

UNIT REPORT

**College of Science - College APR
Report**

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College of Science

College of Science Mission Statement

College's Mission Statement:

The mission of the College of Science is to be an exemplary education and research resource for the university, the state of Idaho, and the nation. We offer an affordable, accessible, and high-quality science education to all science majors by preparing them to be the next generation of scientific leaders while delivering scholarly research and technical expertise to the world. We achieve these goals by providing innovative undergraduate and graduate degrees in science and mathematics. We emphasize providing student opportunities for hands-on research experiences led by faculty conducting cutting-edge research in existing and emerging disciplines as well as across disciplinary lines. We produce graduates that are adaptable, ready to tackle complex problems, and prepared for post-graduate work or to enter the workforce and contribute to economic development in the state, region, and nation.

Goal 1: Student retention

College Goal Statement:

Improve undergraduate retention for College of Science majors as well as for all UI students through the critical service courses we teach.

Action Plan:

- Monitor DFWI rates in gateway and foundational courses. Engage chairs and instructors in discussions for improvement.
- Focus on improving student experiences in lab courses.
- Develop improved college-level practices such as advising interventions for at-risk students based on early warning and midterm grades, and communication with "enrolled not registered" students. Build cooperation in these efforts between University Advising Services personnel and COS team members, particularly our new Director of Student Services and Stakeholder Engagement position.
- Improve student engagement and build a sense of belonging and identity among COS students.

Achievement Indicators/Metrics:

- Increased retention across student populations.
- Numbers of interactions / communications with at-risk students.
- Student assessment of college student services.
- Participation in department-sponsored student clubs, organizations, and events.

COLLEGE GOAL SUPPORTS STRATEGIC PLAN GOALS -----

RELATED ITEM LEVEL 1

Cultivate: Increase Multicultural Student Enrollment

RELATED ITEM LEVEL 1

Transform: Increase Number of Enrolled Students

RELATED ITEM LEVEL 1

Transform: Increase Retention

Goal 2: Graduation rates

College Goal Statement:

Improve 6-year graduation rates for College of Science undergraduate majors.

Action Plan:

- Engage COS departments in an examination of possible curricular obstacles.
- Similarly examine course sequencing within majors and timing of course offerings.
- Consider best practices to improve advising and encourage timely degree completion.

Achievement Indicators/Metrics:

- 6-year graduation rates for COS degrees.
- Curricular and/or course scheduling improvements introduced.

COLLEGE GOAL SUPPORTS STRATEGIC PLAN GOALS -----

RELATED ITEM LEVEL 1

Cultivate: Maintain Affordability for Students

RELATED ITEM LEVEL 1

Transform: Increase Number of Degrees Conferred**Goal 3: Equity in educational outcomes****College Goal Statement:**

Ensure equitable outcomes for students in College of Science majors and programs.

Action Plan:

- Establish baseline retention and graduation rates broken down by first-generation, underrepresented groups, and gender.
- Set targets for improvement based on these baselines.

Achievement Indicators/Metrics:

- Improved retention and graduation rates for all groups, with goal of equal achievement across all groups.

COLLEGE GOAL SUPPORTS STRATEGIC PLAN GOALS -----

RELATED ITEM LEVEL 1

Cultivate: Increase International Student Enrollment

RELATED ITEM LEVEL 1

Cultivate: Increase Multicultural Student Enrollment

RELATED ITEM LEVEL 1

Transform: Creating an Inclusive Learning Environment

RELATED ITEM LEVEL 1

Transform: Increase Number of Degrees Conferred

RELATED ITEM LEVEL 1

Transform: Increase Retention**Goal 4: Curricular innovation****College Goal Statement:**

Provide innovative curricula that are responsive to external demand.

Action Plan:

- Update Geology and Geography degree offerings to be more responsive to both industry demands and current student interests.
- Increase opportunity for student in Coeur d'Alene to complete a Medical Sciences degree either fully online or in a 3+1 option (with year 4 in Moscow).

