Salt Lake Community College

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DATA SCIENCE & ANALYTICS

STUDENT COURSE-TAKING PATTERNS UPDATED STUDY

How have student course-taking patterns within the General Studies Pre-Major changed since 2015?

SUMMARY OF FINDINGS

- Of the GS students who graduated in 2014-2015, 43% took at least 12 credits in an outside field.
- 65% of GS students graduating in the 2018-2019 academic year took 12 credits or more in a concentrated discipline.
- 5% of 2014-2015 GS graduates and 2% of 2018-2019 GS graduates took over 21 credits in business.
- Across both graduating classes, STEM (life sciences) was among the most popular discipline for GS students to take a concentrated number of credits.
- The business and STEM (life sciences) appear to be the two disciplines that students most often switch out of prior to graduation.

INTRODUCTION

In 2015-2016, SLCC Institutional Research developed an exploratory study to examine student course-taking patterns within the General Studies (GS) pre-major. GS is the largest program for students who achieve the AA/AS degree at SLCC. Previous work has sought to track course-taking behaviors to examine if students are starting out in other, non-GS programs and switching before graduation. Perhaps, students apply to graduate and find they are missing courses that would delay their graduation, fueling their decision to switch to GS, a program where they meet the requirements for graduation. The 2015-2016 report, using GS students who graduated in the 2014-2015 academic year, pursued this question by examining course clusters based on credits. A replicated study was requested using students who graduated in the 2018-2019 academic year. This report compares the results of these two groups of students.

DATA

The original data included 1685 students who graduated in the any term (Fall, Spring, or Summer) during the 2014-2015 academic year. The current set pulled the same criteria of students but for the 2018-2019 academic year. The criteria were as follows:

- General studies (AS or AA) graduates
- Students with transfer courses were included

- Students with more than one degree were excluded
- Courses with a failing grade (below a D-) were excluded in the term credit counts
- All developmental courses (any course below 1000) were excluded
- Core general education classes (HIST 1700, POLS 1100, ECON 1740, ENG 1010 & 2010, MATH <1210) were excluded

To create the credit groups, the filters from the original study were applied:

Table 1: Adopted criteria for creating course groups based on credits

Course Group	*Courses Included:*
Business	ACCT, BUS, ECON (not 1740), FIN, MGT, MKTG
STEM Physical Science (PS)	CHEM, GEO, GEOL, GEOG, MATH (>1210), MET, PHYS
STEM Life Science (LS)	BIO, BIOL, BTEC, CHEM, MATH (> 1210), PHYS
Health	DH, HIT, MA, NSG, OTA, PHAR, PTA, RADS, SURG
Social Science	POLS/POLI (not 1100), PSY, SOC, ANTH, ECON (not1740), HIST/HIS (not 1700), SW, ETHS, FHS, SWK
Humanities	HUMA, RELS, ARTH, HIST/HIS (not 1700), ANTH, ENGL (not 1010 or 2010), INTL, PHIL
Fine Arts	ARTH, DANC, DNC, ART, FA, MUSC, MUS, THE, THEA, FLM
Communications	COMM, CO
Computer Science	CS, CSIS, CPE, CIS, ISIS
Engineering	CEEN, EE, ENGR, MSE, PHYS, PHY, MEEN, EDDT, CHE, MATH (> 1210)
Education	EDU

RESULTS

The original exploratory study counted the number of GS students who took courses in a concentrated disciplinary area. In the table below, the original 2014-2015 data is presented alongside the current data. The column *course group* refers to the groups defined in Table 1 above. The *credit group* column includes two ranges of accumulated credits, as defined by the original study:

- 12 credits in the specified area but less than 21 (12-21)
- Greater than 21 credits (>21)

Values in the column labeled *count* reflect the number of GS students. Lastly, the *percent* column is the percent of total GS students in that course group. GS students who completed less than 12 credits in each course group were excluded, as these students were most likely fulfilling their general education requirements and not part of the target major-switching student group. For this reason, the total of the *percent* column does not sum to 100 and instead, the *total* row displays the percentage of students who may qualify as the target population.

