

# Biology Major – Pre-Education Option Guide 2024-25

Document available online at <https://ib.oregonstate.edu/undergraduate/advising/college-advising-guide>.

Courses used to satisfy these requirements also satisfy the Physics or Computational and Quantitative Electives and the Experiential Learning or Integrative Biology Elective in the biology major. This option is designed for the OSU Master of Science in Education program not the OSU Education Double degree. **Previous versions of this option are different and tracked in MyDegrees – see MyDegrees for details. All courses and prerequisites are subject to change, and the listing of terms offered is based on projected Corvallis offerings.**

## Licensure and Endorsement:

**Teaching license:** A license specifies that you are qualified to teach. This option meets the requirements for most graduate teacher licensure programs awarding endorsements in middle school integrated sciences, high school biology and/or high school chemistry. Students should work with IB pre-education advisor to select electives appropriate to their goals. Students should carefully review the program requirements for teaching license programs they plan to apply to. OSU offers an [MS in Education \(Science Education\)](#) and the [OSU Education Double Degree](#). For additional information about either program you can talk to [Thomas Shelley](#).

**Endorsements:** These specify additional content you are qualified to teach. The biology major with the pre-education option will cover the needed courses for the biology endorsement. If you want, you can pursue additional endorsements in chemistry and/or integrated science using the electives listed below. All endorsements require specific courses as outlined on the respective [Content Mastery sheets](#).

## Pre-Education Information:

**Classroom Experience:** Experience in the classroom is required for biology pre-education students and is gained through the practicum courses required for the pre-ed option (see ED 309 information). Additional experience in a teaching and learning environment is highly recommended. It is important to get experience early on in your degree to help you determine if a career in education is right for you. There are many opportunities on campus to get teaching experience. Use the resources below to get involved in formal and informal education.

**Experience Working with Youth:** The MS degree requires you have either of the following:

- **60 hours experience:** 50 hours with middle or HS students and 10 hours classroom observation in biology at the grade level you want to teach. If you have already completed these hours, talk with the pre-ed advisor about options and potential alternatives for ED 309.
- **ED 309 (required for option if not enough hours – see above):** To enroll in ED 309, you are required to complete fingerprinting and a criminal background check through the College of Education. ED 309 will match you with a local teacher and requires teaching practicum hours during the term. More information about [ED 309 and the Intake/Override form is here](#). [Thomas Shelly](#) can help with planning and other questions.

**BI 309 and BI 409:** These courses facilitate work with faculty in delivering college-level instruction, as well as formal training on classroom and lab instruction. This is particularly valuable for students aspiring to teach high school biology (especially AP courses) or community college settings.

**Difference, Power and Discrimination courses:** Although not required, pre-education students should consider ED 216 Purpose, Structure and Function of Education in a Democracy or ED 219 Social Justice, Civil Rights and Multiculturalism in Education as part of their Baccalaureate Core.

**Accelerated Master's Platform (AMP):** The AMP program allows accepted seniors to take graduate coursework (generally up to 9cr) that they can apply to their BI major and the OSU MS in science education while paying undergraduate tuition. Students apply junior year, and applicants must have a 3.25+ GPA and 105 credits to apply. Discuss this option early on with the pre-ed advisor if interested. [More information on AMP website](#).

## Science Education Core Courses:

Course	Description	Term(s)	Pre-requisites	Comments
ED 472	Foundations of ESOL Education (3cr)	F, W, Sp	-	-
HDFS 313	Adolescent Development (4cr)	F, Sp	Sophomore +	-
SED 413	Inquiry in Science and Science Education (3cr)	W, online Sp	-	-
PH 201, 202, 203	General Physics (5cr, 5cr, 5cr)	All	MTH 112	-

## Option Electives:

Select three or more elective courses, at least one upper division (300-400 level), to complete the option. Work with the pre-education advisor on which ones make most sense for you. If an elective also relates to an endorsement, it is grouped with other electives for that endorsement. **If you do not have the required experience with youth (see above) you must take ED 309.**

**OSU Integrated Science Endorsement:** Demonstrating content mastery for this endorsement will require four courses beyond the biology major and pre-ed core (as listed on the [Content Mastery sheet](#)). One in each of the Content Areas listed in the last column. The option requires three total electives, though you can choose to do more.

