The President's Council of Student Advisors
Stony Brook University
Stony Brook, NY 11794-0701
Office of the President

May 18, 2016

Samuel L. Stanley Jr., MD
President, Stony Brook University
310 Administration Building
Stony Brook, NY 11794-0701

Dear Dr. Stanley:

The Council of Student Advisors submits this Final Report to you after a comprehensive investigation of how course availability affects students' course registration process and the academic calendar at Stony Brook University. This research includes an examination into how degree progress and graduation rates are affected by a lack of course offerings. After such explorations, the Council has devised recommendations for you and your staff regarding: an increase in the availability of online courses, the addition of "Hybrid" courses, the potential use of Saturday classes, incorporation of a Guaranteed Four-Year Graduation Program, and more stringent advising requirements for students.

This Final Report outlines in detail how we: 1) verified that these problems are prevalent on our campus; 2) examined the practices of other institutions to provide adequate course availability for students to meet degree progress; and 3) ensured that our recommended solution(s) is/are both feasible and favorable to the campus community.

Your consideration of this Final Report is greatly appreciated!

Sincerely,

The President's Council of Student Advisors

Enclosure: Final Report

The President's Council of Student Advisors
Office of the President
Stony Brook University
Stony Brook, NY, 11794

THE EFFECTS OF COURSE AVAILABILITY ON DEGREE PROGRESS AND THE ACADEMIC CALENDAR

A Final Report submitted to

Samuel L. Stanley Jr., MD
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310 Administration Building
Stony Brook, NY 11794-0701

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Period of Investigation: 2015-2016 Academic Year

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Introduction

In the United States, the total undergraduate enrollment in postsecondary education has increased by 46% since 1990, with an estimated 17.5 million students entering college in Fall 2013. The U.S. Department of Education predicts the total enrollment to be 19.6 million students by 2024 (1). Despite the steady influx of undergraduates, studies indicate declining degree attainment rates with a national, full-time public and full-time private institutional four-year graduation rates of only 38.4% and 57.3%, respectively (2). Therefore, there is an inconsistency between the significant growth in college enrollment and measured college degree attainment. This extended time to degree has resulted in increased and debilitating student debt. The average debt per Class of 2015 graduate rose to an average of $35,000, and more than 70% of degree recipients graduated with student loans (3). Furthermore, delayed entrance into the work field has negatively impacted the United States' competitiveness in the international economy.

Several studies have indicated low rates of degree completion may be affected by the lack of course availability at 2-year and 4-year institutions. A study by the University of California, Davis investigated the effects of student ability and inability to enroll in required courses on four-year graduation rate. Results indicated that undergraduates who graduate in four years have fewer average shutouts, or are "shut out of a unique course section" less times per term than those who graduate in more than four years (5).

Stony Brook University is among colleges that have experienced record high growth in terms of student enrollment and has a graduation rate of 50.3%, well above the national average. However, when compared to other large, public Association of American Universities (AAU), Stony Brook University has experienced stagnation in its four year graduation rate. Some research has been conducted that looked into specific groups that are considered at risk for late graduation. Some of these findings indicate that students who have a weak first semester performance or students who experience weaker connections with their peers are less likely to graduate in the four year period. Demographic-wise, men, as well as White and Hispanic students, are also at a greater risk.

One way to accommodate more students and provide the same flexibility in scheduling is to expand course offerings. While costly for an academic institution, increasing online course offerings can alleviate this burden. However, the efficacy of such courses has been questioned in the past. Hybrid courses that present less than 50% of course material in an online setting are becoming popular among academic institutions as an alternative. The Columbia College Research Center (CCRC) conducted a study in 2010 looking to compare online, hybrid, and face-to-face courses at the community college level. Analyzing over 50,000 students in Washington State, the study concluded that hybrid courses had the same success rate as face-to-face courses, but online courses presented lower success rates in terms of student performance and exam results. Students in online courses were also more likely to drop out of the institution. While this indicates that hybrid courses may be a feasible and effective method to increase course availability, the specific relationship between online, hybrid, and face-to-face courses has not yet been evaluated at the four-year institutional level and requires future investigation.

The primary goal of this report is to investigate factors that can potentially increase the four-year graduation rate. Our first objective was to see how lack of course availability and difficulties surrounding course enrollment can keep students from graduating on time. Our research uses focus groups and surveys to investigate the importance of Saturday courses, evening courses, and online classes and hybrid courses. The second objective includes an investigation of our academic calendar, to see if it is optimally structured to encourage students to graduate in four years. This investigation includes a comprehensive review of other institutions, part of the AAU, using Stony Brook University as a midline. By looking into Fall and Spring semesters, this report will compare overall length of semesters, number of total days off, the timings of days off, and the semester end dates, or the last day of classes. We aim to determine how increasing course availability and changing the structure of the current academic calendar can optimize student success.

