

**Major/Program: Geosciences; Report by Dr. Kristin Huysken, Chair**

**ASSESSMENT SUMMARY**

**Fall 2017-Spring 2018**

**What are the student learning outcomes in the **major/program**?**

1. Program will cultivate critical and analytical thinking skills
2. Program will produce well-prepared students capable of quantitative and qualitative analyses
3. Students will possess a general knowledge of geologic theory and demonstrate its application in solving geological and environmental problems.
4. Program will develop in students the ability to communicate scientific concepts to scientists and non-scientists.

**Which outcome(s) did you assess this academic year?**

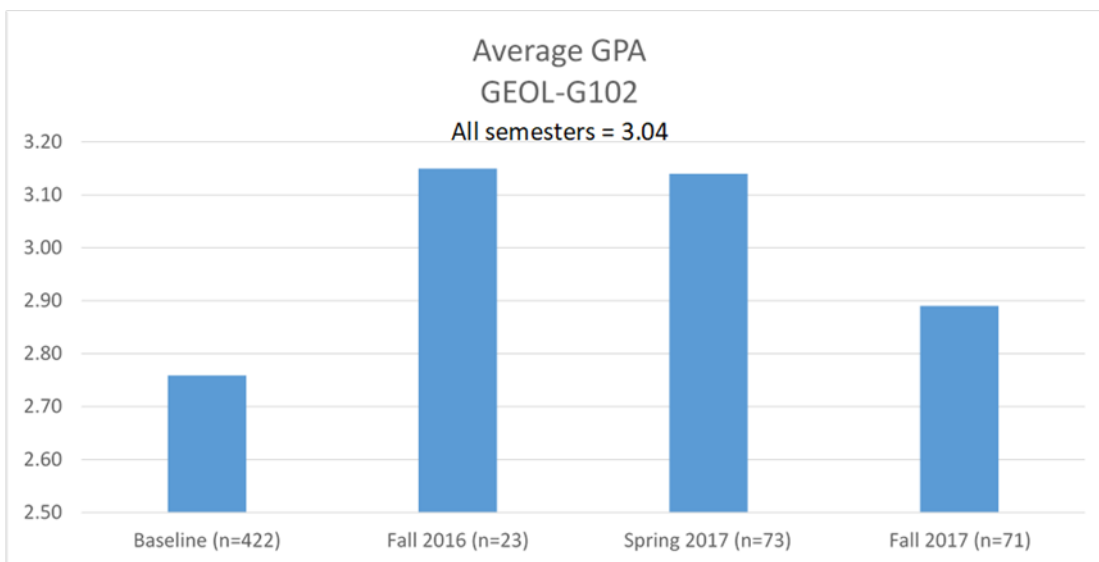
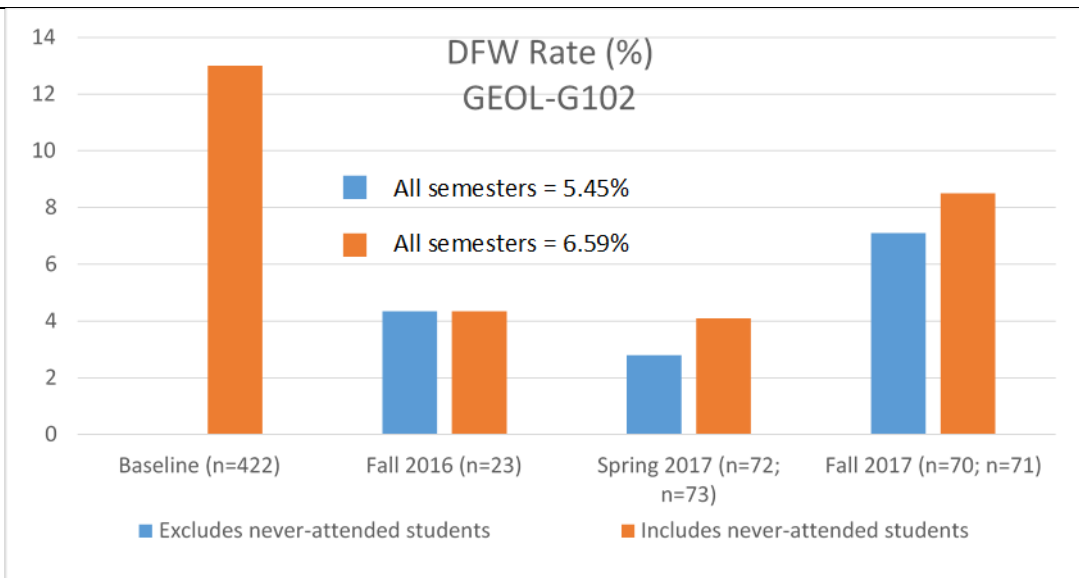
3. Students will possess a general knowledge of geologic theory and demonstrate its application in solving geological and environmental problems.
4. Program will develop in students, the ability to communicate scientific concepts to scientists and non-scientists.