Course	Description	Term(s)	Pre-requisites	Content Area
ATS 201	Climate Science (4cr)	F, W, Sp	CH 233/263	Atmospheric Sciences
ATS 310	Meteorology (4cr)	F	MTH 251 & PH 201, 202	Atmospheric Sciences
GEO 201	Physical Geology (4cr)	F	-	Geology
GEO 202	Earth Systems Science (4cr)	W	-	Geology
GEO 203	Evolution of Planet Earth (4cr)	Sp	-	Geology
GEO 221	Environmental Geology (4cr)	F, Sp	-	Geology
GEO 305	Living with Active Cascade Volcanoes (3cr)	Sp	-	Geology
GEO 306	Minerals, Energy, Water & Environment (3cr)	Sp	-	Geology
GEO 307	National Park Geology and Preservation (3cr)	F	-	Geology
GEO 308	Global Change and Earth Science (3cr)	F	-	Geology
GEO 352	Oregon Geology (4cr)	?	-	Geology
OC 201	Oceanography (4cr)	F, W	-	Oceanography
OC 332	Coastal Oceanography (3cr)	W	-	Oceanography
PH 104	Descriptive Astronomy (4cr)	F, W, Sp	-	Astronomy

**OSU Chemistry Endorsement:**

Course	Description	Term(s)	Pre-requisites	Comments
CH 324	Quantitative Analysis (4cr)	F, W, Sp		
CH 390	Environmental Chemistry (3cr)	W*, Sp*		*Ecampus only
CH 411	Inorganic Chemistry (3cr)	F	CH 233/263 & PH 201, 202, 203	-

**Integrative Biology Electives (not for endorsement):**

Course	Description	Term(s)	Pre-requisites	Comments
BI 333 & 343	Adv. Human Anatomy & Phys & Lab (3cr)	Sp	BI 332, BI 342 (C-)	-
BI 351	Marine Ecology (3cr)	W	BI 221, 222, 223 (C-)	
BI 353	Pacific Northwest Coastal Ecosy. (3cr)	Su*	BI 221, 222, 223 (C-)	*Hatfield
BI 358	Symbiosis and the Environment (3cr)	Alternate W	BI 221, 222, 223 (C-)	-
BI 375	Field Methods Ecol. Restoration (4cr)	Su*	BI 221, 222, 223 (C-)	*Cascades campus
BI 427	Paleobiology (4cr)	Sp	BI 221, 222, 223 (C-)	-
BI 456	Phylogenetics (4cr)	Alternate W	ST 352, BI 311	-
BI 481	Biogeography (4cr)	Alternate W	BI 370	-
BI 483	Population Biology (3cr)	W	(MTH 251 or 227), ST 351, (BI 370 or 311)	-
BI 485	Monster Biology (3cr)	W	BI 311*, BI 370*	*May be concurrent
BI 495	Disease Ecology (3cr)	Alternate W	BI 370	-
Z 350	Animal Behavior (3cr)	W, Sp	BI 221, 222, 223 (C-)	-
Z 361 & 362 <b>or</b>	Invertebrate Zoology & Lab (3cr+2cr)	Sp	BI 221, 222, 223 (C-)	-
Z 461	Marine & Estuarine Invert. (4cr)	Su*	BI 221, 222, 223 (C-)	* Hatfield
Z 365	Biology of Insects (4cr)	Sp*	BI 221, 222, 223 (C-)	*Online only
Z 371 & 372	Vertebrate Zoology & Lab (3cr+2cr)	F	BI 221, 222, 223 (C-)	-
Z 425	Genetics and Development (4cr)	F	BI 311, BB 314	Junior +
Z 432 & 442	Vertebrate Physiology II & Lab (3cr+2cr)	Sp	Z 431 (C-)	-
Z 438	Behavioral Neurobiology (3cr)	Sp	BI 221, 222, 223 (C-) & CH 233/263	-
Z 473	Herpetology (4cr)	F*, Sp*	BI 221, 222, 223 (C-)	*Online only

**Track I Experiential Learning Credits (not for endorsement):**

Course	Description (Credits)	Term(s)	Pre-requisites	Comments
BI 309 <b>OR</b> BI 409	Teaching Practicum <b>OR</b> Advanced Practicum (1-3cr)	F, W, Sp	Departmental approval required*	* <a href="#">See form here</a>
BI 401	Research and Scholarship (1-3cr)	All	Departmental approval required*	* <a href="#">See form here</a>
BI 406	Projects – Curatorial Assistant (1-3cr)	All	Departmental approval required*	* <a href="#">See form here</a>
BI 410	Internship (1-3cr)	All	Departmental approval required*	* <a href="#">See form here</a>
ED 309	Field Practicum (grade 6-12 experience) (3cr?)*	F, W	By application	* <a href="#">See information here</a>

**Other and National Education Resources:**

- [Teacher Standards and Practices Commission \(Oregon teacher licensing\)](#)
- [Teacher certification map](#)
- [U.S. Department of Education](#)
- [National Science Teachers Association](#)
- [National Education Association](#)
- [Oregon Science Teachers Association](#)

**Other Education Opportunities:**

- [Volunteering and Internship list](#)
- [International education internships](#)
- Join the College of Education Aspiring Educators Club to connect with fellow education students. You can email [aspiringeducators@oregonstate.edu](mailto:aspiringeducators@oregonstate.edu) for more details