Annual Assessment Report: Biology

1. **The Annual Assessment Meeting:** This meeting was held on April 28, 2016 and was attended by Kristy Blake, Lindsay Burwell, Christina Schmidt and Jackie Schnurr. We discussed how to break apart the traditional BCS assessment plan and report into separate Biology, BMB, and Chemistry plans. We decided that it was an easy break to split Biology and Chemistry, but BMB and the new BCS major has so much overlap with the other majors that we weren't sure it was possible to split the plans. As such, we are submitting Chemistry and Biology, but BMB and BCS will not be included. This gives us our focus for the 2016-2017 academic year: should BMB and/or BCS become a concentration in the Biology or the Chemistry major? We also discussed which courses to focus on for the 2015-2016 year.

2. **Examination of Assessment Data**

GOAL	OBJECTIVE	OUTCOME	TARGET COURSE/TOOL	SUCCESS?
1	1.1	Understand Principles	Biol 130 / final exam	93% passing
			Biol 114 / final exam	87% passing
			Biol 226/ final exam	100% passing
			Biol 309 / exams	100% passing
			Biol 304 / final exam	80% passing
	1.2	Apply Principles	Biol 130 / lab report	88% passing
			Biol 226 / multiple labs	90% passing
			Biol 309 / problem sets	92% passing
2	2.1	Primary Research	Biol 363/final paper	75% passing
			Biol 304 / species paper	94% passing
	2.2	Statistics	Biol 130 / Excel lab	94% passing
			Biol 226 / Fly lab	100% passing
			Biol 304 / Morphometrics lab	100% passing
3	3.1	Written Communication	Biol 363 / final paper	75% passing
			Biol 309 / poster presentations	100% passing
			Biol 304 / species paper	94% passing
	3.2	Oral Presentation	BCS 403 / paper presentations	100% passing

		Oral Presentation (continued)	Biol 309 / poster presentations Biol 114 / history presentations Biol 304 / species presentations	100% passing 100% passing 100% passing
4	4.1	Group Work	Biol 130 / Big Phylum Day Biol 226 / Fly crossing experiment Biol 309 / poster presentations	99% passing 88% passing 100% passing
	4.2	Biodiversity	Biol 363 / 5 species Biol 130 / Big Phylum Day Biol 304 / Field notebooks – vertebrate species sightings	94% passing 99% passing 100% passing
5	5.1	Ethics	Biol 226 / genetic testing and DNA sequence analysis lab, genome editing, GMOs discussion Biol 114 / history of anatomy and physiology projects, discussion of cadaver use in teaching and research	88 % passing 100% passing
	5.2	New Technology	Biol 226 / sequence technologies and PCR forensic labs	88 % passing
	5.3	Internships	BCS 290/ 390 / Internship poster	100% passing

3. **Program changes:** There were several changes that we made in the current year that we were focusing on for the 2015-2016 year.

   Biol 363: Advanced Ecology was taught as a completely project based course. Throughout the course the students were asked how things were going, and overwhelmingly the students enjoyed learning by doing. Indeed, in the senior reflective essay, all of the seniors who took the course mentioned that it was the course that helped them understand what it actually meant to do science – collaborating with others when necessary and focusing on a single project where they became the expert.

   Biol 226 Genetics: This course was changed from a 100 level course for majors and nonmajors to a 200 level course for only majors. This change was a positive one; the material covered in the course was at a higher level, one that is on par with genetics courses at other institutions. Having majors in the class changed the overall tone of the course to better connect to other topics within the Bio, Chem, and BMB majors; elaborating on topics covered in into bio and introducing topics that covered in depth in Biol312 and Chem326.

In lab, we did a complex fly crossing genetics experiment, where students collected their own data. The students then organized processed, and statistically analyzed this data to see if their genetic hypothesis were correct. Overall this lab went well and the data analysis was a good learning process for them, but I can see ways to improve on the lab for next year, as some of the students got lost in the details. I will work on having the students understand more of why of each step.

4. **Action plan for the upcoming year:** First, we will figure out what to do with BMB.

   BCS 403 will be combined with the former BCS 301 for the first time, making a 4-credit Senior Seminar course. A major focus of next year will be assessing how well that course works in that format.

   Biol 305 will be taught in the similar format to Biol 363, with one major change – it will be a 3-hour seminar. The Biol 363 student evaluations stated that they wished they had longer time periods to focus on their research, and this will be tried for Biol 305, which will also be taught as a project-based course.

   Biol 312L will be taught with the lab section in the same format as 363, where students will each have a research-based project (due to costs, the projects won't be as independent from each other as in Biol363). The students will be learning a new method of genome editing called CRISPR and the ethical implications of genome editing will also be discussed.

   Biol 330L will include a field trip to a cadaver lab, in which students will get hands-on experience with human anatomy.

5. **The updated assessment plan is submitted as a separate document.**