Materials and Methods

I. Focus Groups

Participants
Academic-intensive groups, leadership groups, and organizations classified as tutoring services on campus were selected as potential focus group participant pools. For recruitment purposes, the coordinators of each group were contacted directly and asked to forward a Qualtrics Survey Software link to students who belonged to one of the specific groups of interest. Students were able to sign up for one of five (5) group time-slots. Participants were divided into three

different groups that are believed to have different propensities for success: highly motivated students, student leaders, and at risk students. Table 1 summarizes the groups represented in each category. Each focus group included between three (3) to six (6) individuals, with a 22 students participating overall.

Focus Group Protocol
Five (5) focus groups were conducted at various times spanning three weeks and lasting one hour each. These focus groups were purposed to refine questions for larger surveys and acquire qualitative information regarding student opinion. Sessions began with scripted introductions from a moderator to the group and followed with each subject stating their major and academic year. A script was strictly followed and included the same questions for each focus group. Table 2 summarizes the standard questions that were posed and additional follow-up questions that were asked at specific focus groups. Questions were posed to the group as a whole and each subject allowed to answer at their leisure. Two (2) to three (3) observers recorded each subject's responses on laptop computers. The moderator would occasionally ask follow-up questions to probe certain responses. Observers did not participate in, or guide, discussion.

II. Surveys

Participants
The survey was distributed to all 16,298 undergraduate students at Stony Brook University. 2,105

responses were received for a completion rate of 12.9%. Of those originally surveyed, 690 students were excluded due to transfer student status. Therefore, a total of 1,415 undergraduate student responses were analyzed.

Survey Design and Distribution
The sampling framework involved stratification by the following variables: (a) online classes, (b) Saturday classes, (c) course registration, and the (d) academic calendar, and how each of these variables affects the four-year graduation rate at Stony Brook University. A summary of the survey questions can be found in **Supplemental Figure 9**. Students were incentivized to complete the survey with the chance to win one of several $25.00 Wolfie Wallet Gift Cards. Qualtrics was used to create and distribute the survey. Data collected from focus groups was used to structure the survey questions.

Prior to analysis, all data was collected and de-identified. The data was categorized based on student grade point average (GPA). Those who had a GPA greater than 3.0 were classified as "high GPA students," while those with a GPA below 3.0 were classified as "low GPA students." Students were also identified based on campus involvement. Those who were involved in one or more leadership roles on campus were classified as "high involvement," and those who were not involved in any leadership roles were classified as "low involvement."

III. Hybrid Courses

A hybrid class combines online and in-class lecture formats to maximize accessibility, flexibility and efficiency in course scheduling, while appealing to students with diverse learning styles. After learning the lecture material, students are equipped to solve problems on their own and ask questions, thus promoting student engagement and greater student-faculty interaction. Hybrid courses not only foster a better learning environment, but they also have the potential to increase course availability.

With the intent of trying to improve course availability at Stony Brook University, the role of hybrid courses was investigated; using a preliminary study conducted by Professor Collins and Professor Malmquist, BIO 203 course instructors. Specifically, a high-demand, introductory physiology course, BIO 203 was examined. The hybrid option for this class was first offered to students in the summer of 2015. The novel approach is designed to have weekly activities or Graduated Engagement Tools (GETs), allowing students to complete low-stakes formative assessments, with correct answers provided in a timely manner. GETs consist of a variety of methods such as multiple choice questions, free response, and exam-type questions, giving students more exposure to class material. GETs are supplemented with online lectures.

IV. Academic Calendar Structure

A comparative investigation of AAU institutions was conducted to examine the following attributes: 1) cumulative class days and days off, 2) semester start and end dates, 3) breaks, holidays, and reading days, 4) final examination dates, and 5) graduation dates. Out of 62 research institutions, 15

universities were excluded from the analysis based on incompatible calendar structure (i.e. trimester and quarter systems) and/or location outside of the United States. Fall and spring semesters for the 2015-2016 academic year were compared against Stony Brook University.

Of the 47 AAU institutions reviewed, six (6) universities that offered a guaranteed four-year graduation contracts were contacted. Data was collected either thorough the university's website or via phone. A list of predestined questions was used to investigate the implementation and the effectiveness of these programs.

Results

I.   Graduation Rates:

$n = 1383$
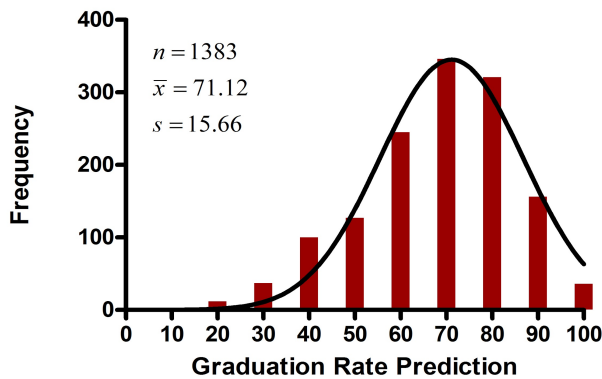$\bar{x} = 71.12$
$s = 15.66$

Figure 1 The frequency distribution of student responses when asked to estimate the current graduation rate of Stony Brook University.

