Biology 479 – Biology Portfolio Checklist
Version F26 – For Students Matriculating in AY 2026-27

Student's Name: _____

Student's Royal ID: _____

Student's Academic Advisor: _____

Introduction

While classrooms provide an essential site for the delivery, discussion, and integration of content and competencies related to biological science education, learning can also take place in a variety of venues. The goal of this Portfolio Checklist is to guarantee that students use these alternate avenues for intellectual and professional development. This program is designed to provide concrete guidelines for implementing student engagement in a variety of learning activities that will ensure that their undergraduate education will consist of both curricular and extracurricular activity. In addition, the Portfolio Checklist provides the department with a way to track the progress of students and to implement assessment mechanisms to improve our major.

BIOL 479 is a required zero-credit course for which each Biology major must register and receive a satisfactory grade (of S) as a necessary part of completing the requirements for the Biology degree. Typically, the student registers for BIOL 479 in their final semester. A satisfactory grade in BIOL 479 is achieved by documenting, in consultation with the student's Academic Advisor, successful completion of the five Programmatic Learning Outcomes that are listed and described on the following pages. Upon completion of the Portfolio Checklist, both the student and the Advisor must sign this checklist, attach supporting documentation, and submit the Portfolio Checklist to the Biology Chair, who will verify its successful completion and assign the grade for BIOL 479.

The student should review progress on completion of the Portfolio Checklist at each semester's preregistration advising meeting to ensure that a successful plan for its completion is in place.

List of attached supporting documentation:

Current version of CAPP sheet *must be attached to submitted Checklist*

1. _____ **4.** _____

2. _____ **5.** _____

3. _____ **6.** _____

Student's Post-graduation Plans _____

_____ _____

Student's signature **Date**

_____ _____

Advisor's signature **Date**

_____ _____

Biology Chair's signature **Date**

1. Demonstrate mastery of content across the broad field of modern biology ☐

Biology majors are required to take the two-semester general biology course with laboratories (BIOL 141-142 and BIOL 141L-142L). In addition to this 9-credit sequence, biology majors will select a minimum of 27 credits of biology electives, with at least four credits in courses at the 200-level or higher that deal primarily with phenomena in each of the three *content areas* listed below.

☐ BIOL 141 and 141L ☐ BIOL 142 and 142L

Total Credit Count from <u>all</u> courses below (must be at least 27 credits): _____
Credit count for each course is indicated in parentheses

MC ☐ Molecular & Cellular Elective (minimum of 4 credits) CREDIT COUNT _____

- ☐ BIOL 232 Neurogenetics (3)
- ☐ BIOL 250 Microbiology (3)
- ☐ BIOL 250L Microbiology Lab (2)
- ☐ BIOL 260 Genetics (3)
- ☐ BIOL 260L Genetics Lab (1.5)
- ☐ BIOL 340 Molecular Biology (3)
- ☐ BIOL 340L Molecular Biology Lab (2)
- ☐ BIOL 344 Immunology (3)
- ☐ BIOL 350 Cellular Biology (3)
- ☐ BIOL 350L Cellular Biology Lab (2)
- ☐ BIOL 358 Cellular and Molecular Neurobiology (3)
- ☐ BIOL 364 Molecular Virology (3)
- ☐ BIOL 440 Biotechnology (3)
- ☐ BIOL 440L Biotechnology Lab (2)

S ☐ Systems Electives (minimum of 4 credits) CREDIT COUNT _____

- ☐ BIOL 245 General Physiology (3)
- ☐ BIOL 245L General Physiology Lab (1.5)
- ☐ BIOL 255 Animal Nutrition and Metabolism (3)
- ☐ BIOL 272 Invertebrate Biology (3)
- ☐ BIOL 272L Invertebrate Biology Lab (2)
- ☐ BIOL 279 Animal Ecophysiology (3)
- ☐ BIOL 341 Comparative Vertebrate Anatomy (3)
- ☐ BIOL 341L Comparative Vertebrate Anatomy Lab (2)
- ☐ BIOL 342 Comparative Biomechanics (4)
- ☐ BIOL 346 Endocrinol. & Reproduction (3)
- ☐ BIOL 348 Functional Neuroanatomy (3)
- ☐ BIOL 349L Plant Physiology Lab (2)
- ☐ BIOL 351 Developmental Biology (3)
- ☐ BIOL 351L Developmental Biol. Lab (2)
- ☐ BIOL 352 Histology (3)
- ☐ BIOL 352L Histology Lab (2)
- ☐ BIOL 357 Developmental Neuroscience (3)
- ☐ BIOL 395 Extreme Physiology (3)
- ☐ BIOL 444 Sensory Biology (3)
- ☐ BIOL 446 Cardiovascular Physiology (3)
- ☐ BIOL 453 Skeletal Biology (3)
- ☐ BIOL 384 ST Behavioral Neuroendocrinology (3)
- ☐ PSIO 220 Advanced Human Anatomy & Physiology I (3)