Achievement Indicators/Metrics:

- Completion of Geography and Geology curriculum revisions and movement of these proposals through the university curriculum process.
- Completion of analysis of Medical Sciences BS requirements to identify courses that can be offered online.
- Identification of ways to broaden Biology offerings in Coeur d'Alene (for example, through use of lab space in Harbor Center).

COLLEGE GOAL SUPPORTS STRATEGIC PLAN GOALS -----

RELATED ITEM LEVEL 1

Innovate: Increased Percentage of Undergraduate Students Participating in Research

RELATED ITEM LEVEL 1

Transform: Curricular Innovation and Evolution**Department of Biological Sciences****Upload Program's APR Self-Study Report:** Attached Files

 [Biological Sciences self report.pdf](#)

Quality of Program's Self-Study Report: Partially Meets Expectations

Questionnaire has been completed: true

Recommendations:

The Biological Sciences program is off to a reasonable start in developing its APR. We recommend the following next steps to improve student success and program quality.

1. For each of the three goals, determine baseline data and targets for next year (enrollments, degree conferrals, grants, pubs, research participation etc).
2. Develop strategies to assess student learning in specific foundational/gateway courses for the degree, such as an evaluation of specific skills or assignments. Provide at least one direct measure for each.
3. Break out data for goals based upon first generation/not first generation and for other groups.
4. The department should continue the effort from the past few years to realign and simplify its undergraduate curriculum. This should include a search for common bottlenecks that might be slowing student progress through the major requirements.

Department of Chemistry

Upload Program's APR Self-Study Report: Attached Files

[Chemistry self report.pdf](#)

Quality of Program's Self-Study Report: Partially Meets Expectations

Questionnaire has been completed: true

Recommendations:

The Chemistry program is off to a reasonable start in developing its APR. We recommend the following next steps to improve student success and program quality.

1. For each of the three goals, determine baseline data and targets for next year (enrollments, degree conferrals, grants, pubs, research participation etc).
2. Develop strategies to assess student learning in specific foundational/gateway courses for the degree, such as an evaluation of specific skills or assignments. Provide at least one direct measure for each.
3. Break out data for goals based upon first generation/not first generation and for other groups.
4. Undertake a department discussion of possible adjustments to how gateway and service courses (CHEM 101, 111, 112, 275, 277) are handled so as to improve student engagement and success. Special attention could be paid to how the lab portions of those courses could be used to build student understanding of and interest in the lecture material.

Department of Geography and Geological Sciences

Upload Program's APR Self-Study Report: Attached Files

[Geo report 12_29.pdf](#)

Quality of Program's Self-Study Report: Incomplete Report

Questionnaire has been completed: true

Recommendations:

1. The department is undertaking a rethinking and restructuring of their degree programs, which provides an excellent opening to restart the assessment schemes. The should concentrate specifically this year on identifying key courses that can be used as waypoints to measure achievement of the learning outcomes, and developing a system to gather student products from those courses to gauge that achievement. The indicator mentioned for the departments Goal 1 (performance in capstone courses) needs to be made concrete by the use of student products, and also supported by observations from courses at intermediate stages of the curriculum so that student progress can be demonstrated.
2. The department's next assessment report should also include baselines for metrics they establish (based on the work done and data gathered this year) as well as targets for improving on those baselines.
3. The department should also give special attention to an assessment of gateway and foundational courses they offer, such as GEOL 101, 102, 111, 112, GEOG 100, 165, 200, and 385. The success of these courses is crucial both for the success of students in those degree programs and also as tools to attract students to the programs. While we believe the department has generally done a commendable job of providing good instruction, it would be beneficial to track D-W-F rates and student evaluation scores (as well as trends that arise in student narrative evaluations) to find ways to fine-tune the effectiveness of these courses.

