



Pathways First 15 Schedule Analysis

Strategy & Analysis

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Introduction

Course recommendations provided to students as a result of the SLCC Pathways initiative may have a significant impact on student course selection. While students are not required to enroll in the recommended courses, this recommendation is a departure from SLCC's previous cafeteria model of course selection.

These recommendations will impact students who do not select a specific program of study when applying to SLCC, and instead select a more general area of study. Each of the eight areas of study provides students with the first five courses (see Appendix B for the complete list) that will introduce them to their chosen area and help get them started on an appropriate trajectory. The courses were selected from the existing course bank. In future iterations we anticipate building specific courses to introduce students to the area of study.

We anticipate that the recommended courses will change enrollment patterns. The students who receive the recommendation will likely enroll in these courses at high rates. But since only a portion of the new students will receive the recommendation the effect is difficult to predict. This analysis will provide a sense of how course enrollment might change in Fall 2019.

Method and results

The analysis began with an accounting of enrollment in each course in prior Fall semesters. We initially focused our analysis on just the first course, with the assumption that even students who do not take a full load will enroll in at least one course. We broke these enrollments down into new and returning students: as this change only affects new students, we assume for this analysis that the number of returning students will remain the same. We were able to calculate the average number of new students in the previous five fall semesters, and predict how many new students we might expect in the fall 2019 semester.

Next, we examined application patterns for the Spring 2019 semester. This was the first semester that utilized the new application logic, which requires students to select an area of study. This information helped us determine not only how many students were selecting the more general area of study option (as opposed to a specific program), but also the proportion of students going into each subject area.

We projected roughly 6,700 new students for the Fall 2019 semester. Only about 20% of Spring applicants selected an area of study rather than a more specific program¹. Using that as a baseline we predict the need to accommodate approximately 1,300 to 1,400 students into these courses. Further, the applications helped us understand which areas of study students might be drawn to. Health Sciences was the most common choice, followed by Business and the Social/Behavioral Sciences, Education and Human Services (see Table 1). See Appendix C for a more detailed account of the methodology.

Table 1: Distribution of areas of study on the Spring 2019 Application

¹ While we anticipate students starting in Fall semester would differ somewhat from those starting in the Spring, our best estimate for the proportion of students selecting each program/area of study was Spring. Additionally, the new application went live a few weeks into the Spring application cycle. Thus, we might expect the proportions to diverge even more.

Area	Percent
Health Sciences	26%
Business	14%
Arts, Communication, Digital Media	14%
Social & Behavioral Science, Education, and Human Services	13%
Science, Engineering, Mathematics	13%
Computer Science & Information Technology	8%
Manufacturing, Construction, and Applied Technology	5%
Humanities	3%

An additional wrinkle arose when attempting to estimate enrollment in the second, third, fourth, and fifth courses recommended to students. Because the majority of SLCC students take courses on a part-time basis, we would anticipate decreasing enrollment in these courses. Based on the average credit load for students in their first fall semester over the past six years, we predict students in Fall 2019 will adopt a credit load pattern in the proportions outlined in Table 2.

Table 2: Distribution of course load among students in their first semester

Number of courses	Proportion of students
1	100%
2	85%
3	62%
4	43%
5	17%

Given these constraints and guidelines, we were able to construct a prediction of how many new students would enroll in each of the recommended courses. Adding the returning students back in allowed us to view the total anticipated enrollment. In addition, we considered the impact of program of study, and the possibility that a small proportion of new students would not follow our advice, and decide to enroll in something completely different.

Table 3 shows the results of this analysis. We predict the biggest changes to be in the Computer Science & Information Technology and Health Sciences areas of study, where we see potential for significant growth. The courses CSIS 1030 and HS 2050 may require fourteen or eleven additional sections, respectively. The increase in sections in other courses appears to be somewhat more manageable.