II.   Class Registration:

According to data collected from 1,415 undergraduate students who entered Stony Brook as freshmen, 53% of students have encountered trouble registering for classes. Of these students, those with a GPA below 3.0 had the least trouble registering for classes. High GPA students were statistically more likely than low GPA

students to have difficulty registering for classes ($P <<.001$) (**Figure 2A**). There was a statistical difference (P << .001) between the low and high GPA students being waitlisted for a major class, with high GPA students being waitlisted more often than the lower GPA students. However, there was no significant difference between campus involvement and course registration difficulties (**Figure 2B**).
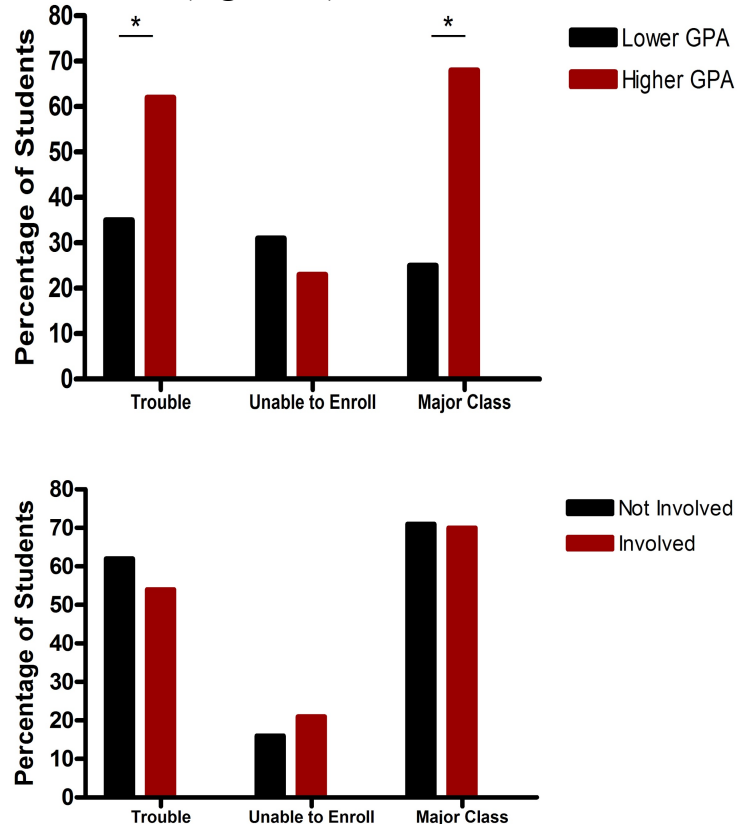

Figure 2 The percent of students experiencing course availability difficulties in various categories. A) Comparing experiences between low GPA (less than 3.0) and high GPA (greater than 3.0) students with regard to course registration. B) Comparing experiences between involved and not involved students with regards to course registration. "Trouble" indicates students that experienced any trouble registered for classes. "Waitlisted" refers to students that have been placed on the waitlist for a class in which they were

unable to enroll. "Major" indicates if the class for which they were waitlisted was a required for their major. A chi-squared test for independence was conducted and all statistically significant values ($P<.05$) are marked with an asterisk (*).

III. Online Courses

Only 26-28% of students surveyed have ever taken an online class (**Supplemental Figure 1**). However, 71-73% of students surveyed would be interested in taking an online class in the future. This includes both students who have taken an online class already and are interested in taking another (20.25-21.8%) and those who have never taken an online class but are interested in doing so (50.15-52.3%). Based on an N-1 2 Proportion test for Binary Data, neither involvement nor GPA significantly affected the likelihood of a student taking an online class or the student's interest in opting for an online class across all cohorts measured.

Further, of the students willing to take an online class in general, it was preferred that this course be used to fulfill a DEC/SBC requirement as opposed to major/minor ones (**Supplemental Figure 2**). When students who had previously taken an online course were asked to rate the effectiveness of said course on a scale of 1-5 ("1" being non-effective and "5" very effective) the average rating was a 3.86. All the student groups investigated felt similarly with involved and non-involved as well as high and low GPA students rating these courses at 3.8-3.9 in regards to effectiveness (**Supplemental Figure 3**).

IV. Hybrid Courses

For the fall 2015 cohort of students, Professor Collins and Professor Malmquist,

instructors of BIO 203, conducted a preliminary study. From the initial analyses performed thus far, it seems that there is a positive correlation between GETs and exam scores. However, exam scores of students in the hybrid section were nearly identical to exam scores of students in the lecture-only section. This indicates that the BIO 203 hybrid course did not necessarily improve student grades overall. However, it is important to note that students who were on the borderline between a passing grade and a "C" grade benefited more in the hybrid course, as their grades showed improvement (**Supplemental Figure 4**).

Preliminary data from this study shows mixed opinions from students regarding the hybrid class. For instance, some students have reported that, "The hybrid section provides [us] with more opportunities to practice the material than the lecture section," while others have stated that, "[Those] in the hybrid section have to do more work to be as successful as students in the lecture section" (**Supplemental Figure 5**). Since this was the first time such a study was conducted for this course, and due to the fact more analyses still needs to be performed on the data collected, more evidence is needed before any hard conclusions can be drawn (**Supplemental Figure 6**).

