01/14/2020

REAL Curriculum Program Alignment Proposal

Department or School: Biology Date: April 10, 2020

Degree type: ☐BS ☐BA ☐BBA ☐BSN ☐BM ☐BFA ☐BSW ☒Minor ☐Certificate

Program: Biology minor, applied learning pathway

REAL Area Program Designation Sought (check all that apply): ☐ R ☐ E ☐ A ☒ L

Dept/School Contact: Jamie Lau jlau@radford.edu

BS/BA Requirements:

- Any degree program that fulfills a REAL area must include at least 9 unique credit hours for each area covered. At least 3 of these 9 credit hours must be at the 300 level or above
- A single major degree program may fulfill no more than three REAL areas for any one student, unless all four REAL areas are fulfilled by accreditation or licensure requirements.
- A single minor or certificate degree program may fulfill no more than two REAL areas.
- Degree program may cover up to two REAL areas using a single prefix.
- All courses documenting the coverage of a REAL area must fulfill all learning outcomes and be designated in that area.
- All courses that document fulfillment of a REAL area within a degree program of study are NOT required to be taught by the department/school. However, departments/schools are expected to formally communicate with other departments about reliance on and inclusion of courses in their degree program plans of study. Indicate this through signature of chair or director of the partnering department or school in the areas below.
- Departments or schools that seek to fulfill REAL areas must acknowledge assessment requirements for those areas. Assessment of degree seeking students is required to be conducted yearly by the department or school offering the degree program.
- If departments or schools want to use a menu of courses to fulfill a particular area, please duplicate the sections below for each REAL area and include information for each course included in the menu of options.
- Please save this file for submission as PROGRAM NAME_ProgramType.docx (Example: Criminal Justice_BS.docx)

By signing, the department/school acknowledges the above conditions and considerations:

Dept/School Signature	Date:

Official Program Description:

Biology Minor (24 semester hours)

A student may earn a minor in biology by completing 24 semester hours selected by the student from the department offerings. Grade point average in the minor is calculated by using all biology courses and courses cross listed with biology courses.

Students are able to earn a Biology Minor in R or L or both (simultaneously) under REAL by choosing one of the following pathways. Students may also earn a minor in biology that does not satisfy a REAL requirement.

Scientific Reasoning Pathway (Earning a Biology Minor in R)
Required Courses: BIOL 131, BIOL 132, BIOL 231, BIOL 232
And at least one of the following courses: BIOL 310, BIOL 311, BIOL 333, BIOL 334, BIOL 361, BIOL 390, or BIOL 408.
And at least 4 hours from any of the department's course offerings.

Applied Learning Pathway (Earning a Biology Minor in L)
Required Courses: BIOL 131, BIOL 132, BIOL 231, BIOL 232
And at least one of the following courses: BIOL 351, BIOL 392, BIOL 411, BIOL 450, or BIOL 476.
And at least 4 hours from any of the department's course offerings.

Applications in Scientific Reasoning Pathway (Earning a Biology Minor in both R and L)
Required Courses: BIOL 131, BIOL 132, BIOL 231, BIOL 232
And at least one of the following R-designated courses: BIOL 310, BIOL 311, BIOL 333, BIOL 334, BIOL 361, BIOL 390, or BIOL 408.
And at least one of the following L-designated courses: BIOL 351, BIOL 392, BIOL 411, BIOL 450, or BIOL 476.

Biology Minor Pathway (not satisfying any REAL area)
Any 24 credits of biology courses from the departments' course offerings.

APPLIED LEARNING

L Area: Course Prefix: BIOL Course Number: 231 Course Title: Genetics, Evolution, & Development Credit Hours: 4 New course: ☐ Yes ☒ No Revised course: ☐ Yes ☒ No Projected student enrollment per academic year: 150	Is this course required or an elective for your degree program? ☒ Required ☐ Elective Is this course offered within your dept/school? ☒ Yes ☐ No If no, collaborating dept/school must also complete the remaining elements, and must sign below. Course Rotation: ☒ Fall ☒ Spring ☐ Intersession ☐ Other (Explain below) Intended Frequency: ☐ Every academic year ☒ Every semester ☐ Every other year ☐ At least once every three years ☐ Other Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:
L Area: Course Prefix: BIOL Course Number: 232 Course Title: Organismal Biology Credit Hours: 4 New course: ☐ Yes ☒ No Revised course: ☐ Yes ☒ No Projected student enrollment per academic year: 100	Is this course required or an elective for your degree program? ☒ Required ☐ Elective Is this course offered within your dept/school? ☒ Yes ☐ No If no, collaborating dept/school must also complete the remaining elements, and must sign below. Course Rotation: ☒ Fall ☒ Spring ☐ Intersession ☐ Other (Explain below) Intended Frequency: ☐ Every academic year ☒ Every semester ☐ Every other year ☐ At least once every three years ☐ Other Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:
L Area: Course Prefix: BIOL Course Number: 351 Course Title: Comparative Animal Physiology Credit Hours: 4 New course: ☐ Yes ☒ No Revised course: ☐ Yes ☒ No Projected student enrollment per academic year: 48	Is this course required or an elective for your degree program? ☐ Required ☒ Elective Is this course offered within your dept/school? ☒ Yes ☐ No If no, collaborating dept/school must also complete the remaining elements, and must sign below. Course Rotation: ☐ Fall ☒ Spring ☐ Intersession ☐ Other (Explain below) Intended Frequency: ☐ Every academic year ☐ Every semester ☒ Every other year ☐ At least once every three years ☐ Other Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:
L Area: Course Prefix: BIOL Course Number: 392 Course Title: Environmental Toxicology Credit Hours: 4 New course: ☐ Yes ☒ No Revised course: ☐ Yes ☒ No Projected student enrollment per academic year: 24	Is this course required or an elective for your degree program? ☐ Required ☒ Elective Is this course offered within your dept/school? ☒ Yes ☐ No If no, collaborating dept/school must also complete the remaining elements, and must sign below. Course Rotation: ☒ Fall ☐ Spring ☐ Intersession ☐ Other (Explain below) Intended Frequency: ☐ Every academic year ☐ Every semester ☒ Every other year ☐ At least once every three years ☐ Other Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:
L Area: Course Prefix: BIOL Course Number: 411 Course Title: Human Anatomy & Physiology for Science Majors II Credit Hours: 4 New course: ☐ Yes ☒ No Revised course: ☐ Yes ☒ No Projected student enrollment per academic year: 48	Is this course required or an elective for your degree program? ☐ Required ☒ Elective Is this course offered within your dept/school? ☒ Yes ☐ No If no, collaborating dept/school must also complete the remaining elements, and must sign below. Course Rotation: ☐ Fall ☒ Spring ☐ Intersession ☐ Other (Explain below) Intended Frequency: ☐ Every academic year ☐ Every semester ☒ Every other year ☐ At least once every three years ☐ Other Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:

