



Comprehensive Course Scheduling based on Student's preference and Course Selection Behavior

Natalie Hannum, Vice President of Instruction

Dr. Chialin Hsieh, Senior Dean of Planning and Institutional Effectiveness

Purpose

Organizational
Structure

Create an effective and efficient course schedule based on students' preference (voice) and behaviors (action) to achieve their educational goal

Enrollment
Behavior

Student
Survey

Course
Success



Planning for Fall 2021 Schedule

Spring 2021



Fall 2021

April 2021
• Student Survey—
Course and
Service
Preference for
Fall 2021



June 2021
• Course
Success by
Modality



June 2021
State Open

July 2021
Outreach
effort



August 1,
2021
District Open



August 2021
• Modification
of Modality



August 18,
2021
• Modality and
Fill Rate

Student Survey—Course and Service Preference for Fall 2021

Student
Survey:
April 2021

Demographics

1. 1304 students responded (N=8000+, Response Rate 15%)
2. Majority (72%) were age group of 18-29
3. Majority (67%) were female
4. Ethnicity:
 - 36% from Hispanic students (40%),
 - 28% white (21%),
 - 16% API (14%),
 - 12% African American (12%).
5. 89% intent to enroll in Fall 2021:
 - 90% Hispanic,
 - 88% white,
 - 89% API,
 - 92% African American.



Student
Voice

Student Survey—Course and Service Preference for Fall 2021--Ethnicity

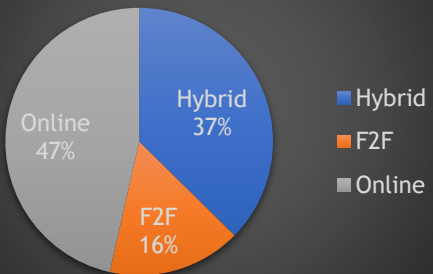
Student Survey:
April 2021

Student Voice

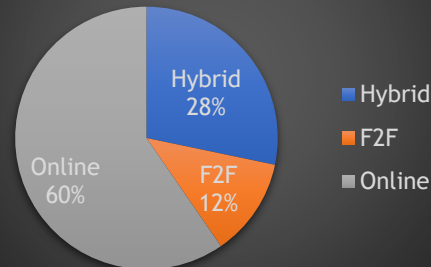
Instructional Modality

(select one preferred method)

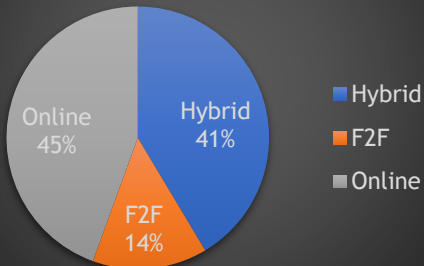
All



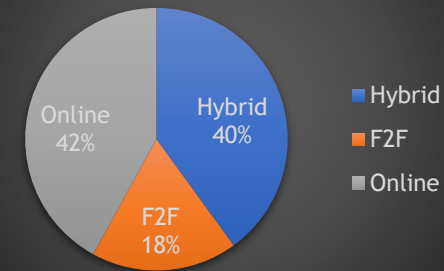
African American



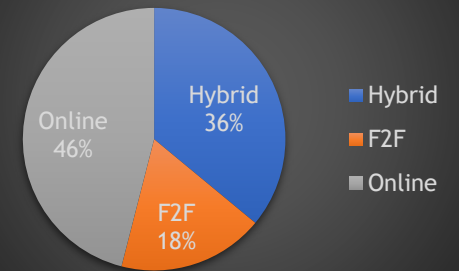
Asian Pacific Islanders



Hispanic



White

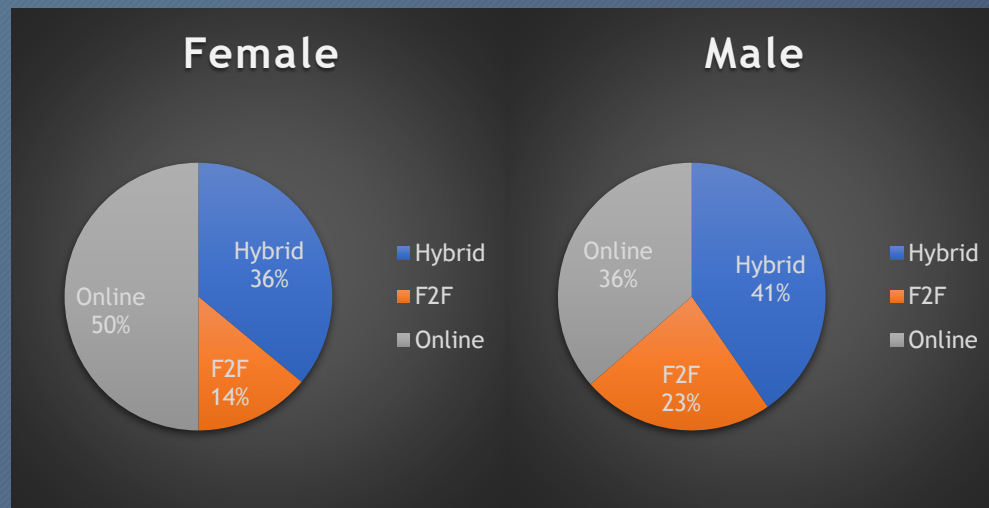
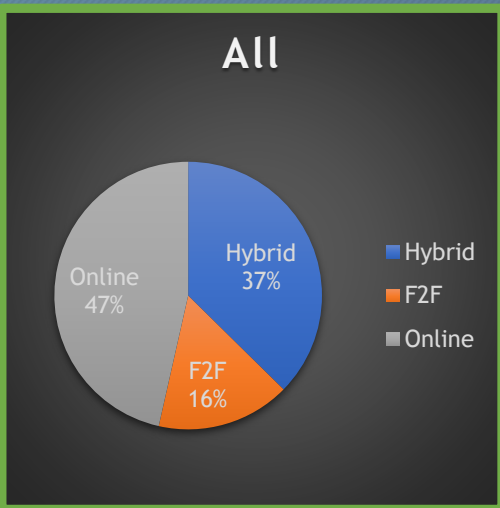


Student Survey—Course and Service Preference for Fall 2021--Gender

Student Survey:
April 2021

Student Voice

Instructional Modality (select one preferred method)

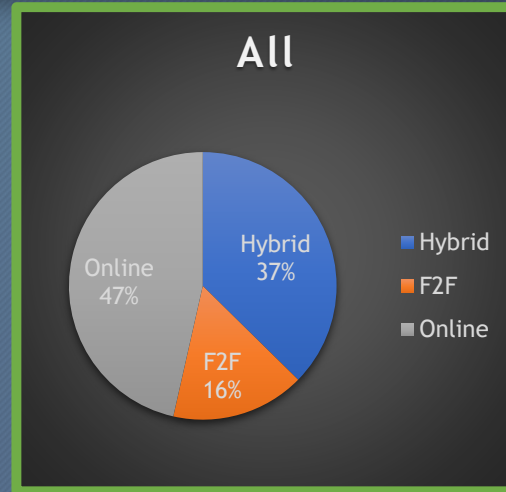


Student Survey—Course and Service Preference for Fall 2021—Age Group

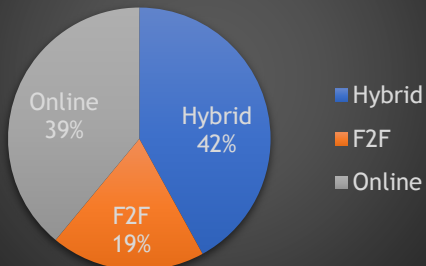
Student Survey:
April 2021

Student Voice

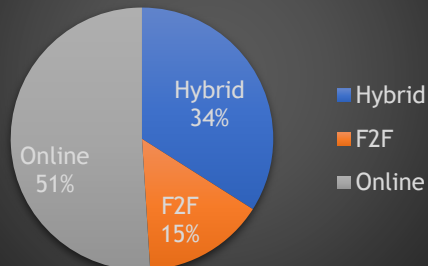
Instructional Modality (select one preferred method)