MO ☐ Multi-Organismal Electives (minimum of 4 credits) CREDIT COUNT _____

- ☐ BIOL 271 Entomology (3)
- ☐ BIOL 271L Entomology Lab (1.5)
- ☐ BIOL 273 Marine Ecology (3)
- ☐ BIOL 274 Conservation Biology (3)
- ☐ BIOL 275 Parasitology (3)
- ☐ BIOL 296 Terrestrial Tropical Ecology (3)
- ☐ BIOL 343 Humans & Evolution in- action (3)
- ☐ BIOL 368 Neuroethology (4)
- ☐ BIOL 370 Animal Behavior (3)
- ☐ BIOL 370L Animal Behavior Lab (2)
- ☐ BIOL 371 Ecology (3)
- ☐ BIOL 371L Ecology Lab (2)
- ☐ BIOL 374 Vertebrate Biology (3)
- ☐ BIOL 374L Vertebrate Biology Lab (2)
- ☐ BIOL 375 Evolution (3)
- ☐ BIOL 384 ST: Genomes and Health (3)

Major Electives (in addition to courses checked above)

Fill in the box below and write the total credit count here: _____

Write down the courses that count towards the major electives. Courses must be BIOL.

Course	Credits

2. Laboratory Expertise



Because hands-on experiences are at the core of the scientific method and enhance active learning, biology majors must pass ***three laboratory courses*** at the 200 level or above from at least two of the three content areas (Molecular/Cellular, Systems, and Multi-Organismal). Students should consult the department's website and their advisors for the lists of courses that fulfill these requirements.

Check THREE boxes below:

☐ Lab experience 1 _____

Content Area: MC ____ S_____ MO _____

☐ Lab experience 2 _____

Content Area: MC ____ S_____ MO _____

☐ Lab experience 3_____

Content Area: MC ____ S_____ MO _____

One of the following may be substituted for a lab experience. **Supporting documentation**, such as a paper or report written by the student, slides from an oral presentation authored or co-authored by the student, a poster authored or co-authored by the student, or a letter from the mentor summarizing the experience, **must be attached**.

☐ Defend an Honors Thesis (BIOL488H/489H) or a thesis in the Magis Honors Program in STEM (BIOL 487S/489S) involving research that generated original data.
☐ Complete a fellowship or internship for summer research in a life science-related project.
☐ Complete Undergraduate Research (BIOL 393 or BIOL 394).

The advancement of biological inquiry also depends upon the proper execution of the scientific method, which ordinarily includes designing a hypothesis and protocol, gathering data, analyzing and interpreting results, developing conclusions, and formulating directions for further investigation. To gain experience with the scientific method, students should also complete the following PLOs.

3. Critically evaluate biological data (two courses or experiences) ☐

The advancement of biological inquiry depends upon the critical analysis and evaluation of biological data. Students must gain expertise in acquiring data either first-hand, from primary literature sources, or from bioinformatics databases, and in analyzing, evaluating, and interpreting the data.

Students must complete two of the following courses or experiences:

Check ANY TWO boxes below:

Courses approved by the department that fulfill this requirement.

☐BIOL 232 Neurogenetics ☐BIOL 245L General Physiology Lab ☐BIOL 271L Entomology Lab ☐BIOL 272L Invertebrate Biology Lab ☐BIOL 273 Marine Ecology ☐BIOL 275 Parasitology ☐BIOL 279 Animal Ecophysiology ☐BIOL 296 Terrestrial Tropical Ecology (3) ☐BIOL 340L Molecular Biology Lab ☐BIOL 342 Comparative Biomechanics	☐BIOL 350L Cellular Biology Lab ☐BIOL 351L Developmental Biol. Lab ☐BIOL 368 Neuroethology ☐BIOL 370L Animal Behavior Lab ☐BIOL 371L Ecology Lab ☐BIOL 374L Vertebrate Biology Lab ☐BIOL 379 Biostatistics ☐BIOL 395 Extreme Physiology ☐BIOL 440L Biotechnology Lab ☐BIOL 446 Cardiovascular Physiology

One of the following may be substituted for a lab experience. **Supporting documentation**, such as a paper or report written by the student, slides from an oral presentation authored or co-authored by the student, a poster authored or co-authored by the student, or a letter from the mentor summarizing the experience, **must be attached**.

