In 2011-12 the University at Albany assessed the degree to which students were achieving student learning outcomes in the Natural Sciences and Social Sciences General Education categories. As with previous assessments, the assessment of General Education courses offered through the University in the High School (UHS) program were conducted at the same time. A representative sample of classes from the Natural Sciences category was selected by IRPE and the General Education Committee. The UHS sample was chosen to be generally representative of the categories rather than random. The UHS office provided materials electronically, and IRPE redacted instructor information.

There were a total of 32 courses offered through UHS in 2011-12 that met the Natural Sciences General Education requirement. Fourteen of those courses were selected for the sample. Six of the instructors sampled responded. Of those, 2 respondents either didn’t properly complete the General Education assessment forms or didn’t submit supporting documentation. The data contained in this report represents 4 classes, with a total enrollment of 136 students.
The Natural Sciences General Education requirement has four learning objectives that must be fulfilled:

Natural Sciences courses enable students to demonstrate:

1. an understanding of the methods scientists use to explore natural phenomena, including observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence;
2. an understanding of the application of scientific data, concepts, and models in the natural sciences;
3. an understanding of the major principles and concepts that form the basis of the knowledge covered in the course and a command of the relevant terminology appropriate for basic discourse in the particular discipline or disciplines of the course;
4. that they have become more knowledgeable consumers of scientific information and are prepared to make informed decisions on contemporary issues involving scientific information acquired in the course.

1) Students will demonstrate an understanding of the methods scientists use to explore natural phenomena, including observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence.

![Figure 1: Natural Sciences Learning Objective 1](image)

**Figure 1: Natural Sciences Learning Objective 1**
Figure 2: Natural Sciences Learning Objective 2

2) Students will demonstrate an understanding of the application of scientific data, concepts, and models in the natural sciences

- Exceeded: 73.53%
- Did Not Meet: 1.47%
- Met: 22.06%
- Approached: 2.94%

Figure 3: Natural Sciences Learning Objective 3

3) Students will demonstrate an understanding of the major principles and concepts that form the basis of the knowledge covered in the course and a command of the relevant terminology appropriate for basic discourse in the particular discipline or disciplines of the course

- Exceeded: 43.28%
- Did Not Meet: 0.00%
- Met: 52.99%
- Approached: 3.73%
In excess of 90% of assessed students either met or exceeded expectations in all four learning objectives in this category.

**Recommendations:**

1) The GEAC should give consideration to dramatic differences in performance between UHS and on-campus populations (this is detailed below).

2) IRPE needs to work closely with UHS to improve the quality of the data submitted by instructors. Perhaps a tutorial or sample assessment forms should be provided to all instructors participating in UHS courses that meet General Education requirements.

3) IRPE needs to work closely with UHS to reinforce the importance of the assessment process to instructors in an effort to improve response rates.
In the Natural Science category, performance is significantly higher in the UHS sample. We harbor some concerns that the number of students “approaching” and “did not meet” is so low as to raise speculations about grade inflation. In the UHS sample, the percentage of students who were “approaching” or “did not meet” each of the learning objectives ranges from a low of 3.73% in category 3 to a high of 7.63% in category 1. In the on-campus sample, the percentage of students who were “approaching” or “did not meet” each of the learning objectives ranges from a low of 11.6% in category 4 to a high of 17% in category 1.¹ Perhaps more striking though is the percentage of students “exceeding” General Education goals. In the UHS sample, this ranges from a low of 43.28% in category 3 to a high of 74.4% in category 4. In the on-campus sample, the percentage of students who were “exceeding” each of the learning objectives range from low of 15.8% in category 1 to a high of 31.4% in category 4. While slight variation across populations would be normal, these results appear aberrant, and further study of actual grade data (rather than the categorical data collected in the General Education Assessment) is needed to compare performance across populations.

¹ Note that the complete report of the assessment of the Natural Science General Education category from 2010-11 is available from IRPE.
Figure 6: Performance on the Natural Sciences Learning Objective 2

Figure 7: Performance on the Natural Sciences Learning Objective 3
It is important to note that the majority of students who enroll in University in the High School courses tend to be highly motivated and high performing. In fact, only juniors and seniors with an overall average of B or better are allowed to enroll in UHS classes. One could reasonably expect students who have a high average overall to perform well in these classes. Additionally, on-campus students taking courses meeting this General Education requirement may be doing so only to fulfill the General Education requirement, and that is a potential explanation of the differences across these populations.
Process notes

- This year the UHS office collected all the requested materials and scanned the sample documents into .PDF format before sending them to IRPE electronically. The names of the instructors were redacted from the forms, which were then coded. While this was a labor intensive endeavor for the IRPE office, it saved a substantial amount of paper, as well as additional copying time and paper when the material is be made available to the General Education Assessment Committee. IRPE continues to encourage instructors to submit electronic versions of their teaching materials and assessment forms.