**How did you assess the learning outcomes this academic year?**

Outcomes 3 and 4 were assessed as part of a RFY-PIG (Reimagining the First Year – Pedagogy Interest Group) intervention, in GEOL-G102 labs. In this intervention, workbook-style laboratories on topographic maps, streams, and floods are replaced by highly collaborative, project-based laboratories focused entirely on local interests and issues (water quality, topographic features, streams, and floods) in the Little Calumet area. This was done in an effort to change student satisfaction, confidence levels, and learning outcomes on topographic map, and stream labs that students previously worked out of a lab manual. Assessment style was changed from a written exam to a group presentation.

We implemented last year's proposal - expanding the RFY-PIG intervention to include all of the G102 laboratories, and to assess student performance and students' connection to the material. We compared DFW rates and class GPA of the revised laboratories with historical values. Our data covers semesters Spring 2016 through Fall 2017. Data from Spring 2018 is currently being analyzed.

In G102, DFW rates are an excellent proxy for persistence through the semester, as nearly all D and F grades are assigned in response to missed labs (i.e. non-attendance). DFW rates were calculated in two ways. Those shown in blue exclude students who enrolled in the class, but never attended. DFW rates including never-attended students is shown in orange. While rates that include never-attended students are a poorer measure of the reformed curricula effectiveness, they do facilitate closer comparison to baseline data and are included for that reason. Baseline data consists of the three semesters (excluding summer) prior to implementation.



Please **summarize the data** you have collected this academic year.

There is a marked decrease in the DFW rate of reformed laboratory sections compared with historical baseline rates. Overall, DFW rates in reformed laboratory sections are 5.45% (6.59% including never-attended students) – half the historical DFW rate of 13%. The decrease occurs the first semester the reformed laboratories are adopted. In fall 2016, DFW rates are approximately one third that of the baseline (4.35% compared with 13%). The largest decrease in the DFW rate occurred in spring 2017, where students who collectively attended reformed laboratory sections experienced a rate of 2.8% (4.1% including never-attended students). In fall 2017 the DFW rates increase compared with prior semesters, but are still below historical values.

Overall, GPA in the reformed laboratory averaged 3.04 (out of a possible 4.0). This is compared with an average 2.76 GPA for the three semesters prior (baseline). The highest average GPAs occur in the fall 2016, and spring 2017 (3.14 and 3.15 respectively). Average GPA drops to 2.89 in fall 2017, to a value just above the historical baseline value.

**Please describe any programmatic changes you have made or are planning to make based on the data you have collected (action steps).**

We are continuing replace G102 laboratories with new locally-significant, highly collaborative labs. Some will be project-based; others will utilize alternative pedagogies. This is a very large project that will come to completion over several years.

Please report on the progress of your **action steps** reported in 2013-2014. See [Assessment Results](#) for your previous unit reports.

We continue working on classes that utilize the “scaffolding approach”, where students revisit and add to previous work in GEOL-G317 Field Methods and Laboratory Techniques, and GEOL-G 323 Structural Geology.

Specifically, G317 (offered every other year), was restructured in Fall 2017, into four individual 4-week units that are scaffolded to lead students through the process of preliminary research, methods of data collection, data analysis, and data written/oral presentation. The effect on student outcomes will be measured in Fall 2019.

**\*\*Note:** Please use this template to provide the responses to the prompts above.\*\*