

Guidelines for the "Basic Science and Math" Requirements Fisheries and Wildlife Science, OSU

The following guidelines have been developed to aid prospective students who want to complete some of their basic science and math requirements prior to their admittance to Oregon State University and the Fisheries and Wildlife Science (FW) program. This coursework does not have to be completed prior to starting the program - it can be done while a student is in the FW program. These are general guidelines only – all credit transfers and course substitutions must be approved by a FW academic advisor.

Biology:

A principles of biology sequence intended for science/biology majors, with labs taken in-person, at an accredited institution. On-line laboratories are not acceptable. At OSU, the courses are Biology 211/212/213; the sequence you plan to take or substitute must be of equivalent duration and rigor.

- Two semesters or three quarters equivalent to BI 211/212/213 at OSU
- If it is not clear based on the college course description that the biology sequence is intended for science majors and equivalent to BI 211/212/213, you should follow these steps:
 - 1) Consult with the college's science department or biology instructor and obtain a syllabus.
 - 2) Determine if the college has transfer agreements with an accredited University. If so, determine what biology courses are accepted for transfer and will meet the basic Freshman biology sequence for the B.S. of Biology degree at that particular University.
 - 3) Contact OSU ECampus for further clarification: ecampus@oregonstate.edu
- **BI 211/212/213 Course Content:** Origins of life, energy transformations, plant and animal diversity and physiology, cell biology, organ systems, genetics, evolution, natural selection, and ecology. Textbook: Cain, Bowman and Hacker, "Ecology", Sinauer Associates.

Chemistry:

A general chemistry sequence for students who have had no previous training in chemistry and for those whose college aptitude test scores indicate the need for a more elementary introduction to chemistry **OR** a general chemistry sequence for students majoring in most sciences, pharmacy, and chemical engineering; full year of lab

- Two semesters or three quarters equivalent to CH 121/122/123 or CH 221/222/223 at OSU
- Available online at OSU ECampus: CH 121/122/123
- **CH 121/122/123 Course Content:** Chemistry and measurement; atoms, molecules and ions; chemical formulas and equations; reactions; gases; thermochemistry; quantum theory of the atom; atomic electron configurations; bonding and molecular structure; hybridization and molecular orbitals, intermolecular forces; chemical kinetics and equilibrium; acids and bases equilibrium; thermodynamics; electrochemistry; nuclear chemistry; transition elements and coordination compounds; organic chemistry.
- **CH 221/222/223 Course Content:** a general chemistry sequence for students majoring in science. Not available online at OSU.

Mathematics:

A mathematics course covering higher-level applied mathematics or calculus. This should be one quarter or one semester equivalent to MTH 241, 245, or 251 at OSU.

- Available online at OSU ECampus
- Students should complete a pre-calculus course (college algebra – OSU equivalent is MTH 111/112) before attempting these courses
- **MTH 241 Course Content:** Differential and integral calculus for polynomial, logarithmic, and exponential functions and their applications to business, management and social sciences.
Prereq: MTH 111
- **MTH 245 Course Content:** Techniques for counting, probability, and elements of statistics including binomial and normal distributions. Introductory matrix algebra. Elements of linear programming. Prereq: MTH 111
- **MTH 251 Course Content:** Rates of change: the derivative, velocity, and acceleration. Algebraic rules of differential calculus and derivatives of polynomial, rational, and trigonometric functions. Maximum-minimum problems, curve sketching, and other applications. Anti-derivatives and simple motion problems.
Prereq: MTH 112

Statistics:

- Two semesters or two quarters of statistical methods equivalent to ST 351 and ST 352 at OSU.
- Taking ST 201 AND ST 211 is equivalent to ST 351. Many colleges offer introductory statistics courses (equivalent to OSU MTH 243) that will count towards ST 351 if a statistical computing lab is included. If it does not include a lab, then you must take ST 211 at OSU in addition to MTH 243 to get credit for ST 351.
- ST 201, 211, 351, and 352 are available online at OSU ECampus
- **ST 351 Course Content:** Descriptive statistics, random variables, normal distribution, sampling distributions, confidence intervals and hypothesis tests for means using one and two samples; must include lab.
- **ST 352 Course Content:** Simple and multiple linear regression, correlation, analysis of categorical data

For students who may consider graduate school, taking additional chemistry (200-level instead of 100-level, plus organic chemistry), math (=calculus) and statistics is essential. Check with your faculty advisor if you have questions on this!