



Achieving Student Learning Outcomes February 2015

First to Second Semester Cohort Student Retention

Below is a summary of the retention status of cohort students from fall to spring semesters. The cohort is defined as the first-time (freshmen), full-time, degree seeking students who enrolled for a particular term. While many factors can influence students' retention decisions, the information below focuses on only three factors: students' academic performance prior to enrolling at Mines, students' academic performance during the first semester at Mines, and students' demographic characteristics.

Table 1: Attrition From Fall to Spring Semesters

Fall Cohort	Number of cohort students	Number of cohort students who did not enroll after first semester	Percent of cohort students who did not enroll after first semester
2010	875	44	5.0%
2011	875	36	4.1%
2012	948	22	2.3%
2013	954	25	2.6%
2014	999	31	3.1%

Attrition is influenced by a variety of factors and it is important to note that some of these factors (faculty/student relationships, students' motivation, aspects of students' personal lives, etc.) are not easily quantifiable. Note that first semester performance at Mines is a stronger predictor of long-term student retention and graduation attainment than are factors such as incoming ACT scores and high school G.P.A. However, these factors do impact first-to-second semester retention, as shown below.

Table 2: Differences Between Fall 2014 Cohort Students and Spring 2015 Retention Status

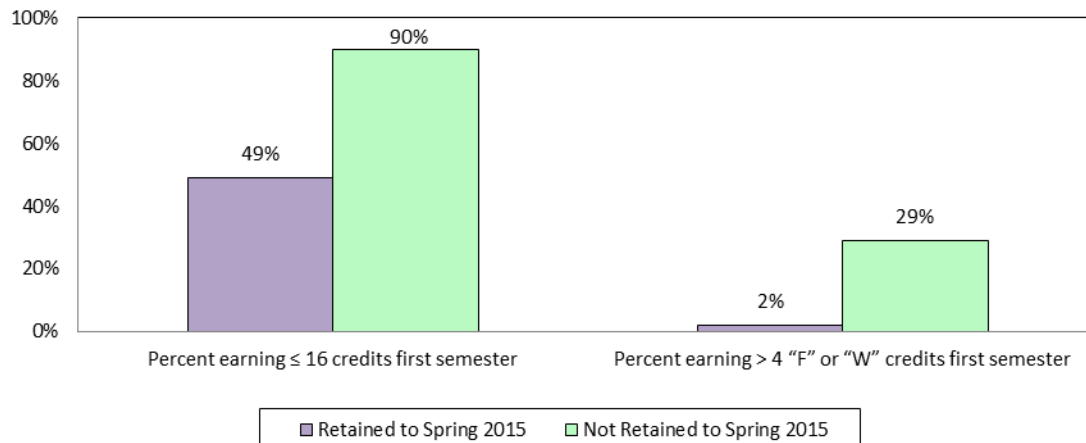
**Differences that are statistically significant
($p \leq .05$)**

- Average high school G.P.A. (lower for non-returning students)
- Average AP credit hours earned (lower for non-returning students)
- Average ACT math score (lower for non-returning students)
- Average ACT comprehensive score (lower for non-returning students)
- Earning ≤ 16 credits first semester (higher proportion of non-returning students)
- Earning > 4 "F" or "W" credits first semester (higher proportion of non-returning students)

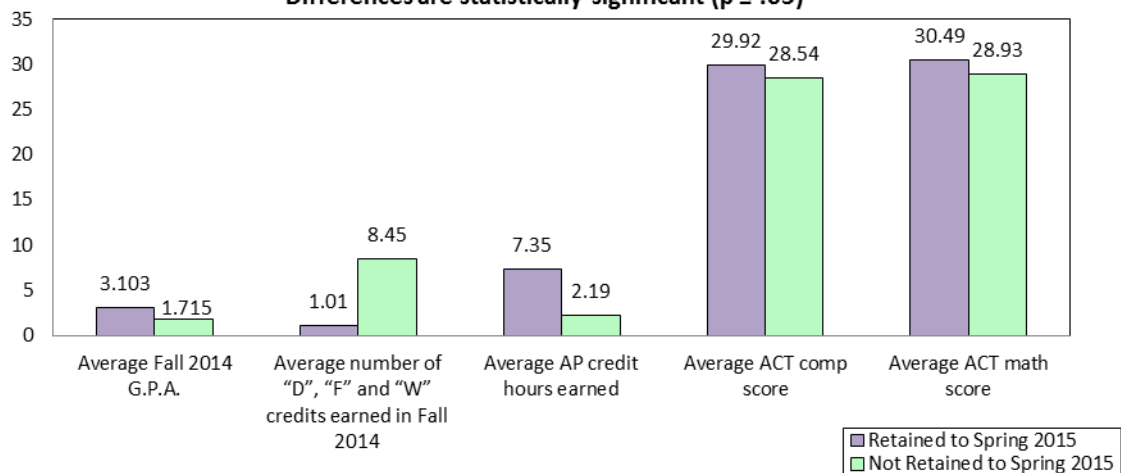
**Differences that are not statistically significant
($p \leq .05$)**