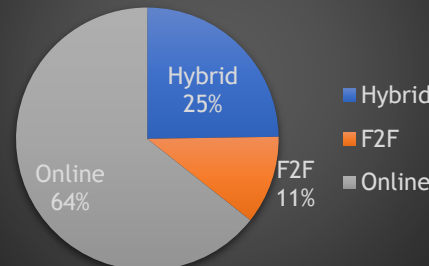
Age Group: 18-23



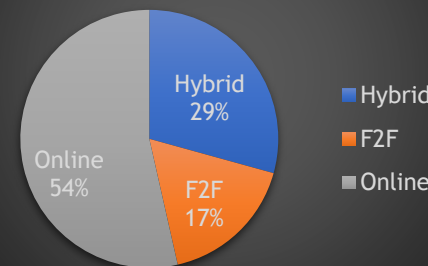
Age Group: 24-29



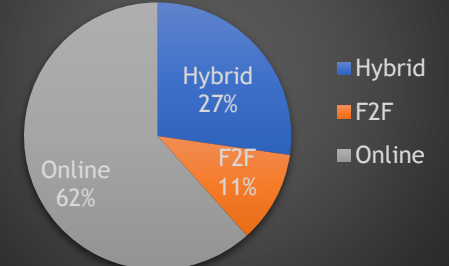
Age Group: 30-34



Age Group: 35-39



Age Group: 40+



Student Survey—Course and Service Preference for Fall 2021—Student Support Services

Student Survey
April 2021

Student Voice

Modality (select one preferred method)

		Registration Support					Counseling					Financial Aid									
District	College	Online	In Person/ On..	Both Online an..	N/A	Null	District	College	Online	In Person/ On..	Both Online an..	Null	N/A	Null	District	College	Online	In Person/ On..	Both Online an..	N/A	Null
District (all locations)	CCC	35%	16%	46%	3%	1%	District (all locations)	CCC	31%	19%	45%	2%	3%	District (all locations)	CCC	30%	19%	42%	8%	1%	
	DVC (all locations)	38%	11%	47%	3%	1%		DVC (all locations)	31%	16%	49%	1%	3%		DVC (all locations)	30%	12%	41%	17%	1%	
	LMC (all locations)	33%	12%	51%	3%	1%		LMC (all locations)	28%	19%	50%	0%	2%		LMC (all locations)	28%	14%	48%	9%	1%	

		EOPS/CARE/CalWorks					Disability Support Services					Transfer Services								
District	College	Online	In Person/ On..	Both Online an..	N/A	Null	District	College	Online	In Person/ On..	Both Online and Campus	N/A	Null	District	College	Online	In Person/ On..	Both Online and Campus	N/A	Null
District (all locations)	CCC	25%	13%	34%	26%	2%	District (all locations)	CCC	14%	11%	26%	45%	3%	District (all locations)	CCC	22%	16%	42%	18%	2%
	DVC (all locations)	20%	7%	28%	43%	2%		DVC (all locations)	15%	7%	26%	48%	3%		DVC (all locations)	21%	14%	49%	15%	2%
	LMC (all locations)	20%	10%	33%	36%	1%		LMC (all locations)	13%	7%	28%	49%	2%		LMC (all locations)	19%	15%	48%	16%	2%

		Library Support					Veterans Support					Student Life								
District	College	Online	In Person..	Both Onli..	N/A	Null	District	College	Online	In Person..	Both Onli..	N/A	Null	District	College	Online	In Person/..	Both Onli..	N/A	Null
District (all locations)	CCC	21%	24%	44%	8%	2%	District (all locations)	CCC	11%	7%	21%	56%	4%	District (all locations)	CCC	19%	18%	39%	21%	3%
	DVC (all locations)	22%	17%	45%	14%	2%		DVC (all locations)	12%	5%	20%	59%	3%		DVC (all locations)	19%	18%	39%	23%	3%
	LMC (all locations)	21%	17%	50%	10%	2%		LMC (all locations)	11%	5%	24%	57%	3%		LMC (all locations)	19%	16%	43%	20%	2%

		Puente/Umoja/Per Ankh					Tutoring					Faculty Office Hours					Career Services										
District	College	Online	In Per son/..	Both O nline..	N/A	Null	District	College	Online	In Perso..	Both Online..	N/A	Null	District	College	Online	In Person..	Both Online ..	N/A	Null	District	College	Online	In Pers on/On..	Both Onlin..	N/A	Null
District (all locations)	CCC	14%	9%	22%	51%	5%	District (all locations)	CCC	24%	20%	45%	9%	2%	District (all locations)	CCC	27%	16%	50%	5%	2%	District (all locations)	CCC	22%	16%	45%	15%	2%
	DVC (all locations)	14%	5%	19%	59%	3%		DVC (all locations)	24%	16%	47%	12%	2%		DVC (all locations)	28%	12%	52%	7%	2%		DVC (all locations)	20%	13%	47%	18%	2%
	LMC (all locations)	14%	7%	23%	53%	3%		LMC (all locations)	22%	19%	48%	10%	1%		LMC (all locations)	23%	11%	56%	9%	1%		LMC (all locations)	19%	13%	50%	16%	1%

Student Survey—Course and Service Preference for Fall 2021—Student Support Services

Student
Survey
April 2021

When asked to select preferred method for student support services:

1. Majority of students preferred both online and in person (hybrid) and range from 43% to 56%.
2. F2F services that students preferred are :
 - a. Tutoring (19%)
 - b. Counseling (19%)
 - c. Library (17%)
 - d. Student Life (16%)

Student
Voice

Takeaway of Student Survey—Planning for Fall 2021

Student
Survey
April 2021

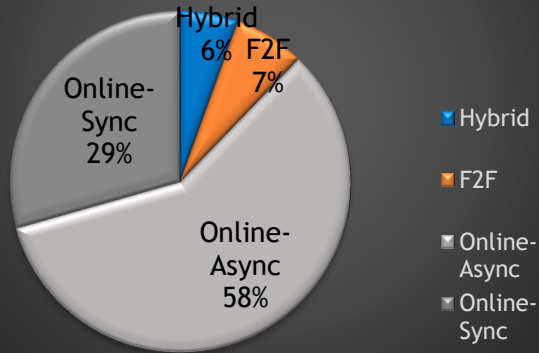
1. From student's voice, 89% of them intend to enroll in Fall 2021
2. Students prefer online (47%), followed by hybrid (37%), then by F2F (16%)
3. African American (60%) seemed to prefer online more than other ethnicities (42%-46%).
4. Female seemed (50%) to prefer online than Male (36%).
5. Age 30+ seemed to prefer online (54-64%) than younger age (Age 30-) groups (39%-51%).
6. When asked to rank students' preferred modality,
 1. Online Asynchronous ranked as 1st preferred method,
 2. Online Synchronous ranked as 2nd preferred method,
 3. Hybrid ranked as 3rd preferred method, and
 4. In Person ranked as the least preferred method.
 5. The rankings are consistent among ethnicities, gender, and age groups
7. Student Support Services Modality: Majority of students preferred both online and in person (hybrid) and range from 43% to 56%.