With future improvements being made in the hybrid and lecture-only sections of BIO 203, the course instructors will implement this course in both fall and spring semesters, in addition to the summer. This will allow for greater enrollment capacity, giving students who are on the waitlist or re-taking the class a greater likelihood of registering successfully.

V.   Saturday Courses

In interest of accelerating time of graduation, rather than staying an extra semester, 63% of total students surveyed replied, "Yes" to taking Saturday class options. Of those in agreement, lab and lecture courses were of the highest appeal, with student interest ratings of 65.3% and 74.4% respectively (**Figure 4**).
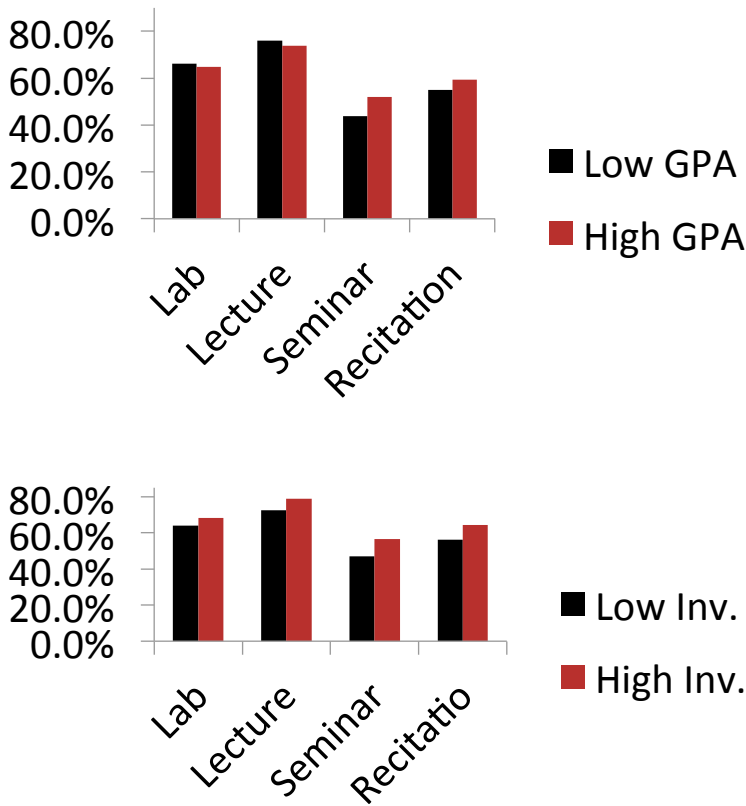
Figure 4 The types of Saturday courses high/low GPA and high/low involved students would prefer to take if such classes were added to the academic calendar.

VI.   The Academic Calendar

Analysis of the fall semester revealed that compared to Stony Brook University, most AAU institutions offer a fall break around mid-October. However, Stony Brook University gives two days off for Labor Day, whereas other AAU institutions only have one day off. Analysis of the spring semester shows that Stony Brook's calendar structure is similar to those of other institutions, in terms of class days and days off, and length of the semester. However, Stony Brook's spring semester starts much later, compared to other universities. This variation can be due to the fact that unlike other universities, Stony Brook University offers winter courses. Stony Brook is also one of few universities to end late during the spring semester. Excluding the semester start and end dates, Stony Brook's Spring semester follows the same structure as other AAU institutions (**Supplementals 7&8**).

VII.   Guaranteed Four-Year Graduation

The investigation into the guaranteed four-year graduation program showed inconclusive results. Most of the programs were created within the last five to ten years with the exception of the University of Colorado Boulder, which was created in 1994. Of the 7 programs reviewed, many were successful, while others did not show any significant changes in graduation rates (**Figure 5**). These institutions had different qualifications and criteria that were designed to encourage students to graduate in 4 years.
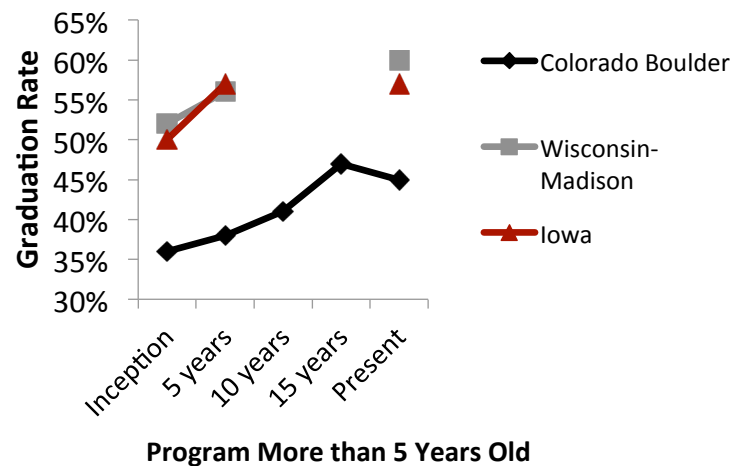
Figure 5A Institutions with Guaranteed Four-Year Graduation Programs more than five years in age and the difference in their 4-year graduation rates since then.
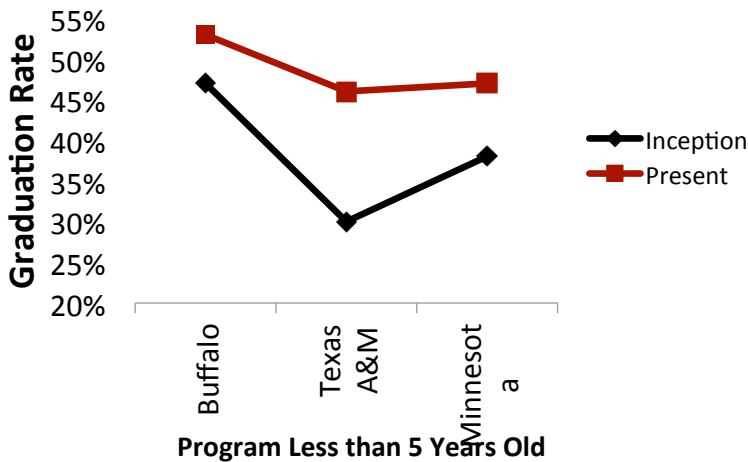