Table 3: Projected changes to the number of sections required

Recommendation	Area	Subject	Number	F18 Sections	F19 Projected Sections	Change in Number of Sections
1	HUM	ENGL	1100	1	1-2	0-1
5	CSIT	GEOG	1000	8	8-9	0-1
1	MCAD	WLD	1005	3	3-4	0-1
3	ACDM	ANTH	1020	10	10-12	0-2
3	SEM	BIOL	1010	10	10-12	0-2
1	ACDM	COMM	1010	63	63-65	0-2
4	SBSEHS					
1	SBSEHS	SOC	1010	25	25-28	0-3
3	HUM					
1	SBSEHS					
3	CSIT	PSY	1010	38	38-42	0-4
3	HUM					
5	ACDM					
2	ACDM					
2	BUS	ENGL	1010	120	120-125	0-5
2	CSIT					
2	HS					
2	HUM					
2	MCAD					
2	SEM					
3	SBSEHS					
2	SBSEHS					
1	SEM	CHEM	1010	15	15-20	1-5
1	BUS	BUS	1010	29	30-35	1-6
3	HS	COMM	2110	8	10-15	2-7
1	CSIT	CSIS	1030	11	15-25	4-14
1	HS	HS	2050	4	10-15	6-11
2	SBSEHS	ANTH	1010	14	14	No change
5	HUM					
1	MCAD	ARCH	1310	4	4	No change
1	ACDM	ART	1010	12	12	No change
5	MCAD	CJ	1010	44	44	No change
1	ACDM	COMM	1020	26	26	No change
4	SBSEHS					
3	BUS	ECON	2010	14	14	No change
1	MCAD	EDDT	1040	2	2	No change
5	HUM	HIST	1510	2	2	No change
1	HUM	HUMA	1100	24	24	No change
4	ACDM	MATH	1030	28	28	No change
4	HUM					
4	MCAD					
5	SBSEHS					
4	HS	MATH	1040	26	26	No change
5	SBSEHS					
4	BUS	MATH	1050	29	29	No change
4	CSIT					
4	SEM					
1	HUM	PHIL	1000	13	13	No change
3	MCAD	POLS	1100	26	26	No change
5	BUS					
5	SEM					
5	HS	PSY	1100	28	28	No change
3	HUM	SOC	1020	3	3	No change

Holistic overview

The most significant changes can be seen in the CSIT and HS areas of study. Indeed, these recommended changes appear daunting. They are based on both the proportion of new students we expect to enroll in these areas, as well as the proportion of students expected to enroll in specific programs (particularly in the case of CSIT). It represents our best guess based on applications for

Spring 2019. Because spring-start students and fall-start students tend to be quite distinct populations, it would wise to be cautious in implementing these recommended changes to the schedule.

Students who start at SLCC in the fall are more likely to be recent high school graduates, and are thus younger with less intentionality. As a result, they may be less interested in the career-oriented areas and programs of study such as CSIT and HS. Thus, we recommend at this time a more conservative approach, with the goal of starting with a few additional sections of both CSIS 1030 and HS 2050, but also being flexible and ready to add more sections if these courses fill up quickly.

Appendix A: Provost's Letter

Colleagues,

As provost I need your voice and input to chart the direction laid out in the SLCC strategic plan. A critical component of that plan is the SLCC Pathways initiative. SLCC Pathways is a multiyear college redesign effort to enhance learning and increase student completion. Full implementation of SLCC Pathways will be achieved through incremental achievements every academic year from 2019 through 2022. Like piecing together, a model, every fall we will implement new elements of the total SLCC Pathways initiative until it is fully implemented. I am committed to listening and continually improving our model based on your input.

The SLCC Pathways model requires new SLCC students to make several choices. Perhaps the most dramatic change for Fall 2019 is that when we admit students they must select one of the eight Areas of Study. Within an Area of Study, students must choose a specific transfer or workforce Program of Study. We are now using our New Student Application Form with incoming students, and we are quite encouraged, based upon early results (5000+ students) that all new students are choosing an Area of Study and more than 60% of these students are choosing a specific workforce or transfer program of study. For students who are not willing to make a Program of Study decision immediately, our goal is to help them get a solid start, develop successful college-going habits and gain confidence to make a Program of Study choice as early as possible. We will seek to empower these students via case management advising strategies, first year targeted interaction, and immediate assistance from SLCC Career Services to help students evaluate program of study options.

To help undecided students get started we are providing a recommended schedule of 15 credit hours of courses aligned with each Area of Study (see attached). Our Fall 2019 SLCC Pathways implementation only starts with these courses. As we move beyond this starting point it is essential that faculty leadership and program faculty remain engaged with academic administrators, academic advising and Institutional Effectiveness to modify and optimize this list and assess our processes in the best interests of student development ('habits of mind'), student learning and academic integrity.

Thanks,

Clifton Sanders, PhD

Provost for Academic Affairs

Appendix B: Area of Study Course Recommendations

Suggested 15 Credits for Area of Study

***First course in bold is the Area of Study major course.**

The courses below would be taken in sequence. Placement for English and Math could change the sequence based on developmental education requirements.