Student
Voice

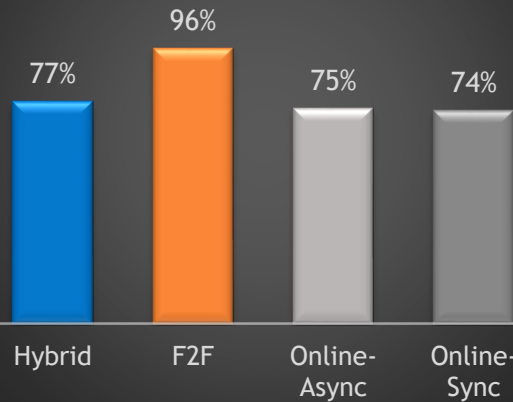
Course Success by Modality for Spring 2021

Course
Success
View
Tableau
Spring 2021

Spring 2021
Section Counts N=813



Spring 2021
Fill Rate

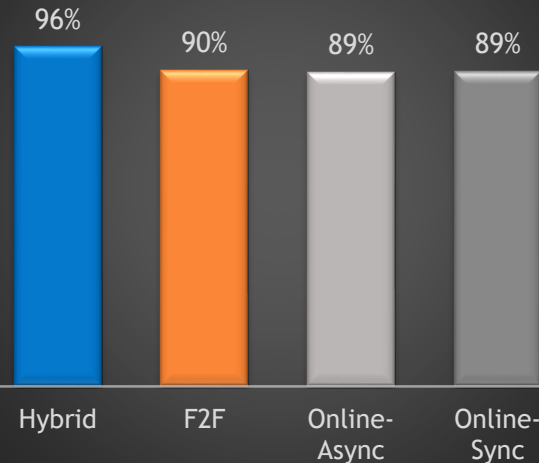


Course Success By Modality Report:

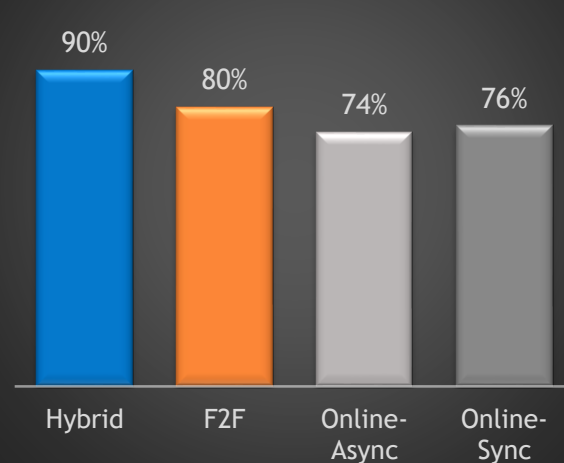
https://www.losmedanos.edu/planning/SuccessRate_ModalitybySemester_M.pdf

Course
Success

Spring 2021
Completion Rate



Spring 2021
Success Rate



*Excluded SPTUP and
Some 170 and 180 that did not have data*

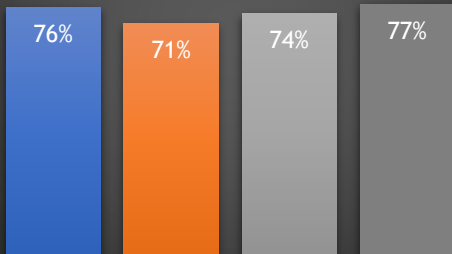
Course Success by Modality for Spring 2021

ASR
Strategic
Scheduling
Tableau
Spring 2021

Course
Success

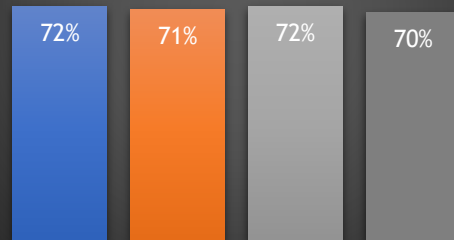
Spring 2021 Course Success Female

Hybrid F2F Online Async Online Sync



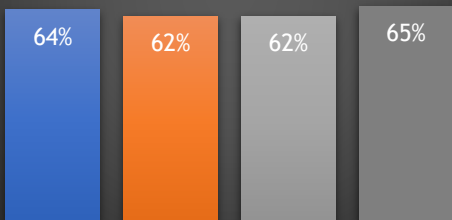
Spring 2021 Course Success Male

Hybrid F2F Online Async Online Sync



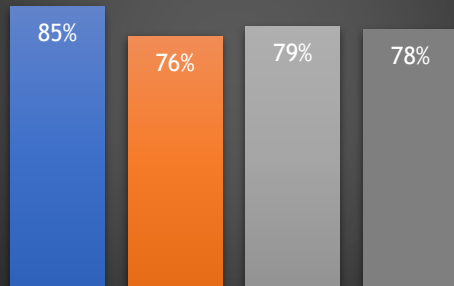
Spring 2021 Course Success African American

Hybrid F2F Online Async Online Sync



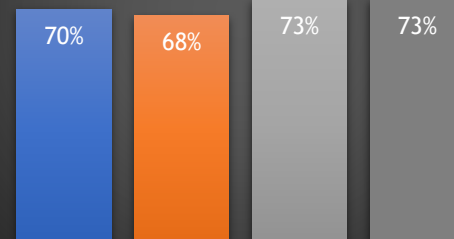
Spring 2021 Course Success Asian

Hybrid F2F Online Async Online Sync



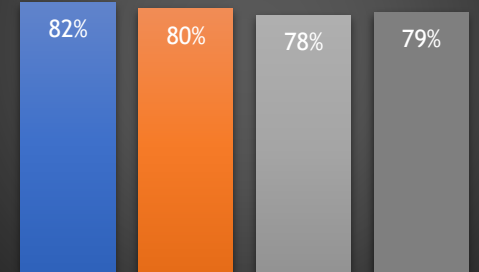
Spring 2021 Course Success Hispanic

Hybrid F2F Online Async Online Sync



Spring 2021 Course Success White

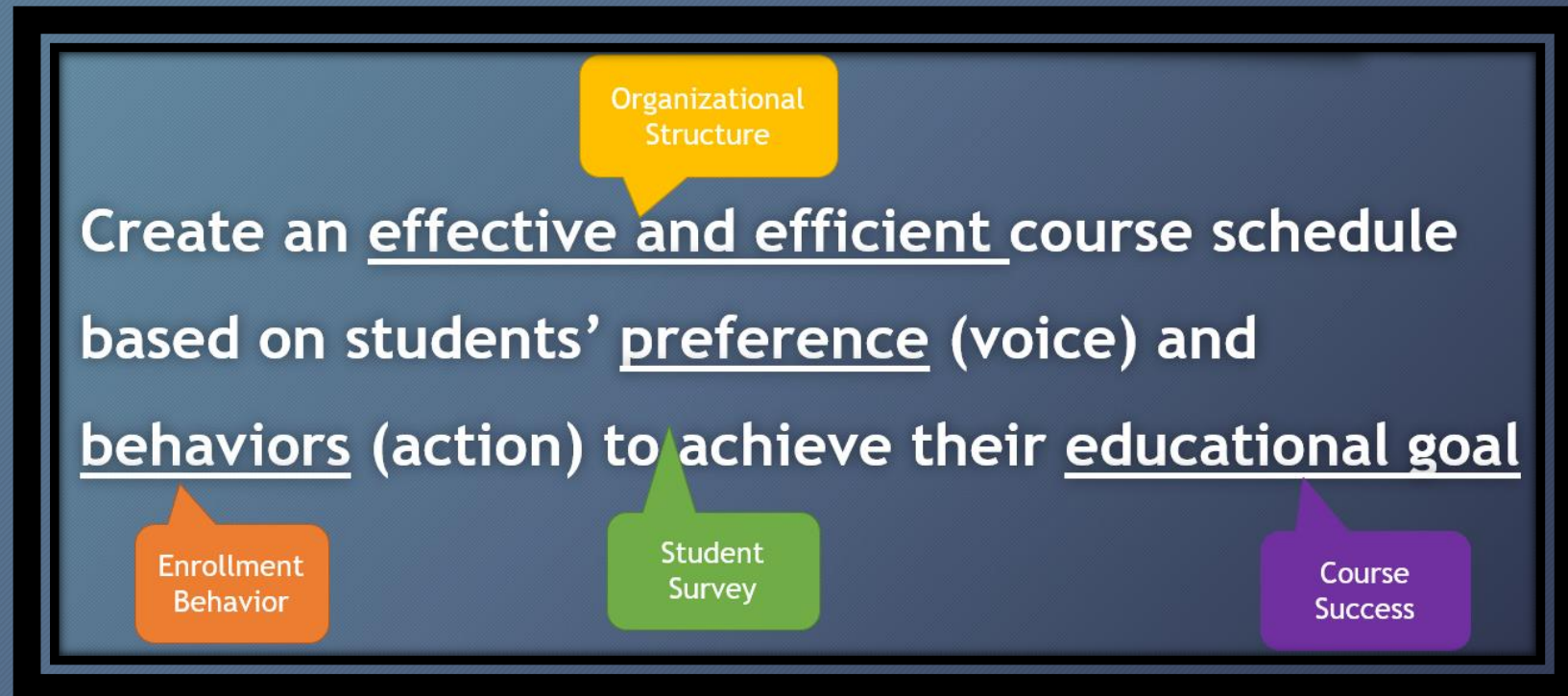
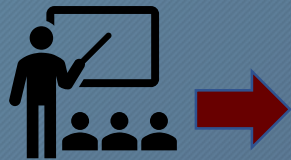
Hybrid F2F Online Async Online Sync