Figure 5B Institutions with Guaranteed Four-Year Graduation Programs less than five years in age and the difference in their 4-year graduation rates since then.

Discussion

Stony Brook already has a standard Spring semester, therefore no changes are recommended to the current spring schedule at this time, especially considering students' preference for Winter courses. On the other hand, it would be beneficial for the students if a break were added mid-semester, to the fall schedule.

Based on the results highlighted in this report, we concluded that not only do the students find online and hybrid courses fairly effective, but they also experience less trouble when enrolling for them. Overall, students preferred to take online courses when it satisfied a General Education Requirement (i.e. DECs/SBCs), rather than a Major or a minor requirement. However, it is important to note that students experienced more difficulties when enrolling for DEC (60%) courses then SBCs (40%). Therefore, it seems that implementing SBCs

has been a positive step in decreasing problems when registering for courses. In conclusion, this Council suggests an increase in course availability by offering more online and hybrid courses. Since hybrid courses only require an in-person lecture once a week, it would be advantageous to offer two separate sections in week. This can include offering one section on Monday, and the other on Wednesday. Additionally, inclusion of more hybrid courses can allow for high demand and controlled access courses to be offered in in various departments. Implementing these changes can decrease pressure on students during registration.

Additionally, the inclusion of Saturday courses can also increase course availability. Not only do the students prefer to take lectures and labs on Saturdays, they are also not opposed to taking courses on Tuesday/ Thursday/ Saturday schedule. While doing so will not change the length of the semesters, it will increase the amount of courses we have to offer. Implementing these changes can make it easier for students to avoid difficulties when registering. They can enroll for courses they need to fulfill their degree requirements, which can potentially increase our four-year graduation rate.

The implementation of a four-year graduation program can prove to be successful in increasing the overall graduation rate. However, after investigating current programs instituted by six (6) AAU universities, there are certain qualification criteria that must be strictly followed by the student.

Recommendations

I.   Academic Calendar Changes

As per our research, we recommend the addition of a fall break. This can be achieved by shifting a correction day from the two-day Labor Day break and a single day from Thanksgiving break to create a four-day weekend in mid-October. This adjustment would interrupt a 55-day consecutive course period. This break could correspond with Columbus Day or other national, nonreligious holidays.

II.   Hybrid Courses

As per our research, we recommend the expansion of Hybrid Courses. This should model the previously implemented BIO 203 structure that has been highly successful. This addition will increase the enrollment capacity for high-demand courses and allow students to take the courses they need to make degree progress.

III.   Stringent Advising for High-Achieving Students

As per our research, we recommend more structured advising schedules for high-achieving students. Based on survey results, it appears that these students have the greatest degree of difficulty registering for classes. More attentive advising should ensure that high-achieving students stay in track for major completion on a four-year timeline.

IV.   Saturday Courses

As per our research, we recommend the addition of Saturday Courses. In particular, we recommend implementing this with lectures and labs, as per student opinion. This will increase laboratory course enrollment and allow students to stay on track with their lab work that is often a prerequisite to higher-level courses.

V.   Guaranteed Four-Year Graduation Program

As per our research, we recommend the addition of a Guaranteed Four-Year Graduation Program. Given the success that similar programs have generated at other institutions, we believe that this would be a popular one for students to ensure that degree progress is met. Additionally, this program would lead to a subsequent increase in Stony Brook's four-year graduation rate.