Manufacturing, Construction & Applied Technologies:

- **ARCH 1310/EDDT 1040 (Intro to AutoCAD) or WLD 1005 (Related Welding)**
- ENGL 1010 (or placement) *EN*
- POLS 1100 (U.S. Government & Politics) *AI*
- MATH 1030 (or placement) *QL*
- CJ 1010 (Introduction to Criminal Justice) *SS, DV*

Humanities:

- **HUMA 1100 (Intro to Humanities) HU or PHIL 1000 (Intro to Philosophy) HU**
- ENGL 1010 (or placement) *EN*
- PSY 1010 (General Psychology) *SS*
- MATH 1030 (or placement) *QL*
- ANTH 1010 (Culture & Human Experience: Intro to Cultural Anthropology) *IG*

Arts, Communication & Digital Media:

- **ART 1010 (Exploring Art) FA or COMM 1020 (Principles of Public Speaking) CM**
- ENGL 1010 (or placement) *EN*
- ANTH 1020 (Human Origins: Evolution & Diversity) *LS*
- MATH 1030 (or placement) *QL*
- PSY 1010 (General Psychology) *SS*

Health Sciences:

- **HS 2050 (Cultural, Legal, And Ethical Issues for The Health Sciences) HR**
- ENGL 1010 (or placement) *EN*
- COMM 2110 (Interpersonal Communication) *CM*
- MATH 1040 (or placement) *QL*
- PSY 1100 (Lifespan Human Growth & Development) *SS*

Science, Engineering & Math:

- **CHEM 1010 (Intro to Chemistry) PS**
- ENGL 1010 (or placement) *EN*
- BIOL 1010 (Intro to Biology) *LS*
- MATH 1050 (or placement) *QL*
- POLS 1100 (U.S. Government & Politics) *AI*

Social & Behavioral Sciences, Education and Human Services:

- **SOC 1010 (Intro to Sociology) SS or ANTH 1010 (Cultural & Human Experience: Introduction to Cultural Anthropology) IG**
- ENGL 1010 (or placement) *EN*
- COMM 1010 (Elements of Effective Communication) *CM*
- MATH 1040 (or placement) *QL*
- PSY 1010 (General Psychology) *SS*

Business:

- **BUS 1010 (Introduction to Business) HR**
- ENGL 1010 (or placement) *EN*
- ECON 2010 (Principles of Microeconomics) *SS*
- MATH 1050 (or placement) *QL (** OR MATH 1060?)*
- POLS 1100 (US Government & Politics) *AI*

Computer Science & Information Technology:

- **CSIS 1030 (Foundations of Computer Science)**
- ENGL 1010 (or placement) *EN*
- PSY 1010 (General Psychology) *SS*
- MATH 1050 (or placement) *QL*
- GEOG 1000 (Physical Geography) *PS*

Appendix C: Detailed methodology

This section gives greater detail with regard to the methodology used to arrive at our conclusions.

Area

One of eight broad areas of study encapsulating a variety of related programs of study, intended for students who have not yet decided on a specific program.

Area	Description
SBSEHS	Social & Behavioral Sciences, Education, Health, and Human Services
MCAT	Manufacturing, Construction, and Trades
ACDM	Arts, Communication, and Digital Media
BUS	Business
SEM	Science, Engineering, and Mathematics
CSIT	Computer Science and Information Technology
HS	Health Science
HUM	Humanities

Recommendation

The sequence in which the course is recommended for each area (1-5).

Subject and number

Course subject and number recommended by each of the eight programs of study as the first course in a sequence to help undecided students familiarize themselves with their chosen area. These courses are merely recommendations, and students are by no means required to take them. They are intended to assist students in building their first semester schedule. Some areas of study list more than one course, and students may opt for either one.

Max enrollment

Using information from the class schedule, we determined the highest seat capacity for each course. While this is largely dependent on the physical layout of the classroom, it gives us some idea of how many students each section of a course can accommodate.

Proportion taking x number of classes

For those courses recommended as the second, third, fourth, or fifth course in the sequence, we require an additional multiplier. All enrolled students, by definition, take at least one course. Thus, for the first recommended course, we can expect the 1,404 new students to be distributed among these courses in the same proportions as they select their area of study. However, a smaller proportion of students will enroll in two courses, fewer in three, and so on.