External Factors

External factors also play a big role on course schedule decision in order to comply with the rule, regulation, and safety order

- State open—June 2021
- District open—August 2021
- COVID-19—Delta Variant



Schedule Modification—July and August 2021

Scheduling Roller Coaster:

- Fall schedule is finalized in late spring
- June 15th- California “opens up”
- Early August- Delta Variant

Monitoring:

- Fill rates (how quickly courses and their modalities fill from the start of registration)
- Student preferences (surveys)
- Anecdotal Observations (staff, faculty, managers)

Action:

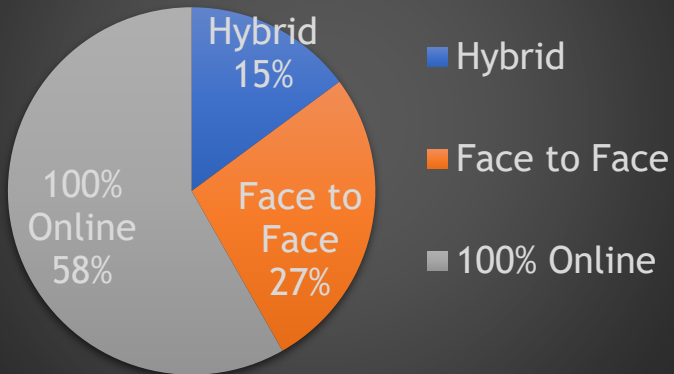
- Convert slow to enroll courses to F2F or Hybrid
- Add sections of “fast to fill” courses
- Accommodate F2F students by allowing very low enrolled courses to run

Institution
Structure

Fall 2021 Modality by Section, Enrollment, and Fill Rate

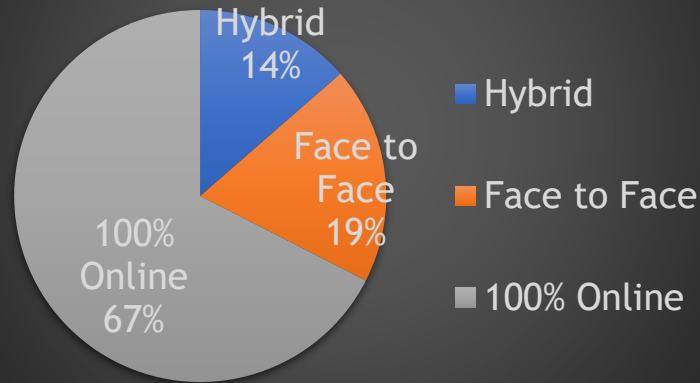
Institution Structure

Section (N=881)



Student's Behavior

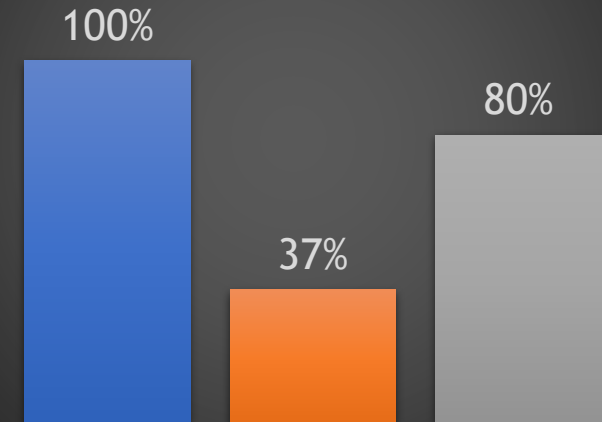
Enrollment (N=20449)
All Student



Student's Behavior

Fill Rate

Hybrid Face to Face 100% Online



Fall 2021 Modality and Fill Rate Analysis--Ethnicity

Fall 2021
As of 11.2.2021
ASR Enrollment
Tableau

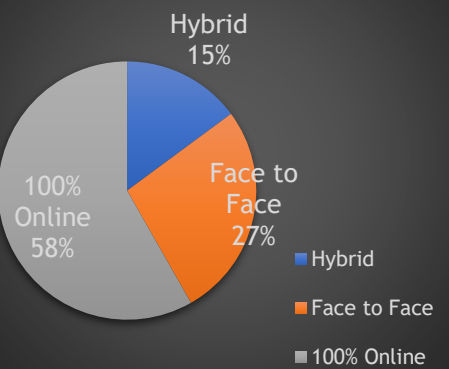
Institution Structure

Student's Behavior

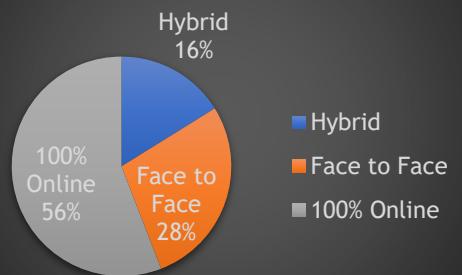
Institution Structure

Student's Behavior

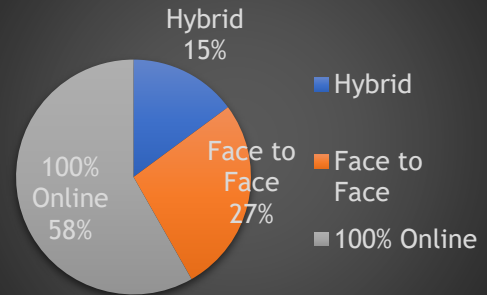
Section (N=877)



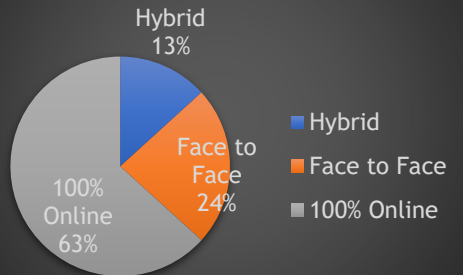
Enrollment (N=2731) Asian Student



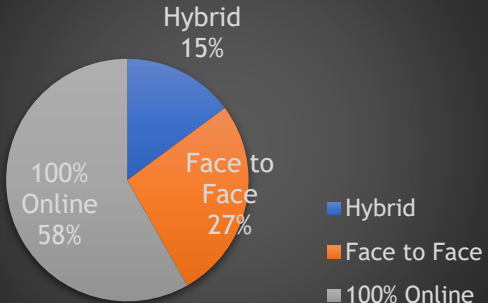
Section (N=877)



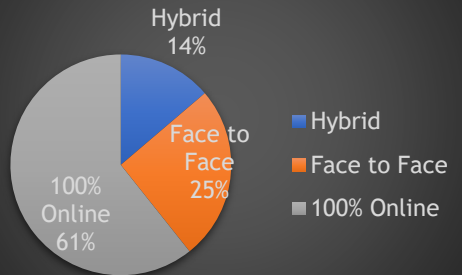
Enrollment (N=4248) White Student



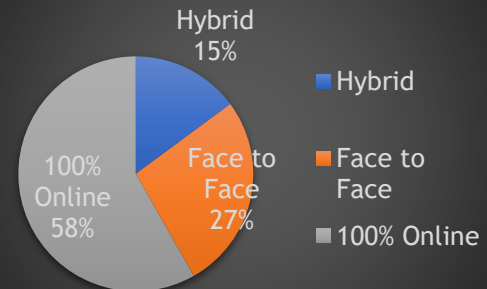
Section (N=877)