- Gender
- Under-represented minority status
- Undeclared major status (as of Fall census date)
- Average SAT math score
- In-state/out-of-state residency status

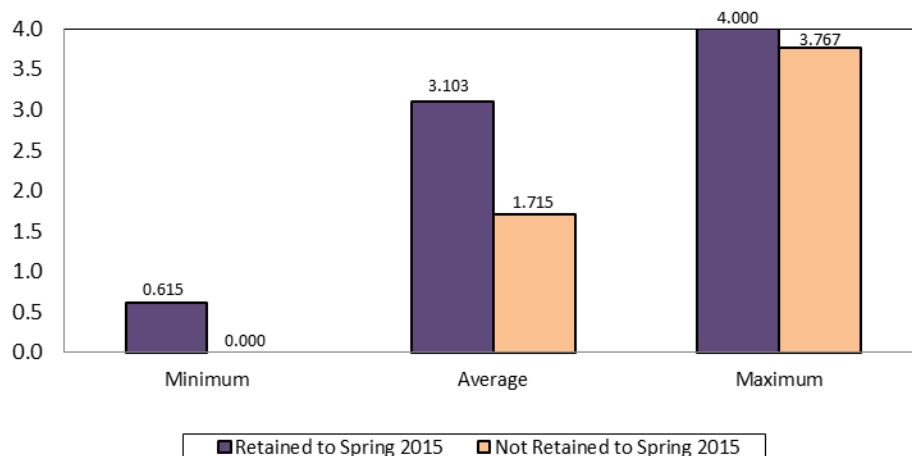
Comparisons Between Returning and Non-returning Fall 2014 Cohort Students
Differences are statistically significant ($p \leq .05$)



Comparisons Between Returning and Non-returning Fall 2014 Cohort Students
Differences are statistically significant ($p \leq .05$)



Fall 2014 Cohort Students' First Semester G.P.A.



How do I write measurable course outcomes? (lunch invitation)

Faculty are invited to a workshop to discuss how to write SMART outcomes for a single class session, a course, a program, or for Undergraduate Council/Graduate Council course applications. We will review and revise learning outcomes so that they are specific and measurable. The session will be held on **Tuesday, February 24, 2015 at noon in Ballroom D**. Lunch will be provided; please RSVP to [Kay Schneider](#).

Proposed Revisions to ABET EAC Criteria 3 and 5

ABET's Engineering Accreditation Commission (EAC) is in the process of drafting potential revisions to Criteria 3 (student outcomes) and 5 (curriculum). Use [this link](#) to view a draft of the revisions. While these revisions are not yet finalized, ABET is soliciting faculty observations/feedback. You can send comments through [this form](#).

Best practices in undergraduate student learning outcome assessment

Below are examples of best practices that have been implemented to assess undergraduate student learning outcomes. This list is not meant to be exhaustive, but is intended to highlight positive aspects of undergraduate assessment plans at Mines. The assessment plans for these departments are now on the assessment [website](#). Thank you to the faculty in the departments listed below for their efforts to improve student learning.

Chemical and Biological Engineering: Faculty assess outcomes in a variety of 300- and 400-level courses and clearly identify which assignment, project, exam question, etc. is the basis of their measurement. These projects, assignments, etc. assess multiple outcomes, rather than a single outcome, which is an ideal approach.

Economics and Business: A variety of direct assessment measures, such as exams, final projects, oral presentations, and written reports, assess each outcome. The assessment measures provide faculty with both quantitative and qualitative data, which they have used to inform discussions of possible modifications to field session. Development of a common rubric to assess written material assigned in economics courses is an excellent strategy.

Engineering Physics: The department has implemented a variety of direct measures (course assignments, exams, final projects, lab assignments, written reports and oral presentations) and indirect measures (alumni survey and senior survey) measures for many years. Assessment in the department is ongoing rather than episodic. Faculty compose a "Post-Delivery Review" report for each course, which includes an overall assessment of the semester, changes that were made since the previous offering of the course, and suggestions for the future.

Metallurgical and Materials Engineering: Multiple faculty within the program take ownership of the assessment process by participating in the Annual Faculty Retreat. The faculty use assessment results to make curricular changes; it is particularly impressive that the faculty have developed plans to measure the impact of these changes.