In order to account for the dwindling numbers of students taking more credits, we calculated the average credit load for students in their first semester. While all students take at least one course, only 85% of students take two, 62% take three, and so on. Thus, we multiplied the 1,404 new students by 85% to determine how many would take enroll in a second course, then distributed these students among the various areas of study. We followed the same procedure for the third, fourth, and fifth recommendations.

Number of courses	Proportion of students
1	100%
2	85%
3	62%
4	43%
5	17%

Program %

Spring 2019 application data shows undecided students selecting from among areas of study in the following proportions:

Area of Study	Percent
Health Sciences	26%
Business	15%
Science, Engineering and Math	15%
Social & Behavioral Sciences, Education and Human Services	14%
Arts, Communication and Digital Media	14%
Computer Science & Information Technology	8%
Manufacturing, Construction, and Applied Technologies	5%
Humanities	3%
Total	100%

While it is unlikely that Fall 2019 students will select these areas of study in precisely the same proportions, it gives us some idea of what we might expect.

Sections

The number of sections of each course offered in the Fall 2018 semester, excluding concurrent.

New students

The number of new students enrolled in each course in Fall 2018

Returning students

The number of returning students enrolled in each course in Fall 2018.

Total

The total number of students enrolled in each course in Fall 2018.

New – low, New – high

While it is unlikely we will see *no* additional new students, our hope is that new students will have greater direction, and fewer undecided students will end up in courses less relevant to them. However, this is inevitable. We were unsure how many students this would affect, so we added a cushion of an additional 25-75% of new Fall 2018 students whose Fall 2019 counterparts may still end up in each course.

New – area

The number of new, undecided students we can anticipate enrolling in each course in Fall 2019. This figure is derived multiplying our projection for the number of new, undecided students by the proportion of these students who selected each area of study on the Spring 2019 application.

We calculated the number of new, undecided students by examining enrollment patterns over the previous five fall semesters. On average, there were 6,688 new students from Fall 2013-Fall 2018. Using data from the Spring 2019 application, we can assume that 21% of new students will be undecided, and will select an area of study, rather than a specific program. This gives us 1,404 undecided students.

New – program

While 21% of our new students will likely take one of these recommended area of study courses, there is significant overlap between area recommendations and program-specific requirements.

For example, the CSIT area of study recommends CSIS 1030 as the first course in the sequence. The CSIS program also requires this course, and recommends that students take in their first semester. Thus, we can anticipate additional, decided students in several courses. The CSIT area is most affected by this phenomenon, as there will likely be comparatively few undecided students in this area (8% of the overall, amounting to 20 students), but many who are likely, based on Spring 2019 data, to select one of CSIT's specific programs (nearly 300).

Returning students

Our best guess for how many returning students to anticipate in Fall 2019 is how many returning students we had the year before. Thus, this column lists the same figure as Fall 2018.

Total – low, Total – high

This column adds up the total number of students we can anticipate enrolling in each course in Fall 2019. The first column assumes an additional 25% of new students will enroll in each class; the second one assumes 75%.

Required sections – low, Required section – high

The number of sections required to accommodate the total number of students, assuming an additional 25% or 75% of new students enroll in each class. This is calculated by taking the figure in the Total – 25%/Total – 75% column and dividing it by 85% of the seat capacity for that course. This gives us the appropriate number of sections, given anticipated enrollment, takes into account physical classroom constraints, and uses the optimum fill rate of 85%.

Change in sections – low

The difference between the projected number of sections required for Fall 2019 and the number of sections offered in Fall 2018.

Change in sections – high

The difference between the projected number of sections required for Fall 2019 and the number of sections offered in Fall 2018.