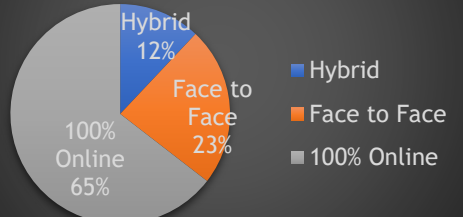
Enrollment (N=9484) Hispanic Student



Section (N=877)



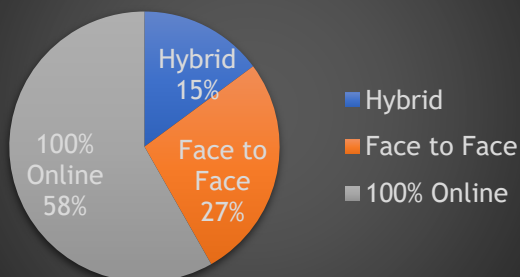
Enrollment (N=2461) African American



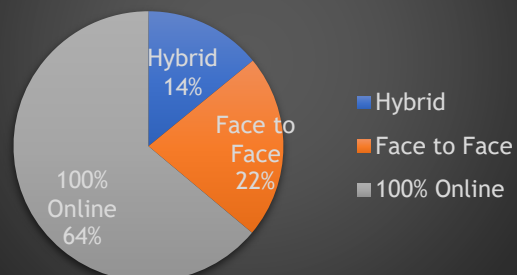
Fall 2021 Modality and Fill Rate Analysis--Gender

Institution Structure

Section (N=877)



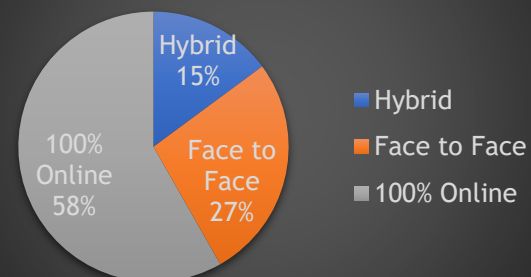
Enrollment (N=12314)
Female



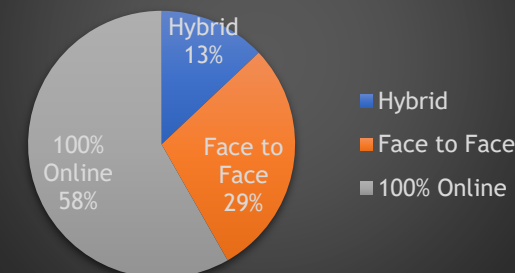
Student's Behavior

Institution Structure

Section (N=877)



Enrollment (N=9513)
Male



Fall 2021 Modality and Fill Rate Analysis--IGETC

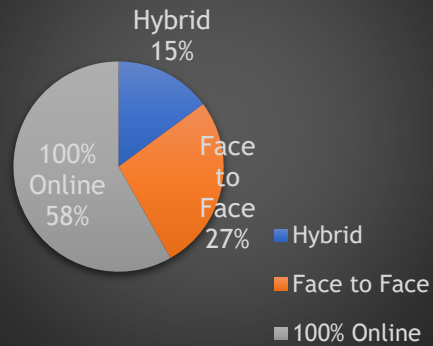
Fall 2021
As of 11.2.2021
ASR Enrollment
Tableau

Institution Structure

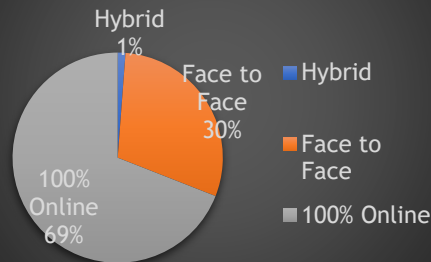
Student's Behavior

AREA 1 English Composition

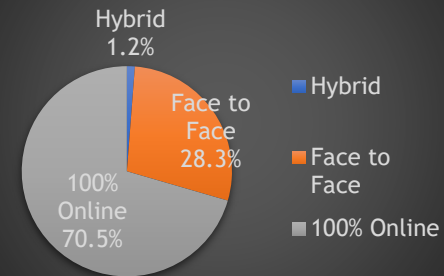
Section (N=877)



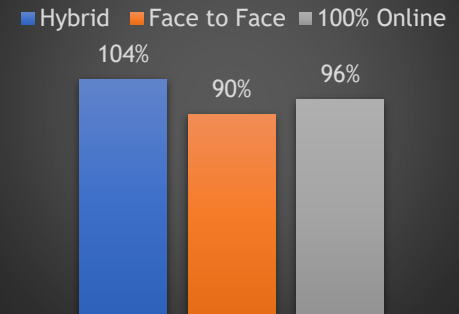
Section (N=84) IGETC-1



Enrollment (N=2373) IGETC-1

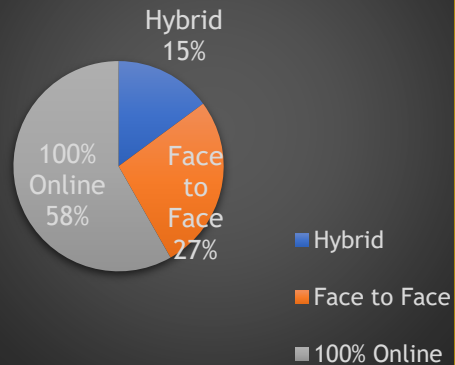


Fill Rate IGETC-1

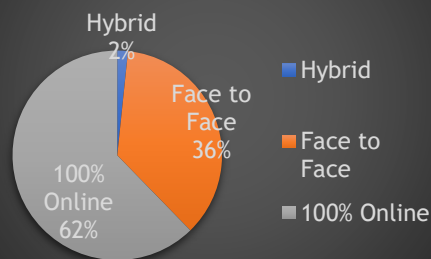


AREA 2 Mathematical Concepts and Quantitative Reasoning

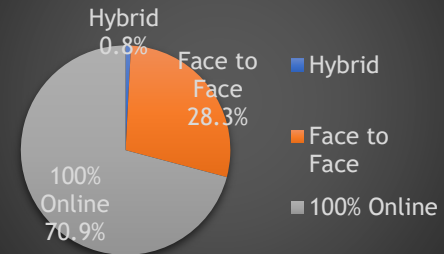
Section (N=877)