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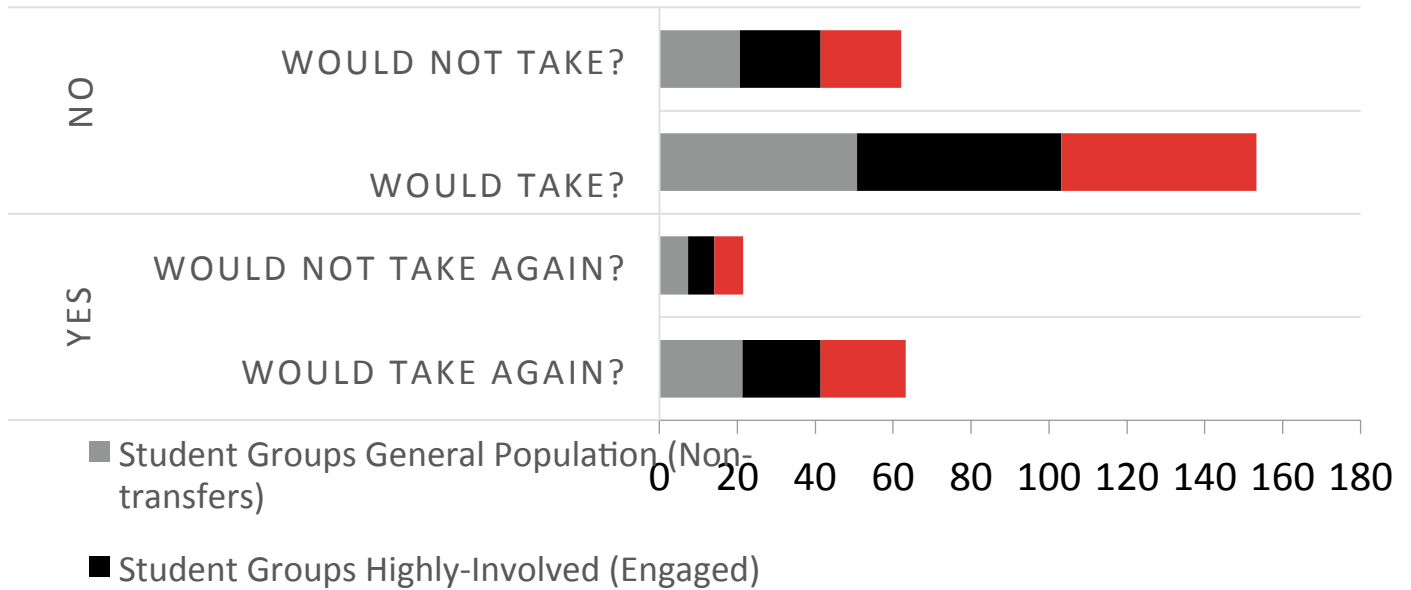
HAVE YOU EVER TAKEN AN ONLINE CLASS? (%)

Figure 1 Frequency of students who have previously enrolled in online classes, and those who would be willing to take an online class in the future across all cohorts (General Population (all subjects, transfers were removed): Red, Highly Involved: Black, Average, Grey).
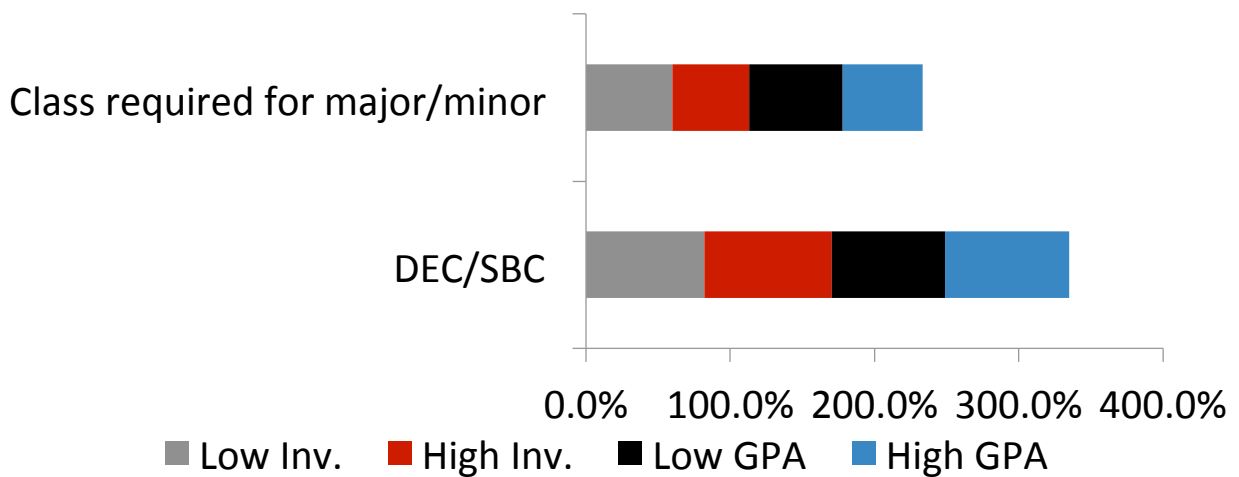