Department of Mathematics and Statistical Science

Upload Program's APR Self-Study Report: Attached Files

[Math_Stat report.pdf](#)

Quality of Program's Self-Study Report: Partially Meets Expectations

Questionnaire has been completed: true

Recommendations:

1. The department has a good start at establishing direct measures and targets for outcomes. They have a well-functioning assessment committee that should concentrate this year on developing a strategy of identifying key courses that can be used as waypoints in achieving the learning outcomes, and develop a program for gathering specific student products from those courses to measure student achievements of the outcomes (as mentioned in the indicators for Goal 2).
2. A substantial task for this next year will be to establish baselines for those metrics and to set specific targets as goals for the next cycle. This will be especially important for Goal 1 (relating to D-W-F rates in critical service courses).
3. We commend the inclusion of Goal 1, as improvement of gateway and service courses will be a college emphasis for this year. As the department provides such courses for numerous programs across campus, their work on this goal will be especially valuable. Metrics that should be considered would be average numerical student evaluations for these courses as well as D-W-F rates. Narrative comments should also be evaluated for themes that affect student learning. Of special importance will be the department's participation (with other units from the college) in discussions with the College of Engineering to ensure our courses meet the evolving needs of their programs.

Department of Physics

Upload Program's APR Self-Study Report: Attached Files

[Physics self report.pdf](#)

Quality of Program's Self-Study Report: Partially Meets Expectations

Questionnaire has been completed: true

Recommendations:

1. The overall program goals and the individual program learning outcomes need improvement by including additional measurable metrics and indicators. The department should consider a strategy of identifying key courses that can be used as waypoints in achieving the learning outcomes, and develop a program for gathering specific student products from those courses to measure student achievements of the outcomes.
2. A substantial task for this next year will be to establish baselines for those metrics and to set specific targets as goals for the next cycle. This would apply particularly to metrics mentioned in the report, such as "number of undergraduate students engaged in research" as well as to new metrics and indicators added as a result of recommendation #1 above.
3. While this does not fit specifically with the learning outcomes assessed in this cycle, we recommend that the department undertake a close examination of success in key service and "gateway" courses during this next assessment cycle. This is certainly consistent with program goals #1 (Deliver high quality undergraduate and graduate programs in Physics) and #3 (Expand the participation of underrepresented groups). Metrics that should be considered would be average numerical student evaluations for courses such as PHYS 100, 111, 112, 211, and 212, as well as D-W-F rates for those courses. Narrative comments should also be evaluated for themes that affect student learning. Specific actions to undertake would be a department strategy for assuring effective coverage of those courses, strengthened connections between the lab and lecture components of the courses, and participation (with other units from the college) in discussions with the College of Engineering to ensure our courses meet the evolving needs of their programs.

Program in Bioinformatics and Computational Biology

Upload Program's APR Self-Study Report: Attached Files

 [BCB self report.pdf](#)

Quality of Program's Self-Study Report: Partially Meets Expectations

Questionnaire has been completed: true

Recommendations:

The BCB program is off to a reasonable start in developing its APR. We recommend the following next steps to improve student success and program quality.

- 1) For each of the three goals, determine baseline data (e.g., for goal 1- need to know baseline enrollment and graduation data; think similarly for other goals)
- 2) Set targets for future years (enrollments, degree conferrals, grants, pubs, internships etc).
- 3) Develop strategies to assess student learning in specific foundational courses for the degree, such as an evaluation of specific skills or assignments. Provide at least one direct measure for each.

College of Science Strategic Recommendations

List of 3-5 Strategic Recommendations:

1. Improve the assessment scheme across the college. Develop strategies in all COS programs for utilizing student products as indicators for learning outcome achievement. Then use those processes to develop baselines (and set meaningful targets) for those metrics.
2. Use the availability of disaggregated student achievement data to begin assessing equity of outcomes for students in first-generation and underrepresented groups.
3. Evaluate connections between lab and lecture portions of key courses to identify possible ways to improve student experiences and learning in those courses.
4. Undertake a close analysis of curriculum pathways and course scheduling to identify bottlenecks and to find potential areas for curriculum simplification.