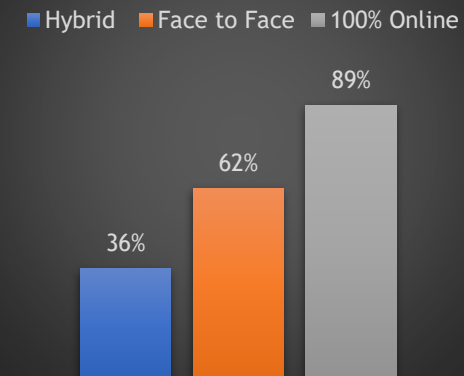
Section (N=61) IGETC-2



Enrollment (N=1582) IGETC-2



Fill Rate IGETC-2



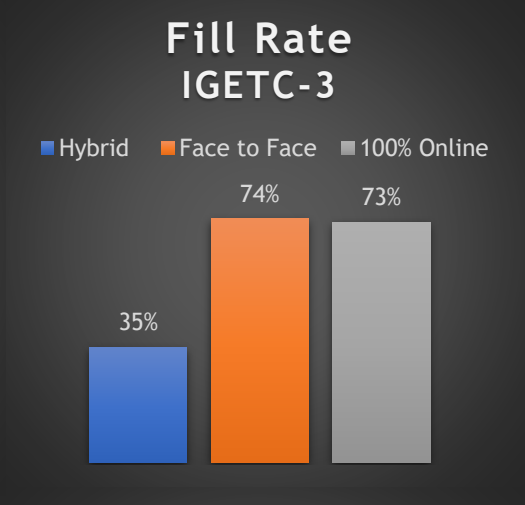
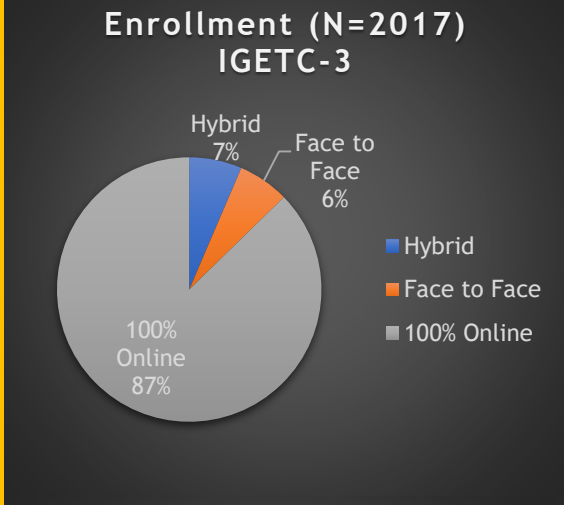
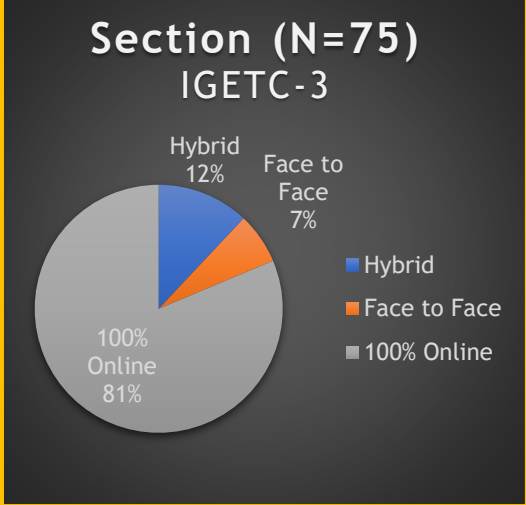
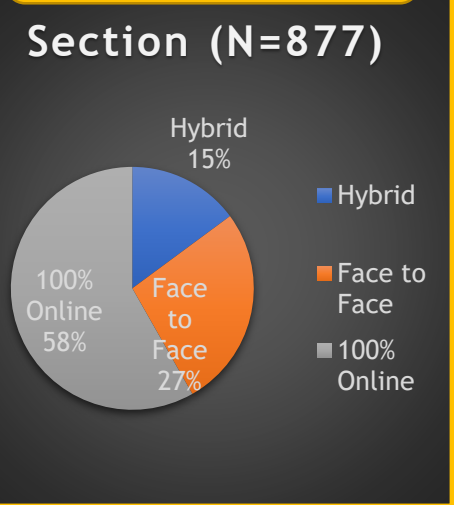
Fall 2021 Modality and Fill Rate Analysis--IGETC

Fall 2021
As of 11.2.2021
ASR Enrollment
Tableau

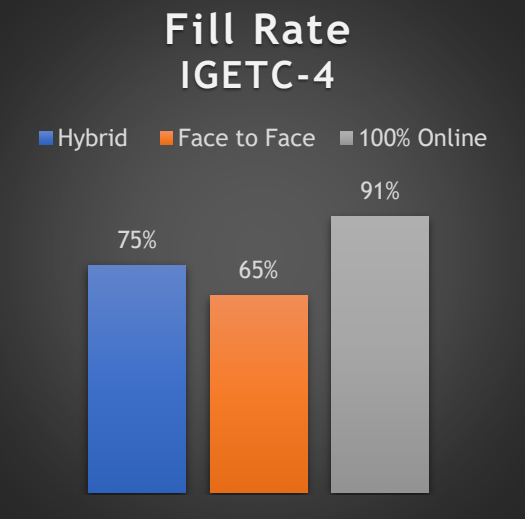
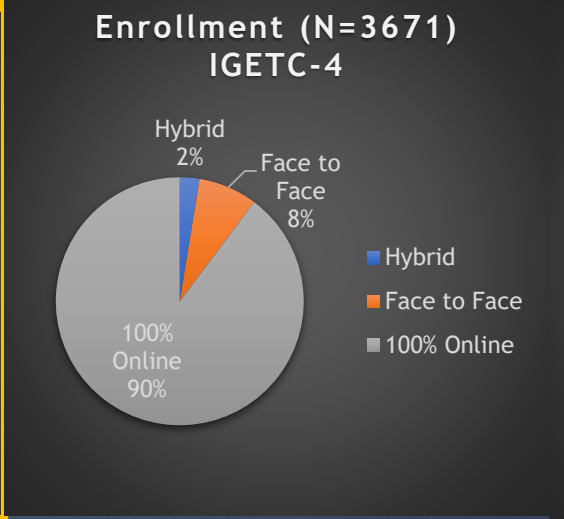
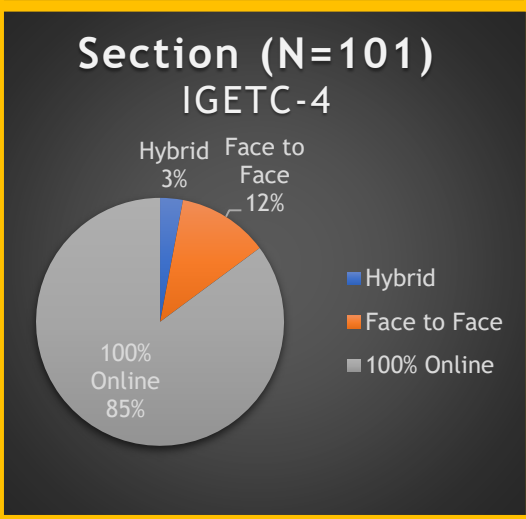
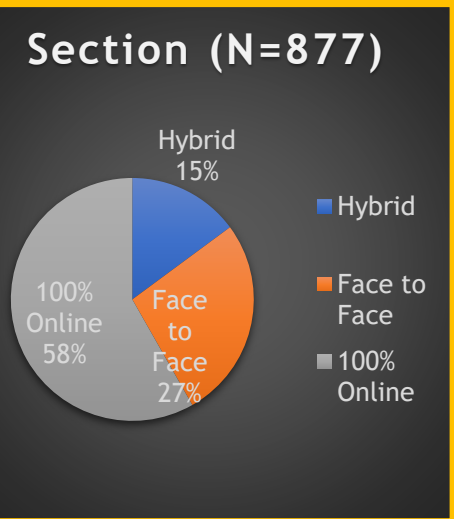
Institution Structure

Student's Behavior

AREA 3
Arts & Humanities



AREA 4
Social & Behavioral Sciences



Fall 2021 Modality and Fill Rate Analysis--IGETC

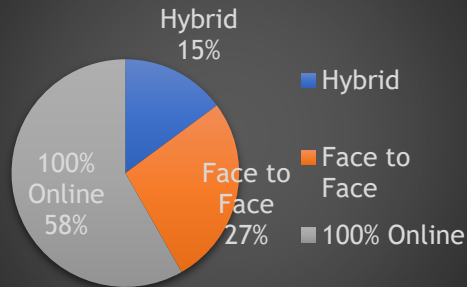
Fall 2021
As of 11.2.2021
ASR Enrollment
Tableau

Institution Structure

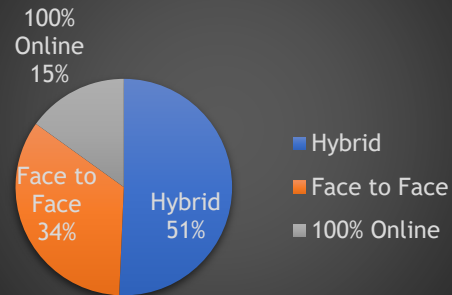
Student's Behavior

AREA 5
Physical & Biological Sciences

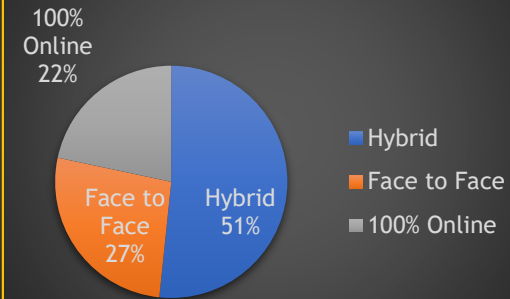
Section (N=877)