Table 2: A comparison of previous and current course groups

Academic Year		*2014-2015*		*2018-2019*	
Course Group	Credit Group	Count	Percent	Count	Percent
Business	12-21	87	5%	56	8%
Business	<21	77	5%	13	2%
CS	12-21	19	1%	13	2%
CS	<21	17	1%	1	0%
Communications	12-21	13	1%	11	2%
Communications	<21	6	0%	2	0%
Education	12-21	12	1%	13	2%
Engineering	12-21	3	0%	7	1%
Engineering	<21	2	0%	7	1%
Fine	12-21	60	4%	8	1%
Fine	<21	31	2%	5	1%
Health	12-21	7	0%	2	0%
Health	<21	7	0%	2	0%
Humanities	12-21	14	1%	47	7%
Humanities	<21	6	0%	1	0%
STEM (Life Science)	12-21	108	6%	95	14%
STEM (Life Science)	<21	30	2%	22	3%
STEM (Physical Science)	12-21	45	3%	19	3%
STEM (Physical Science)	<21	48	3%	3	0%
Social	12-21	73	4%	106	16%
Social	<21	61	4%	9	1%
Total		726	43%	442	65%

- In 2014-2015, 43% of GS graduates took at least 12 credits in a concentrated field outside of the major defined at graduation, compared to 65% who took at least 12 credits in the 2018-2019 graduating class.
- Students in the 2018-2019 class most often took 12-21 credits in the social sciences (16%) or in STEM life sciences (14%). STEM life sciences was previously (for the 2014-2015 group) the most popular area to complete 12-21 credits of outside coursework.
- Across both groups, GS students took the largest number of credits (over 21) business. There were 77 2014-2015 graduates and 13 2018-2019 graduates who took over 21 credits in business.

Major switching. To further investigate if students are switching to a GS major right before graduation, the discrepancies between declared major and graduation major for all 2018-2019 GS graduates were examined. Previous investigation determined that these discrepancies may occur when students apply for graduation in their originally declared major and find that they did not meet criteria to graduate in that program. The students who lacked the required coursework to graduate on their timeline received notice that their application to graduate that term was denied. Often, these students seek advice from an academic advisor who are trained to advise students to take those recommended courses or graduate with a degree in GS. Thus, it can be assumed that students whose major differed from their graduation major may fall into this class of students. Table 3 includes the data from 2018-2019. The column *awarded major* is GS for every case because all students included switched to GS before graduation. The *declared major* refers to the student's previous major before graduation. The *count* column has the number of students for each original declared major and *percent* is the percent of total GS students who switched.

Table 3: 2018-2019 GS Graduates with Different Declared Majors

Declared Major	*Awarded Major*	*Count*	*Percent*
NRS	GS	34	8%
BUS	GS	14	3%
PHS	GS	12	3%
PSY	GS	11	2%
ENME	GS	7	2%
PMHS	GS	7	2%
CSIS	GS	6	1%
BIOL	GS	5	1%
CMGT	GS	5	1%
RAD	GS	5	1%
SOC	GS	5	1%
SURG	GS	4	1%
SWK	GS	4	1%
Various Other	GS	35	8%
Total		154	35%

The 2014-2015 report found the top 4 declared majors that resulted in a switch to GS as the following: Criminal Justice 12%, Nursing 8%, Business 7%, and Psychology 2%. These majors were approximately the same in the current data.

- In previous work, 24% of those graduating with a GS degree changed their major last minute. The current report shows 35% of GS 2018-2019 graduates switching their majors.
- The top majors that 2018-2019 graduates switched to prior to graduation were as follows: nursing (8%), business (3%), physics (3%), and psychology (2%).

RECOMMENDATIONS

Similar majors emerged as the declared majors that students change before graduation, in both datasets. Perhaps, these majors (i.e. Business, STEM) have spurious variables preventing students from completing the required coursework. A closer look into how courses in this major are scheduled, the advising support for each major, and the credit load may shed light as to why these majors emerge as the most frequently replaced by a GS major prior to graduation. Alternatively, these programs are large, popular fields of study. It is possible that due to the sheer quantity of students in these majors that these number represent the percentage of students who do not typically meet criteria for graduation, regardless of institution or discipline.

Future directions. Future updates of this report should include a cluster analysis or association rule. In these models, students can be clustered based on the coursework and number of credits received in each course group. Demographic and other student information can be added to analysis to create profiles of students likely to switch majors close to graduation. Conducting this type of analysis will allow SLCC to better understand the significance of the number of GS degrees awarded and proactively support students in attaining their desired degree, ultimately increasing overall satisfaction with their experience.