Area	Recommendation	Subject	Number	Max enrollment	Proportion taking x number of classes	Program %	Fall 2018				Fall 2019				Change			
							New	Returning	Total	New-low	New-high	New-Area	New-Program	Returning	Total-low	Total-high	Required sections max %85%-low	Required sections max %85%-high
HUM	5 ANTH	1010	35	17%	14	197	212	409	49	148	87	212	348	447	12	15	-2	1
SESEHS	2 ANTH	1020	35	85%	10	77	227	304	19	58	122	227	398	406	12	14	2	4
ACDM	3 ANTH	1310	20	62%	4	20	50	70	5	15	18	50	73	83	4	5	0	1
MCAD	1 ARCH	1010	25	100%	12	75	197	272	19	56	66	197	281	319	13	15	0	1
ACDM	1 ART	1010	35	100%	10	61	203	264	15	46	130	203	349	379	12	13	2	3
SEM	3 BICL	1010	35	62%	29	252	426	678	63	189	211	305	426	1,005	37	42	8	13
BUS	1 BUS	1010	30	100%	15	111	235	346	28	83	211	26	235	499	20	22	5	7
SEM	1 CHEM	1010	30	100%	15	111	235	346	28	83	211	26	235	499	20	22	5	7
MCAD	5 CU	1010	25	17%	44	444	557	1,001	12	111	333	557	902	1,001	42	47	-2	3
ACDM	1 COMM	1010	25	100%	63	744	663	1,407	186	558	143	663	1,048	1,420	49	67	-14	4
SESEHS	4 COMM	1010	22	43%	26	246	233	479	62	185	66	233	416	539	22	29	-4	3
ACDM	1 COMM	1020	22	100%	26	246	233	479	62	185	66	233	416	539	22	29	-4	3
SESEHS	3 COMM	2110	25	43%	8	50	133	183	13	38	226	133	371	396	17	19	9	11
HS	3 COMM	2110	25	62%	11	81	153	234	20	61	112	258	153	544	26	27	15	16
CSIT	1 CSS	1030	25	100%	14	60	284	344	15	45	130	284	429	459	14	15	0	1
BUS	3 ECON	2010	35	62%	2	16	15	31	4	12	18	15	37	45	2	3	0	1
MCAD	1 EDDT	1040	20	100%	2	16	15	31	4	12	18	15	37	45	2	3	0	1
MCAD	2			85%														
MCAD	2			85%														
HUM	2			85%														
HUM	2			85%														
ACDM	2			85%														
HS	2 ENCL	1010	25	85%	120	1,537	1,186	2,723	384	1,153	725	1,186	2,295	3,063	108	144	-12	24
SEM	2			85%														
SESEHS	3			62%														
SESEHS	3			62%														
BUS	2			85%														
BUS	2			85%														
CSIT	2			85%														
HUM	1 ENCL	1100	25	100%	1	7	18	25	2	5	14	18	34	37	2	2	1	1
CSIT	5 GEOG	1000	26	8%	8	78	111	189	19	20	59	111	188	189	9	9	1	1
HUM	5 HIST	1510	35	17%	2	14	24	38	4	4	11	24	38	38	1	1	-1	-1
HUM	1 HS	2050	30	100%	4	33	53	86	8	25	365	53	426	443	17	17	13	13
HUM	1 HUMA	1100	35	100%	24	293	432	725	73	220	14	432	519	666	17	22	-7	-2
MCAD	4			43%														
HUM	4			43%														
ACDM	4 MATH	1030	33	43%	28	201	558	759	50	151	33	558	642	742	24	27	-4	-1
SESEHS	5			17%														
SESEHS	5			17%														
HS	4			43%														
SESEHS	5			17%														
SEM	4			17%														
BUS	4 MATH	1050	30	43%	26	67	602	669	17	50	24	602	643	676	23	24	-3	-2
BUS	4 MATH	1050	30	43%	26	67	602	669	17	50	24	602	643	676	23	24	-3	-2
CSIT	4			43%														
HUM	1 PHIL	1000	35	100%	13	146	246	392	37	110	14	246	287	370	10	12	-3	-1
SESEHS	2 PHIL	1120	35	85%	4	42	87	129	83	11	32	87	202	129	7	4	3	0
MCAD	3			62%														
SEM	5 POLS	1100	35	17%	26	220	464	684	126	220	104	464	694	788	23	26	-3	0
BUS	5			17%														
HUM	3			62%														
ACDM	5			17%														
SESEHS	1			100%														
CSIT	3			62%														
HS	5 PSY	1100	35	17%	38	604	519	1,123	151	453	209	519	1,055	1,357	35	46	-3	8
HUM	3 PSY	1100	35	17%	28	358	464	822	62	90	269	464	794	822	27	28	-1	0
SESEHS	1			100%														
HUM	3 SOC	1010	35	62%	25	321	433	754	80	241	107	433	770	931	26	31	1	6
SESEHS	1			100%														
HUM	3 SOC	1020	35	62%	3	20	65	85	5	15	9	65	79	89	3	3	0	0
MCAD	1 WLD	1005	20	100%	3	6	26	32	2	5	35	26	63	66	4	4	1	1