Q1.
Please complete the program assessment plan. The format is similar to the one for the 2016 plans. If you need assistance, please contact the Office of Assessment. You can enter the data and return to complete, using the same computer and original link. Once you submit, that action is final. You will receive a copy of your submittal.
Be sure to review academic program outcomes for appropriate rigor (Bloom's taxonomy) and assessable results. Avoid vague or general statements that cannot be quantified or measured.
The update of Academic Program Assessment Plans (AY 2019-2021) are due by September 30, 2019.

Q2. Person completing the report

Louise S Wootton

Q3. Email address of person completing the report

woottonL@georgian.edu

Q4. Program Name

Biology, Medical Imaging and Clinical lab science

Q5. School or Department

- (●) School of Arts and Sciences
- ( ) School of Business and Digital Media
- ( ) School of Education
- ( ) other, please specify

Q6. Level of Program

- (●) Undergraduate Major
- ( ) Graduate-Masters
- ( ) Graduate-certificate only
- ( ) Undergraduate-University wide
- ( ) other, please specify

Q7. Assessment Plan for years

- (●) Fall 2019 through Fall 2022
- ( ) Fall 2020 through Fall 2023
- ( ) Fall 2021 through Fall 2024

Q8. Indicate the name of the major(s), minor(s), and the associated degree(s) for this academic program.

Major(s)	Biology, Medical imaging Sciences, Clinical Lab Sciences
Degree(s)	BA, BS
Minor(s)	Biology

Q9. **State your learning outcomes**

- [x] Learning Outcome (LO) 1
  The student will understand and apply key concepts and theories in the areas of Biology (molecular / cell biology and / or environmental and organismal biology) as evidenced through in class testing and course assignments.
- [x] Learning Outcome (LO) 2
  Students will develop appropriate laboratory and/or field skills for the biology professional including proper formulation of testable hypotheses, effective use of sampling tools and instrumentation, precise and accurate data collection, and effective analysis and interpretation of results as evidenced from lab reports and the results of practical lab exams.
- [x] Learning Outcome (LO) 3
  Students will demonstrate the ability to effectively read and critically evaluate scientific literature as evidenced by rubric driven analysis of signature assignments in BI201 (Biological Literature) and BI444 / BI443 (Capstone experience in Biology).
- [x] Learning Outcome (LO) 4
  Students will learn to communicate biological information effectively as evidenced by rubric driven analysis of oral presentations in BI120 (Biological Diversity), BI121 (Biological Unity) and BI444 (Senior Seminar), and of rubric driven analysis of formal laboratory reports prepared in BI204 (Biological Unity) and upper level biology elective courses
- [x] Learning Outcome (LO) 5
  Students will demonstrate an appreciation for the ethical and social dimensions of science, including appreciation of the importance of ethical conduct in science as evidenced by students' responses on the departmentally generated values survey. Students will develop knowledge of contemporary social and ethical issues related to biology and the professional responsibilities of a biologist. Students will demonstrate a strong appreciation for the diversity of living organisms and the potential impacts of human actions on the environment.

Q10. **Related USLG-Undergraduate Student Learning Goals. Align the program learning outcomes stated above with the associated USLG.**

	Foundational Knowledge of Human Cultures and the Physical and Natural World	Intellectual and Practical Skills	Personal and Social Responsibility	Integrative Learning	Mastery of a Defined Body of Knowledge at a Baccalaureate Level
Learning Outcome 1	☐	☐	☐	☐	☑

Learning Outcome 2	☐	☑	☐	☐	☐
Learning Outcome 3	☐	☐	☐	☑	☐
Learning Outcome 4	☐	☐	☐	☐	☐
Learning Outcome 5	☐	☐	☑	☐	☐

Q11. **Related GSLG-Graduate Student Learning Goals. Align the learning outcomes stated above with the associated GSLG.**

This question was not displayed to the respondent.

Q12. **Related BRIDGE-General Education Goals**

This question was not displayed to the respondent.

Q13. **Related Accreditation Standard** *(if applicable)*

- ☑ Learning Outcome (LO) 1
  NA
- ☑ Learning Outcome (LO) 2
  NA
- ☑ Learning Outcome (LO) 3
  NA
- ☑ Learning Outcome (LO) 4
  NA
- ☑ Learning Outcome (LO) 5
  NA

Q14. **Course Mapping**. Program Courses and Experiential Learning mapping to Program Outcomes. Map **all** program courses to the program's learning outcomes here. List courses with short catalog name, i.e. EN101. Please check to see if all program courses are mapped to at least one program outcome.