Figure 2 The types of online courses students would prefer to take as broken up by the different student groups investigated (Low Involvement-Grey, High Involvement-Red, Low GPA-Black, High GPA-Blue). An emphasis is placed on courses to fulfill DEC/SBC requirements by all of these groups.
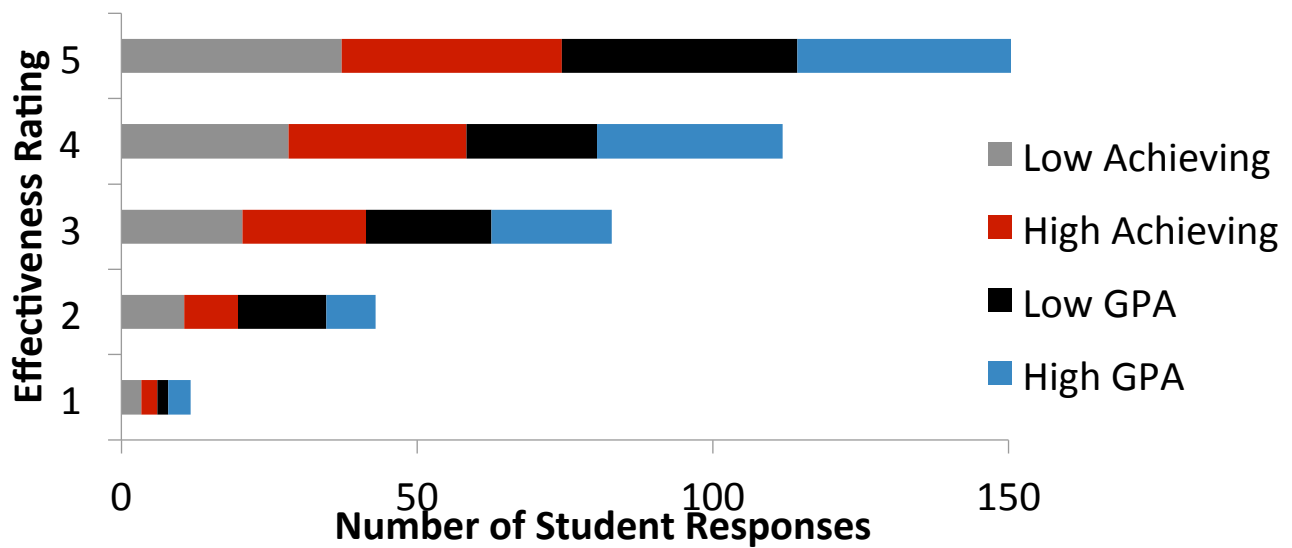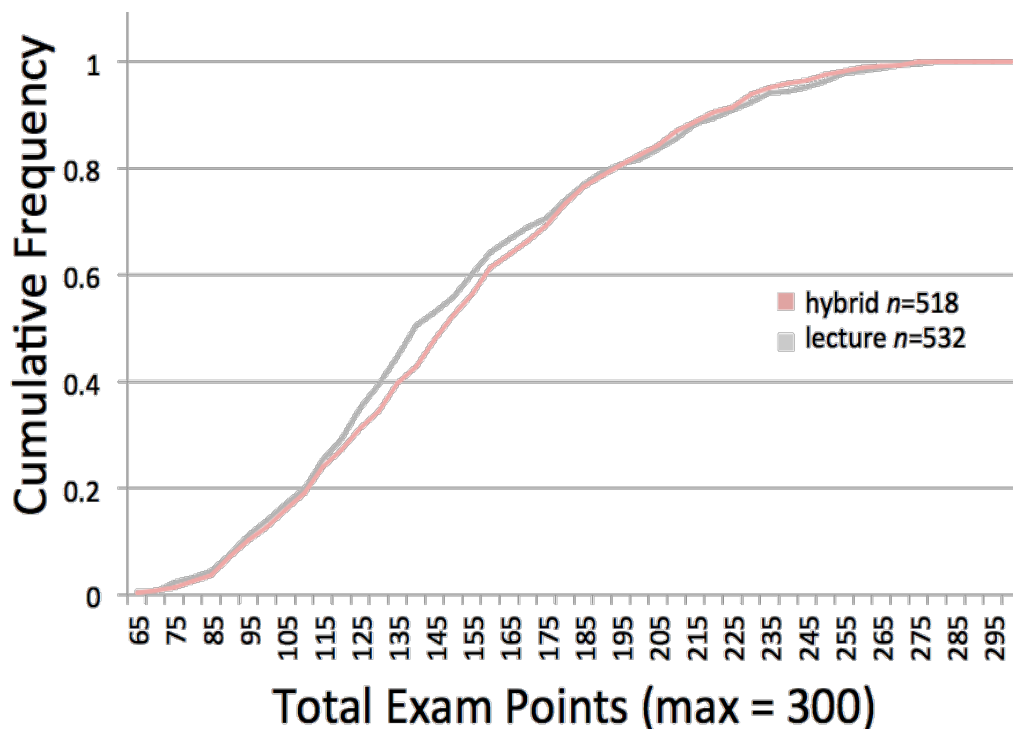
Figure 3 Overall effectiveness ratings for online courses as per students who have previously taken them and distributed amongst groups (Low Involvement-Grey, High Involvement-Red, Low GPA-Black, High GPA-Blue). All students agreed online courses proved to be effective and gave an average rating around 3.8-3.9.