- ☐ Defend an Honors Thesis (BIOL488H/489H) or a thesis in the Magis Honors Program in STEM (BIOL 487S/489S) that involves analysis, evaluation, and interpretation of data.
- ☐ Complete a fellowship or internship for summer research in a life science-related project that involves the analysis, evaluation, and interpretation of data.
- ☐ Complete a faculty-directed research project of at least one semester in duration that involves the analysis, evaluation, and interpretation of data.

4. Effectively communicate biological information in writing (two courses or experiences)

Communication is essential for the scientific process. Writing is one effective way to communicate. Products that satisfy this requirement must be individually authored papers written in the style of an article for a scientific journal. The majority of citations must be from the primary literature.

Students should complete two of the following courses or experiences:

Check ANY TWO of the boxes below

Courses approved by the department that fulfill this requirement.

☐BIOL 245L General Physiology Lab (1.5) ☐BIOL 250L Microbiology Lab ☐BIOL 271 Entomology ☐BIOL 272 Invertebrate Biology ☐BIOL 275 Parasitology ☐BIOL 273 Marine Ecology ☐BIOL 279 Animal Ecophysiology ☐BIOL 340L Molecular Biology Lab ☐BIOL 342 Comparative Biomechanics ☐BIOL 350L Cellular Biology Lab ☐BIOL 358 Cellular and Molecular Neurobiology	☐BIOL 364 Molecular Virology ☐BIOL 368 Neuroethology ☐BIOL 370L Animal Behavior Lab ☐BIOL 371L Ecology Lab ☐BIOL 374L Vertebrate Biology Lab ☐BIOL 375 Evolution ☐BIOL 440L Biotechnology Lab

The following can be substituted for <u>the</u> required courses that fulfills this experience; **supporting documentation must be attached**.

- ☐ Defend an Honors Thesis (BIOL488H/489H) or a thesis in the Magis Honors Program in STEM (BIOL 487S/489S) that involves analysis, evaluation, and interpretation of data.
- ☐ Complete a fellowship or internship for research in a life science-related project that produces a document that satisfies the criteria listed above.
- ☐ Complete a faculty-directed research project of at least one semester in duration that produces a document that satisfies the criteria listed above.
- ☐ Complete a document that meets the above criteria either in a class or independently under the direction of a biology faculty mentor.

5. Effectively communicate biological information orally (two courses or experiences)

Communication is essential for the scientific process. Delivering an oral presentation is one effective way to communicate. Each student must give two oral presentations, each in a different course or experience on a different topic. For each, they must speak for at least 10 minutes without relying heavily on reading from notes or slides to an audience of at least 5 individuals, one of whom must be the instructor of record.

Students must complete two of the following courses or experiences:

Check ANY TWO of the boxes below:

Courses approved by the department that fulfill this requirement.

☐BIOL 232 Neurogenetics ☐BIOL 255 Animal Nutrition & Metabolism ☐BIOL 271 Entomology ☐BIOL 272L Invertebrate Biology Lab ☐BIOL 296 Terrestrial Tropical Ecology (3) ☐BIOL 340L Molecular Biology Lab ☐BIOL 342 Comparative Biomechanics ☐BIOL 346 Endocrinol. & Reproduction ☐BIOL 351L Developmental Biology Lab	☐BIOL 352 Histology ☐BIOL 368 Neuroethology ☐BIOL 395 Extreme Physiology ☐BIOL 440L Biotechnology Lab ☐BIOL 446 Cardiovascular Physiology ☐BIOL 453 Skeletal Biology ☐BIOL 384 ST: Genomes and Health

The following can be substituted for the required courses that fulfill this experience; **supporting documentation must be attached**.

- ☐ Defend an Honors Thesis (BIOL488H/489H) or a thesis in the Magis Honors Program in STEM (BIOL 487S/489S) that involves analysis, evaluation, and interpretation of data.
- ☐ Make a presentation that meets the above criteria either in a class or outside of class under the direction of a biology faculty mentor.