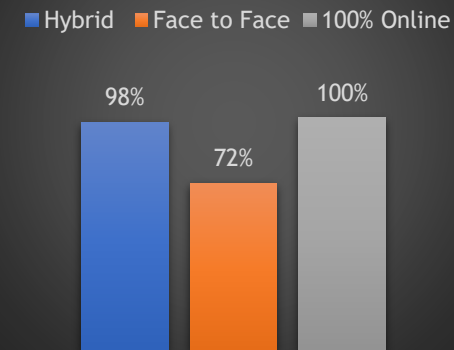
Section (N=73)
IGETC-5



Enrollment (N=2248)
IGETC-5

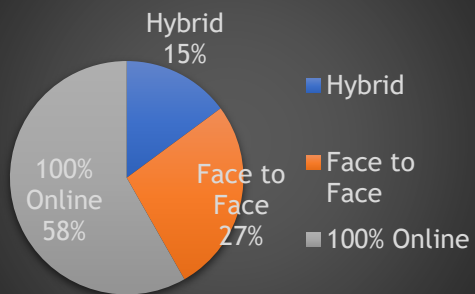


Fill Rate
IGETC-5

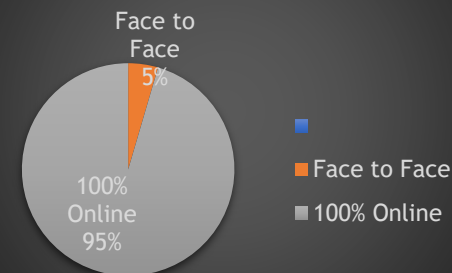


AREA 6
Languages Other Than English

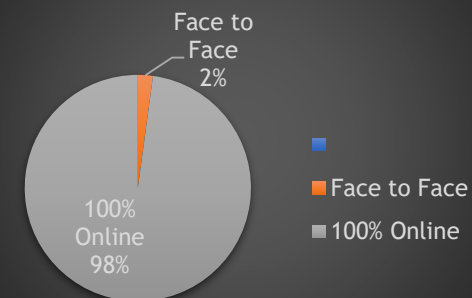
Section (N=877)



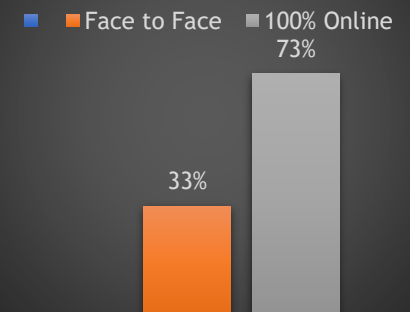
Section (N=22)
IGETC-6



Enrollment (N=559)
IGETC-6



Fill Rate
IGETC-6



Takeaway—Student Behavior Fall 2021

Fall 2021
As of 11.3.2021

Student's
Behavior

1. In terms of Modality, in comparison of proportion, it seemed that there are higher % of online enrollment (student behavior) than the % of online sections (schedule).
2. F2F has the opposite patterns. There are lower % of F2F enrollment (student behavior) than the % of F2F sections (schedule).
3. It seemed that students filled up the online courses higher/faster than Hybrid or F2F. (fill rate)
4. Results vary by IGETC (disciplines), especially Area 5. 😊



Planning for Spring 2022 Schedule

Fall 2021



Spring 2022

September 2021



October 2021



November 2021



February 2022

- Schedule Recommendation:
 - 20% F2F
 - 80% Online or Hybrid

- Student Survey—Course and Service Preference for Spring 2022

- **Super Schedule**
- **Mandate Vaccination**

- Modality and Fill Rate

Student Survey—Course and Service Preference for Spring 2022

Student
Survey:
Oct 2021

Purpose

1. To gauge students preference on course modality in order to confirm course schedule for spring 2022
2. To gauge students' vaccination opinions
3. To gauge student preference on student services modality (we failed to do so).

Student
Voice

Target Population

1. Students who are currently enrolled in fall 2021
2. Students who apply for spring 2022

Student Survey—Course and Service Preference for Spring 2022

Student
Survey: Oct
2021

Demographics

1. 1465 students responded (N=~8500, Response Rate 17%)
2. Majority (80%) were age group of 18-34 (67% in 18-24; 14% in 25-34)
3. Majority (65%) were female (60%)
4. Ethnicity:
 - 34% from Hispanic students (40%),
 - 24% white (21%),
 - 15% API (14%), and
 - 11% African American (12%).
5. 92% intent to enroll in Fall 2021:
 - 94% Hispanic,
 - 92% white,
 - 90% API, and
 - 91% African American.

Student
Voice

Student Survey—Course and Service Preference for Spring 2022

Student
Survey:
Oct 2021

Vaccination

Student
Voice

1. 86% indicated they are fully vaccinated or planned to do so by Nov 1, 2021.
2. 92% (N=1352) of participants intent to enroll spring 2022.
 - a. Of those intent to enroll in spring 2022, 49% (N=710) intent to enroll only online.
 - b. Of those intent to enroll only online, 75% of them said it is NOT due to vaccine mandate.
3. 8% (N=111) of participants indicated that they do not intent to enroll.
 - a. Of those NOT intent to enroll in spring 2022, 80% (N=89) of them are not due to vaccinate mandate

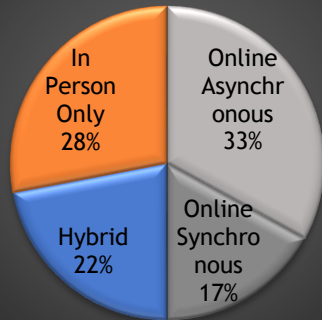
Student Survey—Course and Service Preference for Spring 2022

Student Survey:
Oct 2021

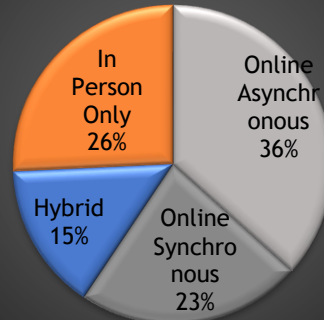
Instructional Modality Preference (Select one)