How do students learn this? In what course(s) and/or co-curricular experience(s)?

- ☑ Learning Outcome (LO) 1
  BI109, BI111, BI120, BI121, BI201, BI203, BI204, BI213, BI214, BI219, BI275, BI305, BI320, BI324, BI325, BI327, BI331, BI340, BI360, BI407, BI422, BI425, BI437, BI438, BI439, BI443, BI444, BI490
- ☑ Learning Outcome (LO) 2
  Laboratory Experiences within BI109, BI111, BI120, BI121, BI201, BI203, BI204, BI213, BI214, BI219, BI275, BI305, BI320, BI324, BI325, BI327, BI331, BI340, BI360, BI407, BI422, BI425, BI437, BI438, BI439, BI443, BI444, BI490
- ☑ Learning Outcome (LO) 3
  BI109, BI111, BI120, BI121, BI201, BI203, BI204, BI213, BI214, BI219, BI275, BI305, BI320, BI324, BI325, BI327, BI331, BI340, BI360, BI407, BI422, BI425, BI437, BI438, BI439, BI443, BI444, BI490with focus on BI201, BI443 and BI444
- ☑ Learning Outcome (LO) 4
  BI109, BI111, BI120, BI121, BI201, BI203, BI204, BI213, BI214, BI219, BI275, BI305, BI320, BI324, BI325, BI327, BI331, BI340, BI360, BI407, BI422, BI425, BI437, BI438, BI439, BI443, BI444, BI490
- ☑

Learning Outcome (LO) 5

BI109, BI111, BI120, BI121, BI201, BI203, BI204, BI213, BI214, BI219, BI275, BI305, BI320, BI324, BI325, BI327, BI331, BI340, BI360, BI407, BI422, BI425, BI437, BI438, BI439, BI443, BI444, BI490

Q15.

Formative Assessment will occur in.....

(Designate the selected course from above mapping where evidence will be collected.)

- [x] Learning Outcome (LO) 1
  BI120 / 121
- [x] Learning Outcome (LO) 2
  BI120/121
- [x] Learning Outcome (LO) 3
  BI201
- [x] Learning Outcome (LO) 4
  BI 120/121 and BI204
- [x] Learning Outcome (LO) 5
  Department Values Survey administered at start of BI120

Q16.

Summative Assessment will occur in.....

(Designate the selected course from above mapping where evidence will be collected.)

- [x] Learning Outcome (LO) 1
  MFAT on exit Upper level elective classes (those composed of at least a 60% of seniors) being offered in year when this LO is being evaluated (BI305, BI320, BI324, BI325, BI327, BI331, BI340, BI360, BI407, BI422, BI425, BI437, BI438, BI439, BI443, BI444, BI490)
- [x] Learning Outcome (LO) 2
  Upper level elective classes (those dominated by seniors) being offered in year when this LO is being evaluated
- [x] Learning Outcome (LO) 3
  BI444
- [x] Learning Outcome (LO) 4
  BI444 (oral) BI305 (written) For oral presentations: BI444 For Scientific Writing: BI305
- [x] Learning Outcome (LO) 5
  Department Values Survey administered at end of final semester at GCU

Q17. **Assessment Protocol.** How and when do you assess the achievement of all students in your program before they graduate and record the results of your assessment.

Formative Assessment

	LO 1	LO2	LO3	LO4	LO5

Direct Evidence	Item analysis from targeted questions on comprehensive final exams.	Rubric Driven Assessment during laboratory practicals Rubric Driven Assessment of Targeted Lab Assignments	Rubric Driven Assessment of Written Assignments requiring summary and analysis of primary scientific papers in Bio lit (BI201)	Rubric driven analysis of oral presentations in BI120 (Biological Diversity), BI121 (Biological Unity) and of rubric driven analysis of formal laboratory reports prepared in BI204	N/A
Indirect Evidence	N/A	N/A	Midterm and Final grades in BI201	N/A	Administration of departmental self-survey At start of BI120

Q18. **Assessment Protocol**. How and when do you assess the achievement of all students in your program before they graduate and record the results of your assessment.

