                     | 3   | BIOL 350, BIOL 355, BIOL 612                             |
|                                                                                                                                                                                                                                                                           | <b>BIOL 623</b>     | Pharmacology                                  | 3   | BIOL 230, BIOL 240, BIOL 612, CHEM 130                   |
|                                                                                                                                                                                                                                                                           | <b>BIOL 652</b>     | Science Education Partners in Biology         | 4   | BIOL 230, BIOL 240, one upper-division Biology course    |
|                                                                                                                                                                                                                                                                           | <b>BIOL 699*</b>    | Independent Study in Biology                  | 1-3 | Senior standing or consent from instructor               |
|                                                                                                                                                                                                                                                                           | <b>BIOL 865</b>     | Advances in Physiology and Behavioral Biology | 2   | Consent from instructor                                  |
|                                                                                                                                                                                                                                                                           | <b>CHEM 343*</b>    | Biochemistry 1 Lab                            | 3   | CHEM 216, CHEM 234, (CHEM 340 - OR- CHEM 349)            |
| Ecological, Anatomical, and Evolutionary Emphasis:<br><b>CHOOSE 1 ONLY</b>                                                                                                                                                                                                | <b>BIOL 328*</b>    | Human Anatomy                                 | 4   | BIOL 230                                                 |
|                                                                                                                                                                                                                                                                           | <b>BIOL 337</b>     | Evolution                                     | 3   | BIOL 230, BIOL 240, BIOL 355                             |
|                                                                                                                                                                                                                                                                           | <b>BIOL 482*</b>    | Ecology                                       | 4   | BIOL 230, BIOL 240                                       |
|                                                                                                                                                                                                                                                                           | <b>BIOL 504*</b>    | Biology of the Fungi                          | 4   | BIOL 230, BIOL 240                                       |
|                                                                                                                                                                                                                                                                           | <b>BIOL 505*</b>    | Comparative Anatomy of Vascular Plants        | 4   | BIOL 230, BIOL 240                                       |
|                                                                                                                                                                                                                                                                           | <b>BIOL 525</b>     | Plant Physiology                              | 3   | BIOL 230, BIOL 240, CHEM 130                             |
|                                                                                                                                                                                                                                                                           | <b>BIOL 526*</b>    | Plant Molecular Physiology Lab                | 2   | BIOL 230, BIOL 240, CHEM 130                             |
|                                                                                                                                                                                                                                                                           | <b>BIOL 529GW*</b>  | Plant Ecology                                 | 4   | GE A2, BIOL 230, BIOL 240                                |
|                                                                                                                                                                                                                                                                           | <b>BIOL 555*</b>    | Marine Invertebrate Zoology                   | 4   | BIOL 230, BIOL 240, one upper-division Ecology course    |
|                                                                                                                                                                                                                                                                           | <b>BIOL 570GW</b>   | Biology of Fishes                             | 3   | GE A2, BIOL 230, BIOL 240                                |
|                                                                                                                                                                                                                                                                           | <b>BIOL 585/586</b> | Marine Ecology + Lab                          | 3/2 | BIOL 230, BIOL 240                                       |
|                                                                                                                                                                                                                                                                           | <b>BIOL 600</b>     | Animal Behavior                               | 3   | BIOL 230, BIOL 240                                       |
|                                                                                                                                                                                                                                                                           | <b>BIOL 614*</b>    | Vertebrate Histology                          | 4   | BIOL 230, BIOL 240                                       |
|                                                                                                                                                                                                                                                                           | <b>BIOL 652</b>     | Science Education Partners in Biology         | 4   | BIOL 230, BIOL 240, or one upper-division Biology course |
|                                                                                                                                                                                                                                                                           | <b>BIOL 699*</b>    | Independent Study in Biology                  | 1-3 | Senior standing or consent from instructor               |
|                                                                                                                                                                                                                                                                           | <b>BIOL 865*</b>    | Advances in Physiology and Behavioral Biology | 2   | Consent from instructor                                  |
| <b>Substitutions, if any</b>                                                                                                                                                                                                                                              |                     |                                               |     |                                                          |
|                                                                                                                                                                                                                                                                           |                     |                                               |     |                                                          |
|                                                                                                                                                                                                                                                                           |                     |                                               |     |                                                          |
|                                                                                                                                                                                                                                                                           |                     |                                               |     |                                                          |

**Total Units for Upper Division**  
**Total Units Needed for Degree**