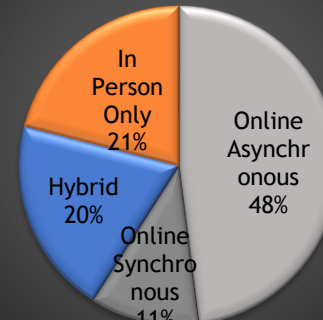
Science



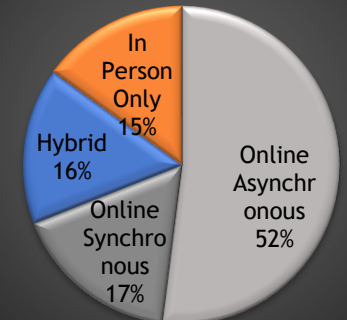
Math



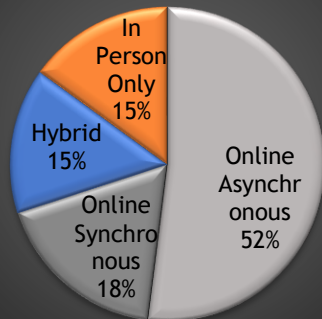
Studio Arts



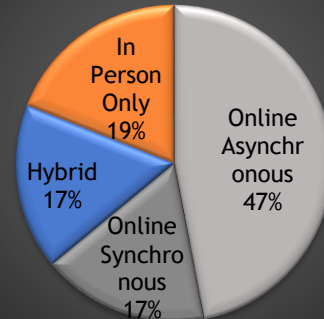
Humanities



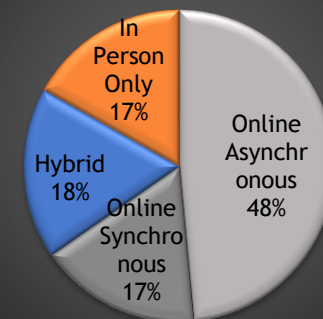
Business



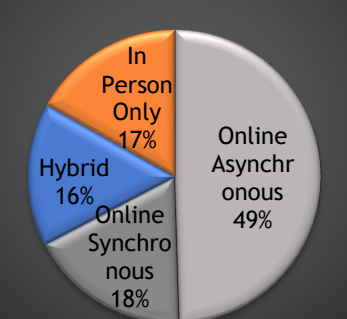
Computer Science



Social Behavioral



Communication/ Language Arts



Takeaway of Student Voice Spring 2022

Student
Survey:
Oct 2021

1. From student's voice, 50% of them intend to enroll only online course. Vaccination mandate is not necessary a factor for enrolling only online courses.
2. Preferred modality vary by disciplines. 😊
 - Science: ~50% online
 - Math: ~60% online
 - Studio Arts: ~60% online
 - Humanities: ~70%
 - Business: ~70%
 - Computer Science: ~64%
 - Social Behavioral: ~65%
 - Communication/Language Arts: ~68%

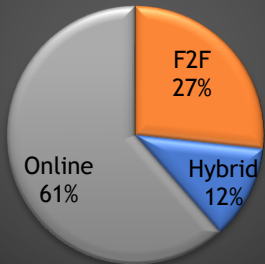
Student
Voice

Modality—Spring 2022 Schedule (Institution Structure)

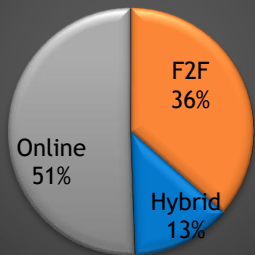
Course
Schedule:
Nov 8, 2021

Institution Structure

Spring 2022 Section N=857

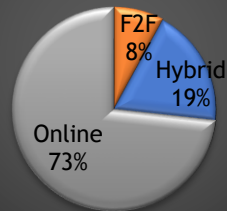


Spring 2022 CTE Section N=269



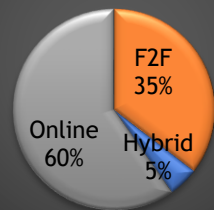
AREA 1 English Composition

IGETC Area 1 Section N=101



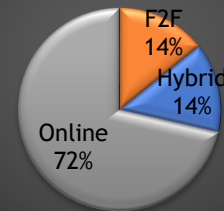
AREA 2 Mathematical Concepts and Quantitative Reasoning

IGETC Area 2 Section N=62



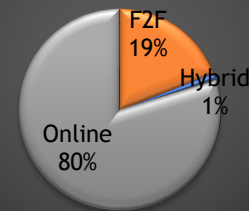
AREA 3 Arts & Humanities

IGETC Area 3 Section N=77



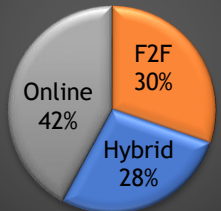
AREA 4 Social & Behavioral Sciences

IGETC Area 4 Section N=99



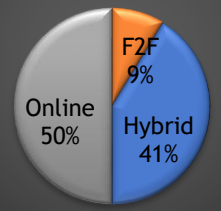
AREA 5 Physical & Biological Sciences

IGETC Area 5 Section N=76



AREA 6 Languages Other Than English

IGETC Area 6 Section N=23



Schedule Modification—Spring 2022

Spring 2021 “Super Schedule”

- Based on external demands and student needs, Department Chairs were introduced to the Spring 2022 Super Schedule at the 10/1 meeting.
- Departments worked to revise 3rd draft to meet the identified student need.
- Final draft of schedule: 61% online / 12% Hybrid / 27% F2F
- Super Schedule Examples: F2F Monday and Wednesday; F2F Tuesday and Thursday

Example Pittsburg Student Schedule:

Monday / Wednesday: F2F & Hybrid

- A1 or A3 - SPCH-110 (9:35) / SPCH 120 - (9:35)
- A2 or A3 - English 100, 0176 (W11:10) / English 221, 8457, (W11:10) / PHIL 110, 0461 (11:10)
- C1 - ART-009 (12:45)
- B2 - BIOSC-008 (3:20)

Tuesday / Thursday: F2F & HYBRID

- A1 - SPCH-110 (9:35)
- A2 or A3- English 100, 0005 (T11:10) / English 221, 8440, (TH11:10)
- D - History 29 (12:45) / PSYCH 10 (3:20)
- B1 – CHEM-025 (2:20)

Example Brentwood Student Schedule:

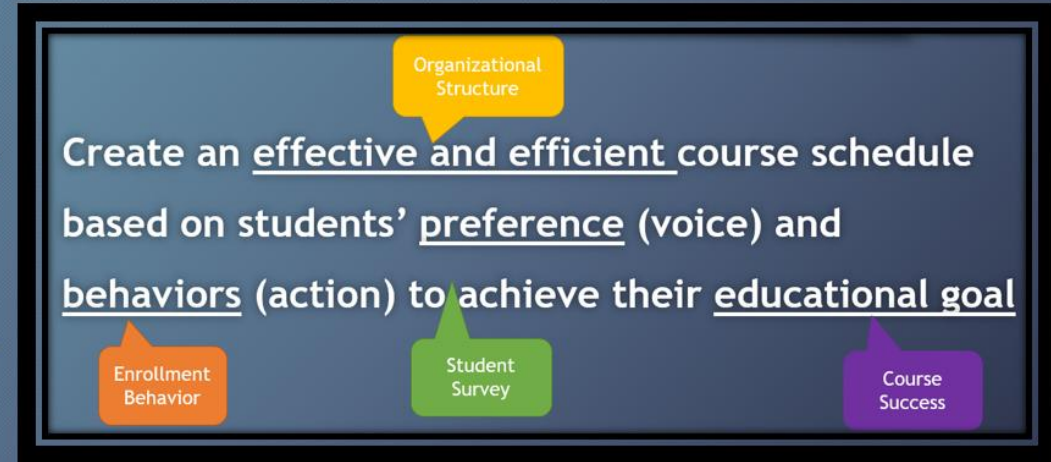
Monday / Wednesday: F2F & Hybrid

- A2 or A3 – English 100 (9:35) / English 230 (11:10)
- A1 – Speech 110 (11:10) / Speech 120 (9:35)
- C2 – Philosophy 122 (12:45)

Tuesday / Thursday

- A2 – English 100 (TH 9:35)
- C2 – Sign-050 (T11:10)
- D – History 40 (TTh12:45)
- B4 – Math 110 (TTH6:50)

Conclusion



LMC seemed to create an effective and efficient course schedule based on students' preference (voice) and behaviors (action) to achieve their educational goal

1. External factors strengthen college to be nimble and agile
2. Be patient on system change
3. Listen to students' voices (survey)
4. Observe students' behaviors (course taken behavior)
5. Study students' course completion and course success (educational goal)
6. Faculty, classified professional, and dean's feedback
7. Make decisions (schedule adjustment) based on what students say and what students do to support their academic excellence

References

1. https://www.losmedanos.edu/planning/IEReportDataPacket_Achievement.pdf
2. https://www.losmedanos.edu/planning/SuccessRate_ModalitybySemester_M.pdf
3. https://www.losmedanos.edu/planning/Fall_2021_StudentPreferencesSurveyReport.pdf
4. https://www.losmedanos.edu/planning/Spring_2022_StudentPreferencesSurveyReport_10.25.2021.pdf
5. Tableau (VPN needed):
https://tableau1.4cd.edu/views/StudentEnrollmentIntentandPreferencesSP2022/SurveyDemographics/chsieh636@ac.portal/f089f6dd-a4aa-450b-a359-d21a32043de4?:showAppBanner=false&:origin=viz_share_link&:display_count=n&:showVizHome=n
6. <https://www.ecampusnews.com/pdfs/connected-student-report-2/>



The End