Summative Assessment

	LO 1	LO2	LO3	LO4	LO5
Direct Evidence	Item analysis of final exams from selected courses composed of at least a 60% of seniors. MFAT upon exit from program (administered at end of final semester)	Rubric driven assessment of signature lab exercises / assignments within level elective classes being offered in year when this LO is being evaluated. MFT	BI444 : Rubric Driven Assessment of Signature Assignment requiring summary and analysis of primary scientific papers	Rubric driven analysis of oral presentations in BI444 (Senior Seminar), and of rubric driven analysis of Scientific Writing in BI305	All students will earn certificate from NIH on human subjects research prior to graduation.
Indirect Evidence	Student responses on SIR sections D ,F, G, and I as well as overall scores Program satisfaction survey administered to Senior graduates	Self assessments completed by students rating their comfort / proficiency with key laboratory and field methods skills	SIR scores from sections of D, F, G and I of the student course evaluations	N/A	Administration of same departmental self-survey at end of BI444

Q19. **What do you consider satisfactory achievement of this outcome? Why?**

Formative Assessment

	LO 1	LO2	LO3	LO4	LO5

Direct Evidence Benchmark	For item analysis 80% of biology majors will score 70% or better on each of the subject areas targeted in the item analysis of the cumulative section of the final exams.	For rubric guided assessments of students' lab practicals, 75% of students will achieve at or above the developing level (level 2 of 4) for all rubric criteria. For Rubric Driven Assessment of Targeted Lab Assignments 75% of students will achieve at or above the developing level (level 2 of 4) for all rubric criteria.	80% of students will achieve at or above the developing level (level 2 of 4) for all rubric criteria.	80% of students will achieve at or above the emerging level (level 2 on a 6 point scale) for all rubric criteria on their oral presentations in BI120 and BI121 80% of students will achieve at or above the developing level (level 2 of 4) for all rubric criteria on their formal lab report in BI121	100% of students complete the survey. Results retained for comparison with administration of survey to students at senior level.
Indirect Evidence Benchmark	N/A	N/A	75 % of students will score better than C- on this assignment and 50% will score better than a B- on this assignment	N/A	N/A

Q20. **What do you consider satisfactory achievement of this outcome? Why?**

Summative Assessment

	LO 1	LO2	LO3	LO4	LO5
Direct Evidence Benchmark	85% of students will achieve MFAT scores above the mean in at least one of the 4 subscores for content areas on the MFAT, and 50% or more will score above the mean in 2 or more content areas.	For rubric guided assessments of students' lab practicals, 85% of students will achieve at or above the developing level (level 3 of 4) for all rubric criteria. For Rubric Driven Assessment of Targeted Lab Assignments 85% of students will achieve at or above the developing level (level 3 of 4) for all rubric criteria	80% of students will achieve at or above the accomplished level (level 3 of 4) for all rubric criteria	80% of students will achieve at or above the accomplished level (level 3 on a 4 point scale) for all rubric criteria on their oral presentations in BI444 80% of students will achieve at or above the accomplished level (level 3 of 4) for all rubric criteria on their formal lab reports in BI305	Improvement in scores on each values item assessed relative to the same scores on the survey given during the formative period
Indirect Evidence Benchmark	SIR scores in sections D,F,G,I and overall score for each course assessed will meet or exceed the average comparison score for all similar courses	Student responses to departmentally administered self assessment of student's comfort level with key field and laboratory skills needed for professional success	Scores on SIR section F for BI444 will meet or exceed the average comparison score for all similar courses	N/a	n/a

Q21. **Program Assessment Time Frame:** Time Frame for Assessing the outcome.
Indicate the year of the plan where the data will be analyzed. Also indicate if data will be collected annually. This is helpful for gathering assessment artifacts from small classes or groups.

	Year 1 of Plan	Year 2 of Plan	Year 3 of Plan	Data collected annually
Learning Outcome 1	☑	☐	☐	☐
Learning Outcome 2	☐	☐	☑	☐
Learning Outcome 3	☐	☑	☐	☐
Learning Outcome 4	☐	☑	☐	☐
Learning Outcome 5	☐	☐	☑	☐

Location Data

Location: (39.976898193359, -74.160102844238)

Source: GeoIP Estimation