p>0.06 in Welch's 2 sample t-test and Wilcoxan rank sum test of each exam, total exam points, and average exam score

Figure 4 Exam performance among students who took BIO 203 during the fall 2015 semester and were either enrolled in the lecture (grey) or hybrid (red) sections.
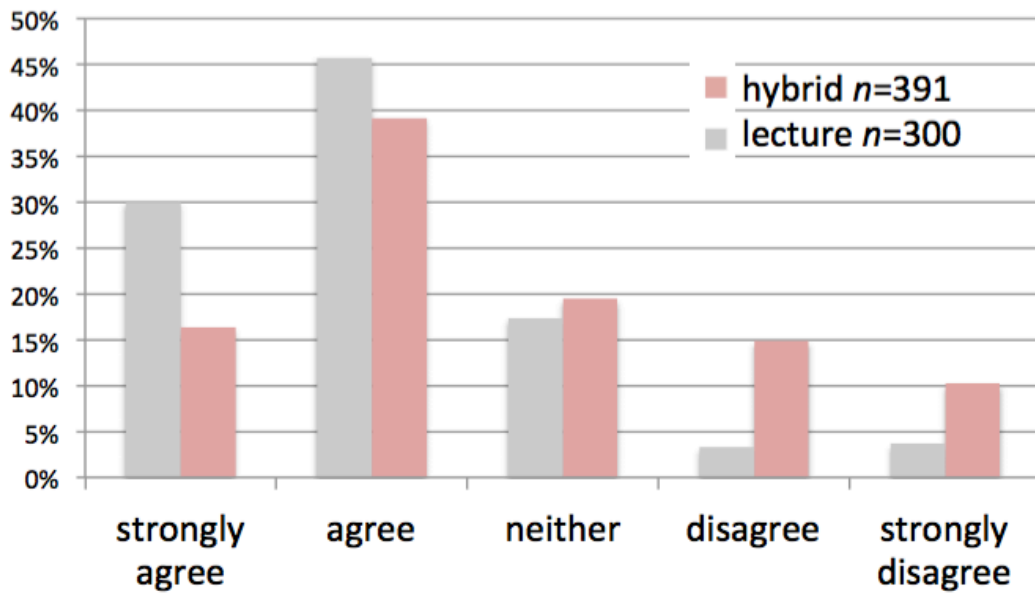
Figure 5 How students in the lecture (grey) verses hybrid (red) course responded to the following prompt: *"The hybrid section provides students with more opportunities to practice the material than the lecture section."*
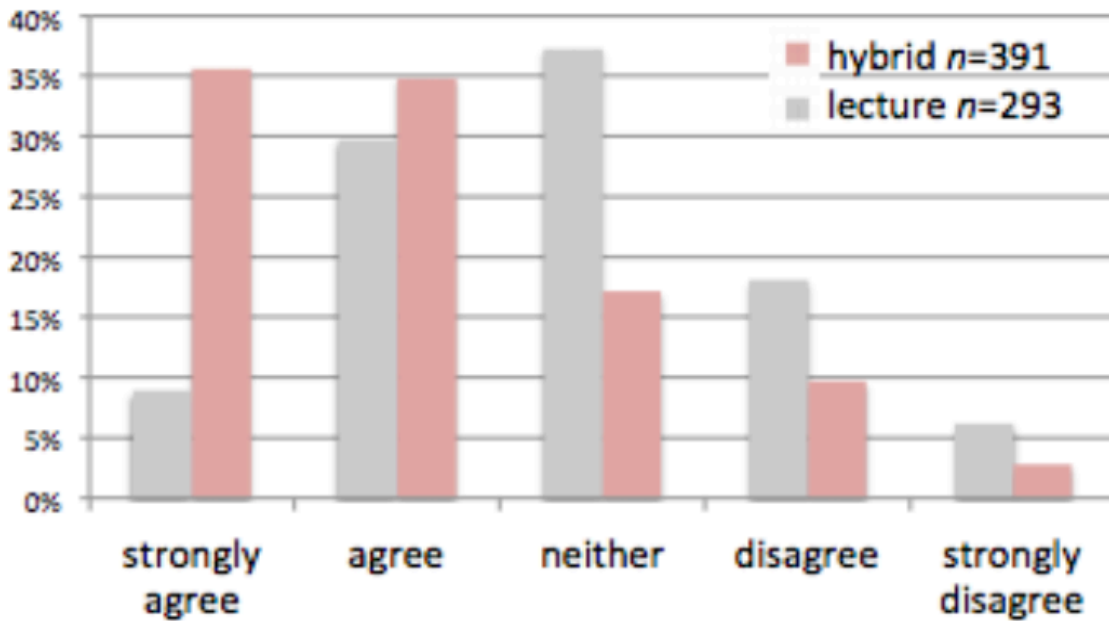

Figure 6 How students in the lecture (grey) verses hybrid (red) course responded to the following prompt: *"Students in the hybrid section have to do more work to be as successful as students in the lecture section."*