L Area: Course Prefix: BIOL Course Number: 450 Course Title: Molecular Biology Credit Hours: 4 New course: ☐ Yes ☒ No Revised course: ☐ Yes ☒ No Projected student enrollment per academic year: 24	Is this course required or an elective for your degree program? ☐ Required ☒ Elective Is this course offered within your dept/school? ☐ Yes ☐ No If no, collaborating dept/school must also complete the remaining elements, and must sign below. Course Rotation: ☒ Fall ☐ Spring ☐ Intersession ☐ Other (Explain below) Intended Frequency: ☒ Every academic year ☐ Every semester ☐ Every other year ☐ At least once every three years ☐ Other Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:
L Area: Course Prefix: BIOL Course Number: 476 Course Title: Forest & Wetland Ecology Credit Hours: 4 New course: ☐ Yes ☒ No Revised course: ☐ Yes ☒ No Projected student enrollment per academic year: 24	Is this course required or an elective for your degree program? ☐ Required ☒ Elective Is this course offered within your dept/school? ☒ Yes ☐ No If no, collaborating dept/school must also complete the remaining elements, and must sign below. Course Rotation: ☒ Fall ☐ Spring ☐ Intersession ☐ Other (Explain below) Intended Frequency: ☐ Every academic year ☐ Every semester ☒ Every other year ☐ At least once every three years ☐ Other Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:
L Designated Course Required within the Program of Study Approved for Inclusion in the General Education Coursework: BIOL231, BIOL232	

L Area: Learning Goal: To explore professional practice through the application of knowledge, skills, and critical reflection.	
Learning Outcome 1: Students apply acquired knowledge and skills to develop professional identity or professional practice.	Description of learning outcome assessment plan: Artifact 1: A representative sample of our graduating seniors will be assessed in a 300- or 400-level course that provides an authentic research experience. The faculty member on record for the course will apply a department-designed, quantitative rubric per senior to determine whether or not the student is at introductory-, intermediate-, or mastery-level. Our minor program will be deemed successful if 70% of the seniors sampled are at the intermediate-level. Artifact 2: The faculty advisors will apply the quantitative, ePortfolio rubric to all of their graduating seniors to determine whether or not the student's ePortfolio is underdeveloped, developing, developed, or highly developed regarding this LO. Our minor program will be deemed successful if 70% of the graduating seniors score at least 26 out of 52 on the ePortfolios, which is equivalent to a developing ePortfolio.
Learning Outcome 2: Students critically reflect on their learning, abilities, experiences, or role within professional contexts.	Description of learning outcome assessment plan: Artifact 1: A representative sample of our graduating seniors will be assessed in a 300- or 400-level L-designated course. The faculty member on record for the course will apply a department-designed, quantitative rubric per senior to determine whether or not the student is at introductory-, intermediate-, or mastery-level. Our minor program will be deemed successful if 70% of the seniors sampled are at the intermediate-level. Artifact 2: The faculty advisors will apply the quantitative, ePortfolio rubric to all of their graduating seniors to determine whether or not the student's ePortfolio is underdeveloped, developing, developed, or highly developed regarding this LO.

	Our minor program will be deemed successful if 70% of the graduating seniors score at least 26 out of 52 on the ePortfolios, which is equivalent to a developing ePortfolio.
Additional information for REAL Council consideration: We plan to have a biennial workshop that recalibrates and standardizes the scoring to ensure that faculty are scoring uniformly. During this workshop, we will collaboratively score an introductory-, intermediate-, or mastery-level research project using the rubric. Similarly, we will collaboratively score an underdeveloped, developing, developed, and highly developed ePortfolio using the rubric. We will clarify/modify the rubrics as needed increase the ease their use.	

Are existing material resources adequate to support this program alignment proposal?
☒ Yes ☐ No If not, what additional material resources would be needed?

Are existing space resources adequate to support this program alignment proposal?
☒ Yes ☐ No If not, what additional space resources would be needed?

Are existing human resources adequate to support this program alignment proposal?
☒ Yes ☐ No If not, what additional human resources would be needed?

Department Curriculum Committee Recommendation:	Signature:	Date:
Chair/Dean on Behalf of Dept/School:	Signature:	Date:
College Curriculum Committee Approval:	Signature:	Date:
Dean/AVP Approval:	Signature:	Date:
REAL Council Recommendation:	Signature:	Date:
Faculty Senate Curriculum Committee Recommendation:	Signature:	Date:
Faculty Senate Approval:	Signature:	Date:
Provost Approval:	Signature:	Date: