UC Davis
Special Visit Index of Appendices

UCDAVIS
UNIVERSITY OF CALIFORNIA

UC Davis Special Visit Report

Index of Appendices

Appendix A: Charge Letter, Joint Administration/Academic Senate WASC Accreditation Special Visit Steering Committee

UNIVERSITY OF CALIFORNIA, DAVIS

BERKELEY • DAVIS • IRVINE • LOS ANGELES • MERCED • RIVERSIDE • SAN DIEGO • SAN FRANCISCO   SANTA BARBARA • SANTA CRUZ

OFFICE OF THE PROVOST AND EXECUTIVE VICE CHANCELLOR
ONE SHIELDS AVENUE
DAVIS, CA 95616
TEL: (530) 752-4964
FAX: (530) 752-2400
INTERNET: http://provost.ucdavis.edu

February 7, 2017

Assistant Vice Provost Helen Frasier   Professor Ed Dickinson*
Associate Vice Provost Matt Traxler   Professor Andres Resendez*
Chief Data Officer Steve Weisler   Professor Kyaw Tha Paw U*
Associate Dean Jim Schaaf   Director Sharon Knox
Professor Ed Caswell-Chen*   Executive Director Edwin Arevalo
Professor Elizabeth Constable*   Senior Executive Analyst Angelina Herron
Professor Daniel Cebra*

*Academic Senate Representative (appointed through Aug 31, 2017 with option to extend)

RE: Joint Administration/Academic Senate WASC Accreditation Special Visit Steering Committee

Dear Colleagues:

During the 2017-2018 academic year, UC Davis will undergo a special visit by the Western Association of Schools and Colleges (WASC). We invite you to serve on the joint Administration/Senate Steering Committee that will oversee the preparation of the campus' submissions to WASC and facilitate communication and cooperation between the administration and the Senate regarding the upcoming WASC special visit to campus. This charge necessitates committee members attend one meeting per month beginning with a kickoff meeting **Wednesday, February 22nd from 3-4pm** and extending through the scheduled review visit April 17-19, 2018.

The intent of the special visit is for WASC to review progress on the following issues:

    i.   Assessment: how data gathered about student learning outcomes are used consistently across all departments to guide improvement.
    ii.   Program review: how direct evidence of student learning has been incorporated into the allocation of resources.
    iii.   2020 Initiative: an update on the implementation of the 2020 initiative with specific attention to the faculty/student ratio; ladder rand vs. non-ladder rank faculty; faculty diversity; level of course impaction; changes in staffing; advising; academic support and student services; and facilities.

Helen Frasier (hsfrasier@ucdavis.edu) will be managing the report content in preparation for the visit. Angelina Herron (arherron@ucdavis.edu) will coordinate logistics for the committee and visit. Please contact them with any questions.

For more information on WASC, please see http://www.wascsenior.org/; documents from the campus' previous reviews as well as the Special Visit Institutional Report Guide are available at http://wasc.ucdavis.edu/.

Thank you for your service to this very important campus endeavor.

Sincerely,

Carolyn Thomas
Vice Provost and Dean for Undergraduate
Education

Jon Rossini
Vice Chair, Davis Division of the Academic Senate
Associate Professor, Theatre and Dance

c: Interim Provost Kenneth Burtis

Appendix B: Undergraduate Instruction and Program Review Documents

1. **UIPR Schedule**
2. **UIPR Self-Review Template**
3. **UIPR Cluster 4 Kickoff Presentation**

	CAES	CBS	CLAS

Revised December 2017

Cluster & Year	CAES	CBS	CLAS
Cluster 1 2014/15	Biotechnology	Microbiology	Art History
	Environmental Hort. & Urban Forestry	Plant Biology	Art Studio (Interim report due 2018-19)
	Sustainable Agriculture & Food Systems		Design
	International Agricultural Development		Music
	Plant Sciences		Technocultural Studies Program - Name & Curric. change approved April, 2015 - Now **Cinema and Digital Media. Interim Review 2018-19**
	Ecological Mgmt. & Restoration		Theatre & Dance (Interim Review 2018-19)
			Women & Gender Studies (Interim review 2014-15)
Cluster 2 2015/16	Hydrology	Biochem & Molecular Biology	Chemistry (All Chem reviewed as one)
	Atmospheric Science	Cell Biology	Pharmaceutical Chemistry
	Environmental Toxicology	Genetics & Genomics	Chemical Physics
			Computer Science
			Geology
			Mathematics (All Math reviewed as one)
			Applied Mathematics
			Mathematical & Scientific Computation
			Natural Science
			Physics (Applied Physics reviewed with Physics)
			Applied Physics
			Statistics
			African & African Amer. Studies (Interim review)
			Mathematical Analytics & Operations Research (approved May, 2014 w/first class admitted fall 2016. Placed in Cluster 2 w/Initial review in Cluster 6)
Cluster 3 2016-17	Science & Society (minor)		Anthropology
	Ag & Environmental Education		Communication
	Marine & Coastal Science interim (established 2013 with first review moved to 2017-18)	Marine & Coastal Science interim (established 2013 with first review moved to 2017-18)	Marine & Coastal Science interim (established 2013 with first review moved to 2017-18)
			East Asian Studies
			History
			Jewish Studies (minor)
			Linguistics
			Philosophy
			Cognitive Science (First class admitted fall 2016, Interim review spring 2017)
			Science & Technology Studies
			Middle East/South Asia Studies
			Asian American Studies Interim Review

	CAES	CBS	CLAS
Cluster 4	Community & Regional Development		Economics
2017-18	Human Development		Psychology
	Marine & Coastal Science(established 2013)	Marine & Coastal Science (established 2013)	Marine & Coastal Science (established 2013)
	Managerial Economics		Sociology
			Political Science Postponed to Cluster 5
			International Relations Postponed to Cluster 5
School of Ed Undergrad minor initial review	Sustainable Environmental Design major was approved January, 2014. UIPR added to Cluster 1 with initial assessment review in Cluster 4		Political Science-Public Service Postponed to Cluster 5
Cluster 5	Environmental Policy, Analysis & Planning	Evolution, Ecology & Biodiversity	African American & African Studies
2018-19	Environmental Science & Mgmt		American Studies
	*Clinical Nutrition (Feb. 2014 Accreditation with 5 yr cycle; due in 2018-19)		Asian American Studies
	Global Disease Bio major approved July , 2014 & added to Cluster 5 w/first class of students admitted fall 2015 (CAES, SVM, SOM)		Chicana/o Studies
	*Landscape Architecture (May 2012 Accreditation with 6 yr cycle; due again in 2018)		Native American Studies
	Ag & Environmental Education status report		Women & Gender Studies
	Science & Society status report		Theatre & Dance Interim Report
			Art Studio Interim Report
			Technocultural Studies Interim report - Name & Curric. change approved April, 2015 - Now **Cinema and Digital Media. Interim Review 2018-19**
			Political Science **Postponed From Cluster 4**
			International Relations **Postponed From Cluster 4**
			Political Science-Public Service **Postponed From Cluster 4**
Cluster 6	Fiber & Polymer Science	Biological Sciences	Comparative Literature
2019-20	*Food Science (May, 2014 Accreditation with 5 yr cycle; due again 2019)		English
	Nutrition Science		Medieval & Early Modern Studies
	Textiles & Clothing		Religious Studies
	Viticulture & Enology		University Writing Program
All College of Engineering Majors (ABET completion summer 2019)			Mathematical Analytics & Operations Research (approved May, 2014 w/first class admitted fall 2016.Placed in Cluster 2 w/Initial review in Cluster 6)
			East Asian Studies Interim Report
			Interdepartmental Human Rights Program
Cluster 7	Animal Biology	Neurobiology, Physio & Behavior	Classical Civilization
2020-21	Animal Science		Chinese
	Animal Science & Mgmt		French
	Entomology & Nematology		German
	Wildlife, Fish & Conserv. Biology		Italian
			Japanese
			Russian
			Spanish
			Anthropology Interim Report
			Science & Technology Studies Interim Report

PROGRAM SELF-REVIEW

FOR THE UNDERGRADUATE MAJOR IN

for the period [   ] to [   ]

Date submitted [   ]

Prepared by:

Name	Title	Department

Home Department of the major:

Table of Contents

Introduction and General Instructions

The purpose of this program self-review is to provide responses to a series of questions about your undergraduate major, and to compare it to similar majors that are being reviewed in the same cluster, in the following eight categories, which comprise sections 1 and 3-9 of the report: 1) overview of the program; 3) faculty in the program; 4) instruction in the program (including staff, space, and facilities); 5) students in the program; 6) students' perceptions of the program; 7) post-graduate preparation; 8) educational objectives; and 9) self-assessment methods, including, when possible, outcome assessment of student learning. This is followed by a summary of major strengths and weaknesses (section 10) and a statement of future plans for the program (section 11). Section 2 is a report on the outcome of the last review of the program.

Each section begins with a series of guiding questions which give an overview of the information that the campus hopes to gain from these reviews. In order to help you frame responses based on actual evidence, we are providing a series of tables and graphs which are organized in several reports. Appendix A, provided by the Office of the Registrar, includes catalog descriptions of all programs in the cluster. Appendix B contains information on instruction, students, and faculty gathered by Budget and Institutional Analysis (BIA) using data from a variety of sources. Appendix C includes the results of two surveys conducted by BIA: the first gathered the opinions of students in selected classes one and four years after graduation, and the second is a subset of data taken from the University of California Undergraduate Experience Survey (UCUES), which focuses on current upper division students. Appendix D, provided by the Office of the Registrar, is a list of the educational objectives of the campus, as published in the General Catalog.

The data presented in Appendices A-C provide you with the basis to make comparisons between your program and other programs being reviewed in the same cluster as well as your division, college, and the entire campus. Generally, the BIA data on students and faculty were compiled for the home department of your program, while the survey data (the undergraduate experience survey and the alumni survey) were compiled by the students' majors. If, in consultation with your department, it was determined that this approach would not provide useful information for your major, alternative information has been provided based on the core courses that your department has identified for your major.

In responding to the questions below, we ask that you refer to specific data tables where they are referenced. Responses should be concise; where there is nothing particularly remarkable to note, they can be very brief (e.g., "Enrollment in the major has shown a slow but steady increase over the period of the review, consistent with our goals and with the pattern seen in most other majors in this cluster.") Cases in which the data for your program are substantially different from other programs require more detailed responses. In cases where the data we have supplied alone do not provide a complete and accurate understanding of the issue, please include additional information and commentary as necessary. For a few questions, no data are supplied and you are asked to draw on your own knowledge of the program to address the issue. In the summary following specific questions in sections 2-8, please describe briefly the overall state of the program for the issues addressed in that section, highlighting major problems, if any.

1. OVERVIEW OF THE MAJOR

Questions: What are the Program Learning Outcomes identified for this major? What is the role of this major in undergraduate education on the campus, i.e., how does the major contribute to the undergraduate educational mission of the campus? Is the major clearly distinguished from other similar majors on campus?

Refer to the catalog description of the major and the other majors reviewed in the same cluster (Appendix A). Describe any inaccuracies in the catalog description and explain plans for correcting them. Identify the other majors in the cluster that are most similar to yours and explain how your major differs from them.

Enter your text here.

2. OUTCOME OF PREVIOUS PROGRAM REVIEW

Please list the recommendations made at the conclusion of the previous review (these may have been made by the review committee, Executive Committee and/or Dean) and comment briefly on the current status of the matters noted in the recommendations. Discuss any other significant changes in the major since the last review.

Enter your text here.

3. FACULTY IN THE MAJOR

Questions: Who does the bulk of teaching in the major? What are the demographics of instructors in the major? Will the program be affected by substantial changes in the faculty (e.g. anticipated retirements) in the next review period?

Refer to the attached data concerning faculty in your department and the other departments reviewed in the same cluster (Appendix B, Tables 1-5). Based on those data and any additional information you wish to include, comment on each of the following for your major over the review period, referring, when appropriate to differences between your major and others in the cluster:

a) Table 1. Instructional Faculty – FTE and Percent by Rank
b) Table 2. Age of Ladder Faculty – Percent by Age Group
c) Table 3. Gender of Ladder Faculty – Number and Percent by Rank
d) Table 4. Under-represented Ladder Faculty – Number and Percent by Rank
e) Table 5. New Faculty Hires and Separations – Number by Rank

Enter your text here.

4. INSTRUCTION, ADVISING, AND RESOURCES IN THE MAJOR

Questions: How effective is the delivery of instruction in the major? Are faculty engaged in the major? Is instruction meeting the student learning objectives for the major? Is advising adequate? Is there adequate staff support? Are adequate space and facilities available? Is the program keeping pace with developments in the field? Are grading standards appropriate?

Refer to the attached data concerning instruction in the major and the other majors reviewed in the same cluster (Appendix B, Tables 6 -12). Based on those data and any additional information you wish to include, comment on each of the following for your major over the review period, referring, when appropriate to differences between your major and others in the cluster:

a) Table 6. Majors per Instructional Faculty FTE
b) Table 7. Students in Major Enrolled in Upper Division Courses – Percent of Total Course Enrollment
c) Table 8. TAs Assigned to Upper Division Courses – Number By TA Role
d) Table 9. Student Faculty Ratio – By Instructor Type
e) Table 10. Courses Taught – Percent By Instructor Type and Course Level
f) Table 11. Assigned Space – I&R Assignable Square Feet (ASF) – By Department
g) Table 12. Distribution of Grades in Upper Division Courses – Percent of Total Enrolled and Average GPA

Please also address the following issues, for which no data are provided:

h) Comment on the degree of interest and engagement of the faculty in the major.

i) Comment on the adequacy of staff support for the major.

j) Comment on the adequacy of staff advising for the major.

k) Comment on the adequacy of instructional equipment and facilities for the major.

l) Comment on the program's record of keeping pace with advances in the field.

m) Comment on the program's record for meeting its student learning objectives.

Enter your text here.

5. STUDENTS IN THE MAJOR

Questions: This section is intended to characterize the students in this major. How have enrollments in the major varied over the period of the review, in terms of both the numbers and quality of the students? Are students succeeding in the major both in terms of qualitative and quantitative academic standards? Are students meeting the learning objectives identified for the major? Are students graduating on time? How do students find out about the major? Is the major reaching a wide and diverse spectrum of students? Are students who enter the major retained in the major, and if not, why not?

Refer to the attached data concerning enrollments in the major and the other majors reviewed in the same cluster (Appendix B, Tables 13-23). Based on those data and any additional information you wish to include, comment on each of the following for your major over the review period, referring, when appropriate to differences between your major and others in the cluster:

a) Table 13. Number of Students - Duplicated Count and Percent Change
b) Table 14. Students in Multiple Majors - Percent of Total in Major
c) Table 15. Gender of Students – Percent of Total in Major and Percent Change
d) Table 16. Under-represented Students – Percent of Total in Major and Percent Change
e) Table 17. New Freshman Students Number and Percent Change
f) Table 18. New Transfer Students Number and Percent Change
g) Table 19. Average Cumulative UC Davis GPA
h) Table 20. Students in Good Standing – Percent of Total by Level
i) Table 21. Degrees Conferred – Duplicated Count and Percent Change
j) Table 22. Time to Degree for Freshman and Transfer Students – All Students
k) Table 23. Time to Degree for Freshman and Transfer Students – In Same Major

l) In light of the information presented in Tables 13-23, describe and evaluate the effectiveness of any efforts by the program's faculty and staff to retain students in the major.

Please also address the following issue, for which no data are provided:

m) Describe and evaluate how students find information about the major (websites, course catalog, etc.).

Enter your text here.

6. STUDENTS' PERCEPTIONS OF THE MAJOR

Question: What are current students' and recent graduates' opinions of the major?

Refer to the attached data obtained from surveys of current students and alumni concerning their perceptions of the quality of the major and the other majors reviewed in the same cluster (Appendix C, Figures 1-53). Based on those data and any additional information you wish to include (e.g., results of departmentally administered course evaluations), comment on each of the following for your major over the review period, referring, when appropriate to differences between your major and others in the cluster:

a) overall understanding of the major (Figures 1-4)
b) overall satisfaction with the major (Figures 5-22)
c) satisfaction with instruction in the major (Figures 23-36)
d) satisfaction with academic advising in the major (Figures 37-43)
e) satisfaction with courses offered in the major (Figures 44-53)

Enter your text here.

7. POST-GRADUATE PREPARATION

Questions: How well does the major prepare students for postgraduate education and careers? Do the students have sufficient contact with the faculty to get internships or letters of recommendation?

Refer to the attached data obtained from surveys of current students and alumni concerning preparation by the major for postgraduate education and careers (Appendix C, Figures 54-80). Based on those data and any additional information you wish to include, comment on each of the following for your major over the review period, referring, when appropriate to differences between your major and others in the cluster:

a) quantity and quality of research and creative activities provided by the major (Figures 54-59)
b) quality of preparation by the major for postgraduate education (Figures 60-64)
c) quality of preparation by the major for the workforce (Figures 65-74)
d) the degree to which students have sufficient contact with faculty to help them in their postgraduate education and careers (Figures 75-80).

Enter your text here.

8. ASSESSMENT

Question: How does the program monitor and evaluate its success in achieving its Program Learning Outcomes (section 1)?
Specifically:

a) Please confirm that the PLOs are clearly listed in an easily accessible location on the program website.

b) Please provide a program curriculum matrix or map identifying in which required courses in the curriculum each PLO is introduced, practiced, and demonstrated and/or assessed.

c) How does the program ensure alignment between learning outcomes for individual courses and the PLOs (that is, program coherence)?

d) What unit (committee or officer) in your program is responsible for collecting and analyzing data on student progress toward PLOs?

e) Please use direct data from students in the major taking capstone courses to assess student achievement of PLOs, and provide a summary of that assessment. (Examples of direct data would include samples of capstone projects, pre-tests and exit tests for majors, examinations or essays from key or capstone courses identified in the curriculum matrix.) For this data, describe the methodology for sample selection and size. Does the program have in place ongoing assessment of this type?

f) Please use indirect data to assess student achievement of PLOs, and of the contribution that individual courses make toward it, and provide a summary of the assessment. (Examples of indirect data would include student evaluations, peer evaluation of teaching, the BIA survey data from current students and graduates provided for this review, graduation and retention rates, aggregate and individual grade patterns at different stages in the program.) Does the program have in place ongoing assessment of this type?

g) Please provide a summary of key limitations that inhibit effective assessment of PLOs as per (e) and (f).

h) Do the results of assessment for this review cycle reveal particular areas of strength and/or weakness with regard to the achievement of the PLOs?

i) Do the results of the program review reveal particular areas of strength or weakness in program assessment of student progress toward achieving PLOs?

j) If there are areas of weakness in student learning or in program assessment of student learning, what steps does the program intend to take to address them?

(Programs are encouraged to work with assistance available from the Educational Effectiveness Hub and the Assessment Office in the Office of Undergraduate Education in developing or extending their program's assessment of learning outcomes, and in analyzing the data collected.)

9. MAJOR STRENGTHS AND WEAKNESSES/PROBLEMS

Summarize the major overall strengths of the program as well as any current problems that you perceive.

Enter your text here.

10. FUTURE PLANS

Describe current or proposed plans to strengthen educational objectives of the program, such as increasing enrollments, improving student performance, and increasing the contribution of the program to the campus educational objectives. Describe and justify if new resources are needed to preserve or strengthen the program.

Enter your text here.

Undergraduate Program Review 2017-18 Review Cycle

Presented by: Elizabeth Constable, Chair of the Undergraduate Program Review Committee and Daniel Cebra, Chair of the General Education Committee

Cluster 4 Programs

CAES

- **Marine & Coastal Science**
- **Community & Regional Development**
- **Human Development**
- **Managerial Economics**
- **Sustainable Environmental Design**

CBS

- **Marine & Coastal Science**

CLAS

- **Marine & Coastal Science**
- **Economics**
- **International Relations**
- **Political Science**
- **Psychology**
- **Sociology**

Important Dates

February, 2017	Programs notified of pending review & Kickoff – no changes to programs will be considered
April 14, 2017	Deadline for Review Team nominations
Spring Quarter 2017	Programs collect student work and begin GE course assessment and self-review
September, 2017	Data Appendices sent from BIA to programs
September – December, 2017	Programs complete UIPR Self-Review, collect student work and complete GE course assessment
January 1, 2018	Deadline for completed Self-Reviews including GE to Academic Senate Office
January-April, 2018	Review team meetings with programs
January – June, 2018	UIPR forwards all reports to UGC
	UGC reviews all reports and forwards recommendations to Provost, Deans and Department Chairs

Contact: Debbie Stacionis, 754-4791 dstacionis@ucdavis.edu

Undergraduate Program Review: Davis Division Regulation 556

556. Undergraduate Program Review

 Each undergraduate teaching program (and/or major) on the Davis campus shall be reviewed and evaluated by a committee of its parent school or college at intervals not exceeding seven years. The criteria for said reviews shall be established by the Davis Division Undergraduate Council and disseminated widely so that they will be commonly understood. The reports of reviewing committees shall be forwarded to the Divisional Undergraduate Council for consideration or action as it sees fit. (En. 5/28/74; Am. 4/27/76)

UCDAVIS

BIA = Budget & Institutional Analysis
RT = Review Team
UIPR = Undergraduate Instruction Program Review committee

Undergraduate Instruction and Program Review (UIPR) Program Review Process

	March	September	October	January	January-April	April - June
UIPR	Notification followed by kickoff meeting	UIPR analyst receives data (appendices) from BIA and posts on whiteboard		Self-reviews are sent to RT & FECs	Review Team visits. Completed reports are sent to UIPR analyst to fwd to programs and college/ division level review committees& College FECs	UIPR members review all reports and summarize → Summaries are reviewed & approved by UIPR members → UIPR committee-approved reports and cluster summaries are submitted to UGC.
Dept\Program	Programs receive notification and request for RT nominations	Programs receive data (appendices) from BIA	October – December Programs complete self-review & AS office coordinates RT visits with programs	Completed Self-reviews are sent to UIPR analyst	programs check RT reports for correction of fact	
Dean's Office						
Budget and Institutional Analysis	BIA is notified and compiles cluster data	Cluster data (appendices) sent from BIA to programs with copy to AS Analyst				
Undergraduate Council (UGC)						UGC reviews full report and sends to Office of the Provost, Deans & programs & FECs
Office of the Provost						Provost reviews reports

Undergraduate Council Program Review Process

Late Spring Quarter

UGC
notes recommendations for programs & admin to consider in a cover letter forwarded with the clustered Program Reviews to the Provost's office. Recommendations for each program will be sent to Deans and Program Chairs with copy to FEC.

Dean's Office receives recommendations

Provost's Office receives recommendations

Program receives recommendations

Fall Quarter

Provost mtg with Deans and Program chairs to discuss UGC recommendations. (1 mtg for all programs in each college = 3 mtgs)

Winter Quarter

Provost Office follow-up meeting with Deans and individual program chairs to determine if concerns have been addressed. Provost's office & programs will notify UGC and Dean's office of actions taken

Provost reports how concerns have been addressed

Program reports how concerns have been addressed

UGC reviews reports from Provost and Programs and records whether concerns have been addressed

UIPR Self-Review Template

Section 1) Overview of the major/program

Section 2) Outcome of the last review

Sections 3-8) Major/program information

3) faculty in the major
4) instruction in the major, staff, space, and facilities)
5) students in the major
6) students' perceptions of the major
7) post-graduate preparation
8) assessment

Section 9) Major strengths and weaknesses

Section 10) Future plans

1. OVERVIEW OF THE MAJOR

Questions: What are the student learning objectives identified for this major? What is the role of this major in undergraduate education on the campus, i.e., how does the major contribute to the undergraduate educational mission of the campus? Is the major clearly distinguished from other similar majors on campus?

Refer to the catalog description of the major and the other majors reviewed in the same cluster (Appendix A). Describe any inaccuracies in the catalog description and explain plans for correcting them. Identify the other majors in the cluster that are most similar to yours and explain how your major differs from them.

2. OUTCOME OF PREVIOUS PROGRAM REVIEW

Please list the recommendations made at the conclusion of the previous review (these may have been made by the review committee, Executive Committee and/or Dean) and comment briefly on the current status of the matters noted in the recommendations. Discuss any other significant changes in the major since the last review.

3. FACULTY IN THE MAJOR

Questions: Who does the bulk of teaching in the major? What are the demographics of instructors in the major? Will the program be affected by substantial changes in the faculty (e.g. anticipated retirements) in the next review period?

Refer to the attached data concerning faculty in your department and the other departments reviewed in the same cluster (Appendix B, Tables 1-5). Based on those data and any additional information you wish to include, comment on each of the following for your major over the review period, referring, when appropriate to differences between your major and others in the cluster:

a) Table 1. Instructional Faculty – FTE and Percent by Rank
b) Table 2. Age of Ladder Faculty – Percent by Age Group
c) Table 3. Gender of Ladder Faculty – Number and Percent by Rank
d) Table 4. Under-represented Ladder Faculty – Number and Percent by Rank
e) Table 5. New Faculty Hires and Separations – Number by Rank

4. INSTRUCTION, ADVISING, AND RESOURCES IN THE MAJOR

Questions: How effective is the delivery of instruction in the major? Are faculty engaged in the major? Is instruction meeting the student learning objectives for the major? Is advising adequate? Is there adequate staff support? Are adequate space and facilities available? Is the program keeping pace with developments in the field? Are grading standards appropriate?

Refer to the attached data concerning instruction in the major and the other majors reviewed in the same cluster (Appendix B, Tables 6 -12). Based on those data and any additional information you wish to include, comment on each of the following for your major over the review period, referring, when appropriate to differences between your major and others in the cluster:

a) Table 6. Majors per Instructional Faculty FTE
b) Table 7. Students in Major Enrolled in Upper Division Courses – Percent of Total Course Enrollment
c) Table 8. TAs Assigned to Upper Division Courses – Number By TA Role
d) Table 9. Student Faculty Ratio – By Instructor Type
e) Table 10. Courses Taught – Percent By Instructor Type and Course Level
f) Table 11. Assigned Space – I&R Assignable Square Feet (ASF) – By Department
g) Table 12. Distribution of Grades in Upper Division Courses – Percent of Total Enrolled and Average GPA

Please also address the following issues, for which no data are provided:

h) Comment on the degree of interest and engagement of the faculty in the major.

i) Comment on the adequacy of staff support for the major.

j) Comment on the adequacy of staff advising for the major.

k) Comment on the adequacy of instructional equipment and facilities for the major.

l) Comment on the program's record of keeping pace with advances in the field.

m) Comment on the program's record for meeting its student learning objectives.

5. STUDENTS IN THE MAJOR

Questions: This section is intended to characterize the students in this major. How have enrollments in the major varied over the period of the review, in terms of both the numbers and quality of the students? Are students succeeding in the major both in terms of qualitative and quantitative academic standards? Are students meeting the learning objectives identified for the major? Are students graduating on time? How do students find out about the major? Is the major reaching a wide and diverse spectrum of students? Are students who enter the major retained in the major, and if not, why not?

Refer to the attached data concerning enrollments in the major and the other majors reviewed in the same cluster (Appendix B, Tables 13-23). Based on those data and any additional information you wish to include, comment on each of the following for your major over the review period, referring, when appropriate to differences between your major and others in the cluster:

a) Table 13. Number of Students - Duplicated Count and Percent Change
b) Table 14. Students in Multiple Majors - Percent of Total in Major
c) Table 15. Gender of Students – Percent of Total in Major and Percent Change
d) Table 16. Under-represented Students – Percent of Total in Major and Percent Change
e) Table 17. New Freshman Students Number and Percent Change
f) Table 18. New Transfer Students Number and Percent Change
g) Table 19. Average Cumulative UC Davis GPA
h) Table 20. Students in Good Standing – Percent of Total by Level
i) Table 21. Degrees Conferred – Duplicated Count and Percent Change
j) Table 22. Time to Degree for Freshman and Transfer Students – All Students
k) Table 23. Time to Degree for Freshman and Transfer Students – In Same Major

l) In light of the information presented in Tables 13-23, describe and evaluate the effectiveness of any efforts by the program's faculty and staff to retain students in the major.

Please also address the following issue, for which no data are provided:

m) Describe and evaluate how students find information about the major (websites, course catalog, etc.).

6. STUDENTS' PERCEPTIONS OF THE MAJOR

Question: What are current students' and recent graduates' opinions of the major?

Refer to the attached data obtained from surveys of current students and alumni concerning their perceptions of the quality of the major and the other majors reviewed in the same cluster (Appendix C, Figures 1-53). Based on those data and any additional information you wish to include (e.g., results of departmentally administered course evaluations), comment on each of the following for your major over the review period, referring, when appropriate to differences between your major and others in the cluster:

a) overall understanding of the major (Figures 1-4)
b) overall satisfaction with the major (Figures 5-22)
c) satisfaction with instruction in the major (Figures 23-36)
d) satisfaction with academic advising in the major (Figures 37-43)
e) satisfaction with courses offered in the major (Figures 44-53)

7. POST-GRADUATE PREPARATION

Questions: How well does the major prepare students for postgraduate education and careers? Do the students have sufficient contact with the faculty to get internships or letters of recommendation?

Refer to the attached data obtained from surveys of current students and alumni concerning preparation by the major for postgraduate education and careers (Appendix C, Figures 54-80). Based on those data and any additional information you wish to include, comment on each of the following for your major over the review period, referring, when appropriate to differences between your major and others in the cluster:

a) quantity and quality of research and creative activities provided by the major (Figures 54-59)
b) quality of preparation by the major for postgraduate education (Figures 60-64)
c) quality of preparation by the major for the workforce (Figures 65-74)
d) the degree to which students have sufficient contact with faculty to help them in their postgraduate education and careers (Figures 75-80)

8. ASSESSMENT

Question: How does the program monitor and evaluate its success in achieving its Program Learning Outcomes (section 1)?
Specifically:

a) Please confirm that the PLOs are clearly listed in an easily accessible location on the program website.

b) Please provide a program curriculum matrix or map identifying in which required courses in the curriculum each PLO is introduced, practiced, and demonstrated and/or assessed.

c) How does the program ensure alignment between learning outcomes for individual courses and the PLOs (that is, program coherence)?

d) What unit (committee or officer) in your program is responsible for collecting and analyzing data on student progress toward PLOs?

e) Please use direct data from students in the major taking capstone courses to assess student achievement of PLOs, and provide a summary of that assessment. (Examples of direct data would include samples of capstone projects, pre-tests and exit tests for majors, examinations or essays from key or capstone courses identified in the curriculum matrix.) For this data, describe the methodology for sample selection and size. Does the program have in place ongoing assessment of this type?

f) Please use indirect data to assess student achievement of PLOs, and of the contribution that individual courses make toward it, and provide a summary of the assessment. (Examples of indirect data would include student evaluations, peer evaluation of teaching, the BIA survey data from current students and graduates provided for this review, graduation and retention rates, aggregate and individual grade patterns at different stages in the program.) Does the program have in place ongoing assessment of this type?

g) Please provide a summary of key limitations that inhibit effective assessment of PLOs as per (e) and (f).

h) Do the results of assessment for this review cycle reveal particular areas of strength and/or weakness with regard to the achievement of the PLOs?

i) Do the results of the program review reveal particular areas of strength or weakness in program assessment of student progress toward achieving PLOs?

j) If there are areas of weakness in student learning or in program assessment of student learning, what steps does the program intend to take to address them?

(Programs are encouraged to work with assistance available from the Educational Effectiveness Hub and the Assessment Office in the Office of Undergraduate Education in developing or extending their program's assessment of learning outcomes, and in analyzing the data collected.)

9. MAJOR STRENGTHS AND WEAKNESSES/PROBLEMS

Summarize the major overall strengths of the program as well as any current problems that you perceive.

10. FUTURE PLANS

Describe current or proposed plans to strengthen educational objectives of the program, such as increasing enrollments, improving student performance, and increasing the contribution of the program to the campus educational objectives. Describe and justify if new resources are needed to preserve or strengthen the program.

http://academicsenate.ucdavis.edu/committees/committee-list/undergrad_council/committee_ge.cfm

General Education Assessment

UC Davis General Education (GE) requirements became effective during the fall quarter 2011 with clear criteria for the certification of general education courses. Programs have been asked to define reasonable learning objectives for undergraduates. These learning objectives are intended to reflect the goals identified for the GE courses and to provide coherence and consistency for courses offered within each literacy.

In 2014, as a result of the WASC review recommendations, an assessment plan for new general education requirements was adopted under a two-year pilot program. GE assessment was incorporated into the Undergraduate Instruction and Program Review (UIPR) process, and programs in Cluster 1 and 2 participated in this pilot program and continues to be included in the UIPR process.

General Education Assessment

Commencing with the Cluster 3 program review process, the General Education Committee (GEC) has revised the GE assessment plan which will now consist of

- GEC assessment of large enrollment courses including assessment of student work
- Program self assessment of all GE designated courses.

In order to meet WASC's directive to the campus that "UC Davis is expected to . . . ensure that all departments consistently gather, analyze, interpret and use [assessment] data for improvement". The program self assessment will help ensure that the courses continue to address the GE Learning Objectives for which they have been approved. The GEC assessment will provide an overall view of the GE program and suggest ways in which it could be improved.

GEC Assessment

- GEC will determine specific large enrollment courses for GEC assessment, and programs will be notified of those courses at the kickoff meeting.

- GEC will request data from those specified courses for spring of the current academic year and fall of the following academic year. Requested data from programs will include:

  - The course syllabus

  - Representative assignments which reflect each of the approved literacies.

  - Three pieces of graded student work (with names redacted) from that assignment. The student work samples should consist of one average, one below average, and one above average.

  - A brief statement explaining how the submitted material meets the literacy.

- The GEC will review all submitted data and then write a report to each program noting observations or suggested improvements for the delivery of General Education. The GEC will also write an overall summary of GE assessment for those programs in the cluster to the Provost. All reports from GEC will go to Undergraduate Council before going forward to programs or the Provost.

GEC Assessment

The GEC assessment of the submitted data will consider the following points:

• Does the syllabus indicate that the course satisfied the designated literacies?
• Does the syllabus clearly delineate the expectations of the students with respect to the GE literacies?
•Is it necessary to master the literacy to pass the course, implying that each course should have no more than three literacies?

• Do the assignments meet the learning objective of the literacy?
• Is it necessary to master the GE Literacy in order to pass the assignment?

• Do the students demonstrate that they have addressed the LOs?
• Do the students also demonstrate that they have acquired competency in the learning objectives of the literacy?

Self Assessment of GE Designated Courses

- The GEC asks programs to self assess all GE courses to ensure that they satisfy the learning outcomes that have been articulated for the General Education Program. All GE courses will be assessed by the programs during the review cycle to assure courses still qualify for the literacy(ies) for which the course was approved. The review cycle is considered spring of the academic year in which programs are notified they are under review through the end of the following academic year (June).

- The list of courses with a link to each literacy and assessment table will be sent to each program chair for them to assign to instructors, or determine who will assign to individual instructors, of GE courses. A faculty coordinator may be chosen to complete the GE course assessment, but assessment should be done at the level of instructors teaching the course. This would be for instances when several sections of the same course are taught by different instructors. The assessment table will include all GE courses provided to GEC by the Registrar's office and will ask faculty to determine whether the course:

  o was offered during the assessment period (Spring or Fall quarters)

  o meets learning outcomes for the currently approved literacy(ies)

  o will be adapted to meet learning outcomes for the currently approved literacy(ies)

  o meets learning outcomes for an alternate GE literacy; the instructor will submit a GE course proposal form to request a change to the appropriate literacy

  o is best delivered without GE literacy designations; the instructor will submit a GE course proposal form to request the removal of the course from the GE program

Self Assessment of GE Designated Courses

GE has eight literacy categories: Writing Experience (WE), Oral Literacy (OL), American Culture (AC), World Culture (WC), Quantitative Literacy (QL), Scientific Literacy (SL), and Domestic Diversity (DD). Descriptions of these literacies can be found at:

http://ge.ucdavis.edu/

		GE Literacies								Course offered (yes/no)	Course meets all GE LOs (yes/no)	If course does not meet LOs		
												Will revise curriculum to meet LOs	Will request change in GE designations	Will remove GE designations
SUBJ	CRSE	WE	OL	VL	AC	WC	QL	SL	DD					
LIN	005		Y			Y								
LIN	006	Y			Y				Y					
LIN	106	Y												
LIN	160	Y												
LIN	163	Y			Y				Y					
LIN	180	Y												
LIN	182	Y				Y								

Data Provided to Programs from BIA

- Appendix A, provided by the Office of the Registrar, includes catalog descriptions of all programs in the cluster

- Appendix B contains information on instruction, students, and faculty gathered by Budget and Institutional Analysis (BIA) using data from a variety of sources

- Appendix C includes the results of two surveys conducted by BIA: the first gathered the opinions of students in selected classes one and four years after graduation, and the second is a subset of data taken from the University of California Undergraduate Experience Survey (UCUES), which focuses on current upper division students. Appendix D, provided by the Office of the Registrar, is a list of the educational objectives of the campus, as published in the General Catalog.

The data presented in Appendices A-C provides the basis to make comparisons between programs being reviewed in the same cluster as well as division, college, and the entire campus. Generally, the BIA data on students and faculty were compiled for the home department of the program, while the survey data (the undergraduate experience survey and the alumni survey) were compiled by the students' majors. If, in consultation with departments, it is determined that this approach would not provide useful information for the major, alternative information is provided based on the core courses that the department has identified for the major.

Review Team Selection

- The Review Team (RT) will be comprised of one campus and one national reviewer from nominations received from programs and colleges. The standard will be to have one national reviewer and one campus reviewer for each program, however if UIPR feels it necessary, they will propose addition of a reviewer to UGC and the Academic Senate Chair. UGC will be authorized to approve the additional reviewer; the Academic Senate Chair will approve expenditure of additional funding.

- Nominations for members of the RT will be requested from the program faculty, and the associated FEC(s) and Dean(s). Each group will be asked to compile one list of five individuals from outside the UCD campus and one list of five individuals from within the UCD campus (4 lists/program) identifying any possible conflicts of interest. Nominations are sent to AS office by April 14.

- UIPRC will review nominations and rank in the order they wish nominees to be invited. Invitations and confirmations are sent for each team member solidifying the Review Team membership by July 1.

Review Team Qualifications

Qualifications:

The campus reviewer should be familiar with the discipline but should not be a member of the program faculty or administration, teach in the program, or collaborate with program faculty in teaching, grants or contracts.

The national reviewer will be asked to evaluate the program from a national perspective. National reviewers cannot have been involved in an active collaboration in either teaching, research, or be a co-author on any research publications with faculty in the program within the past five years, be currently listed as a Co-PI on a proposed grant or co-instructor on a proposed course.

- **Programs do not need to contact the nominees for willingness to serve or availability: just provide 5 UCD faculty and 5 external faculty nominations.**

Conflict of Interest Policy

Potential review team members will be asked to disclose any potential conflicts of interest. In the case of a perceived conflict of interest, nominees may still be submitted along with an explanation of the potential conflict. The UIPR Committee will review the information and make a determination if a meaningful conflict of interest exists. If the disclosed conflict appears likely to create appreciable bias, UIPRC will recruit an alternate reviewer.

External reviewer nominees can be from any college or university outside UC Davis, or from other institutions. Potential sources of conflict of interest that should be disclosed include active collaboration in either teaching or research, co-authorship of any research publications with faculty in the program within the past five years, being currently listed as a co-PI on a proposed grant or contract, or being co-instructor on a proposed course, or having been a departmental colleague with, student of, or supervisor for any program faculty.

UC Davis reviewer nominees should be faculty members on the UC Davis campus with expertise appropriate for assessing the program being reviewed, but who are not members of the undergraduate program under review. Given that our campus reviewers will have expertise in the program area, they will probably have knowledge of the program and some interaction with it. Potential sources of conflict of interest that should be disclosed include past or current teaching in the program being reviewed and collaboration in research, grants, or contracts with any program faculty within the past five years.

Minor conflicts of interest not deemed by the UIPRC to be likely to create appreciable bias will nevertheless be disclosed in the UIPRC report accompanying the RT report.

Review Team Visit

- The Academic Senate Office will coordinate review team (RT) visits which include two days of meetings with the program chair, faculty, students, staff, and supporting committees.

- The Academic Senate Office will coordinate with a program-designated faculty member who will be responsible for scheduling the program review meeting itinerary focusing on scheduling the RT visit at a time that allows maximum opportunity for faculty and students to participate.

- The Academic Senate Office will forward the program self-review and past review to the RT prior to review visit.

- The RT meets with faculty, staff, students, executive committee, deans and others as appropriate over a two-day period. Note: The RT must meet with groups together to assure RT members receive all of the information directly. The UIPRC member assigned to oversee the review will be invited to attend the meetings if desired.

- Completed RT reports are sent to UIPRC analyst within two weeks of the RT visit. The reviewers are free to determine if they wish to submit individual or separate reports so long as both perspectives are addressed.

- RT reports are sent to programs and college/division level review committees & College FECs for correction of fact. Any correction of fact must be rec'd by UIPR analyst within one week.

UIPR Assessment of Reviews

•UIPRC members are assigned to serve as hosts to The RT for majors/programs and will write a report to be presented to UGC

•UIPRC generates a report to identify status of any outstanding follow-up issues from previous reviews, program specific strengths, weaknesses and recommendations for corrective action including a proposed time line for completion.   UIPRC's report will include (as attachments) the program self-review and RT report.

•Draft summaries are discussed by UIPRC members during a committee meeting

•It should be only in rare circumstances that necessitates additional information requests from the program; however, if additional information is requested by UIPRC, the host UIPRC member goes back to the program to obtain requested information and a revised report is presented again to UIPRC. This continues until the report is approved by that committee.

•UIPR forwards reports to Undergraduate Council (UGC).

Undergraduate Council Review

- Undergraduate Council (UGC) will review the UIPRC report during a Council meeting. If UGC has questions or concerns, the report is returned to UIPRC for refinement and resubmission to UGC. In this process UGC should not request that UIPRC recommendations be changed. It is to be UGC's prerogative to make recommendations different than UIPR.

- Following review and endorsement of the UIPRC report, UGC will forward a program specific report summarizing strengths, weaknesses and corrective action necessary (the report will include the UIPRC review report). The Provost has agreed to coordinate all response to administrative corrective action (budgetary allocation, FTE, space, safety, etc.) with the Dean and program. UGC will communicate directly with the program concerning academic corrective actions such as issues with curricula/academic matters. Therefore UGC's summary will be addressed to the Provost, Dean, and program chair with a copy to the FEC chair and Academic Senate chair.

- If necessary, UGC may ask UIPRC to conduct an interim review when matters are of grave concern. If an interim review is desired, the time frame for the review and matters to be re-examined will be outlined in the UGC summary described above. An interim review will be focused on specific serious issues requiring correction within 1-3 years from UGC report. This review must remain focused on the issues identified, and should not serve to uncover additional issues in need of attention. In the event that additional issues arise, UGC will be notified to decide on subsequent action.

Closing Each Cluster

- If corrective action is requested prior to the next program review, the Provost or Program Chair will report back to UGC on or before a specified deadline. Most often matters should be resolved and reported to UGC by follow-up memo. UGC will maintain a record of recommendations and actions assuring a complete record of activity for archive and use by the program during the next review.

- UIPRC will provide UGC a report concerning trends within the cluster following completion of all program reviews

- UGC will review and approve the report forwarding it to the Provost, Deans and all Programs

- The UIPRC analyst will maintain a complete file (all correspondence and reports, action assigned and taken) associated with the programs and cluster reviewed

Important Dates

February, 2017	Programs notified of pending review & Kickoff – no changes to programs will be considered
April 14, 2017	Deadline for Review Team nominations
Spring Quarter 2017	Programs collect student work and begin GE course assessment and self-review
September, 2017	Data Appendices sent from BIA to programs
September – December, 2017	Programs complete UIPR Self-Review, collect student work and complete GE course assessment
January 1, 2018	Deadline for completed Self-Reviews including GE to Academic Senate Office
January-April, 2018	Review team meetings with programs
January – June, 2018	UIPR forwards all reports to UGC
	UGC reviews all reports and forwards recommendations to Provost, Deans and Department Chairs

Contact: Debbie Stacionis, 754-4791 dstacionis@ucdavis.edu

Assessment
We can help you:

- Define goals and outcomes; map opportunities to outcomes; articulate research question(s)

- Identify types and sources of evidence; develop data collection plan (types, sources, amount)

- Identify benchmarks & criteria to guide interpretation

- Formulate questions for next cycle
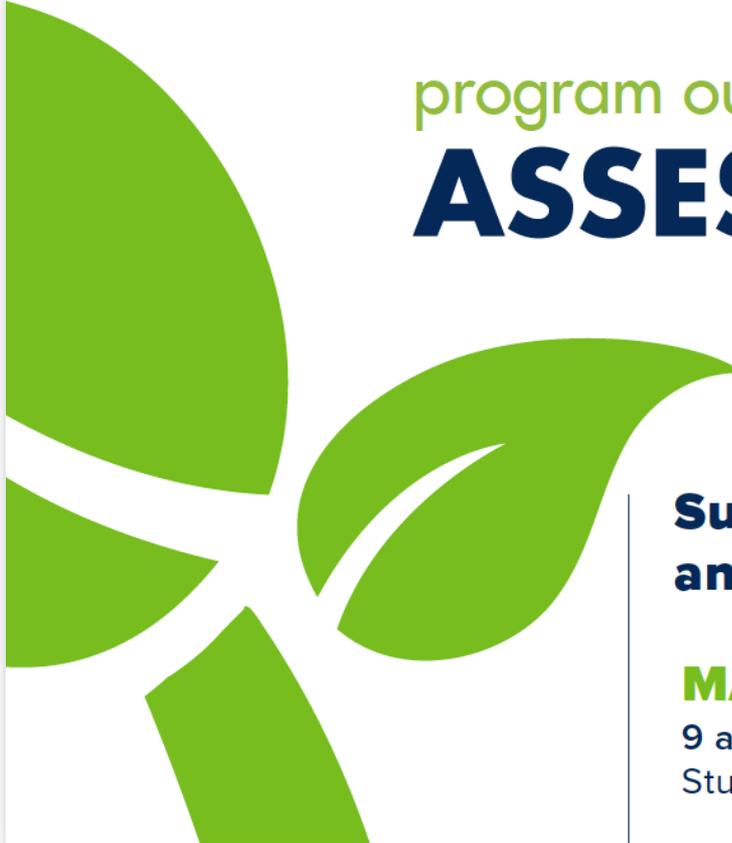
Program outcomes ASSESSMENT SHOWCASE

Successes, challenges, and lessons learned

MAY 17, 2017
9 am to noon
Student Community Center

EMAIL: ATeam@ucdavis.edu
WEB:
assessment.ucdavis.edu

Appendix C: College of Engineering - Canvas CoE Pilot Study of Assessment in Canvas LMS

College of Engineering, UC Davis
Canvas-CoE Pilot Study
Jennifer Quynn, Ph.D.

Learning Management System, Canvas

In fall of 2017, The University of California, Davis adopted the cloud-based Learning Management System, Canvas. Canvas allows instructors to create and post course content and syllabi, assignments, quizzes, discussions, and assessments. Students access course materials through their own Canvas account and can submit work products to their instructors electronically, check grades, participate in real-time class discussions, and communicate with their instructors.

Instructors at UC Davis have adopted and applied Canvas functionality in their courses to varying degrees. Within the College of Engineering, some instructors rely primarily on Canvas to deliver course activities and assignments, while others, such as instructors in the Department of Computer Science, deliver course content to students through a series of coding activities and compilers developed outside of Canvas

One of the greatest advancements that Canvas brings to the campus relates to assessment and the evaluation of student outcomes. In spring of 2017, the College of Engineering (CoE), Office of Undergraduate Education (UE), and Academic Technology Services (ATS) collaborated to support the Canvas-CoE Pilot, an action—research study designed to understand the use of Canvas for producing direct-measures evidence of student outcomes. Over these months, the Canvas-CoE Pilot has produced evidence of a gap between current and best assessment practices by department. Information about the gap has been shared regularly with ABET teams from each department, and has led to new conversations and new decisions made to improve reliability and validity of the assessment process in support of student learning and continued program improvement.

Initial pilot findings and Canvas account re-structure

In order to apply student outcomes data to be used by departments for continued program improvement, two requirements were identified early in the pilot study: 1) student outcomes data would need be aggregated, or pulled from across courses within a department and 2) student outcomes data would need to be reliable and valid. The first requirement led to restructuring of sub-accounts in Canvas. ATS completed the restructuring for the College of Engineering in September of 2017. The restructure of College of Engineering sub-accounts in Canvas is now a nested design involving three levels, College, Department, and Program.
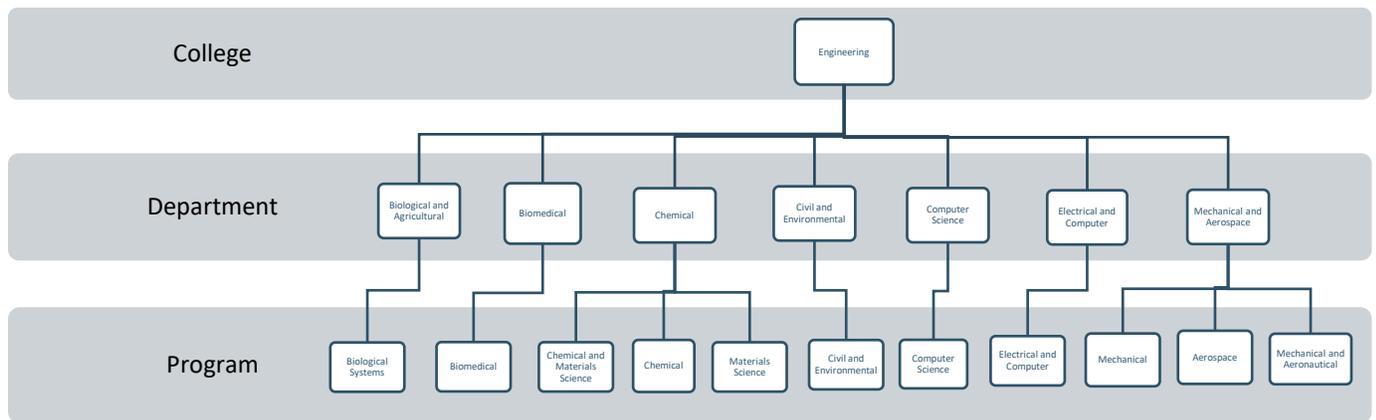
The second requirement, ensuring student outcomes data are reliable and valid involves scrutinizing measurement tools and assessment practices. Evidence for data use to improve reliability and validity of assessment practices within the College of Engineering is addressed in later sections.

Student Outcomes and Canvas

Initially, five of the eight departments and five instructors within the College of Engineering volunteered to participate in the Canvas-CoE Pilot study. Since then, participation has increased to 7 departments and 20 instructors who are using Canvas to collect student outcomes data.

Nesting sub-accounts within Canvas has allowed for sharing of student outcomes by instructors within a program and across departments. A folder for each of the 11 ABET Student Outcomes was loaded at the College level and imported down to departments and programs. Overall outcomes were included in the folder, as well as outcome "sets" that operationalize an overall outcome. Instructors participating in the pilot study have access to a holistic, overall version of each outcome. In the case of some outcomes and where departments have developed a strong set of criteria to operationalize the outcome, that "set" is also available in the folder. Making these two methods available, holistic and analytic, allowed instructors a choice, spurred conversations about reliability and validity in assessment, and, anecdotally, made more room for advancing the culture of assessment within the CoE.

Instructors using Canvas to import the student outcome "C.Overall" into their course from the C-Design folder will see the following:
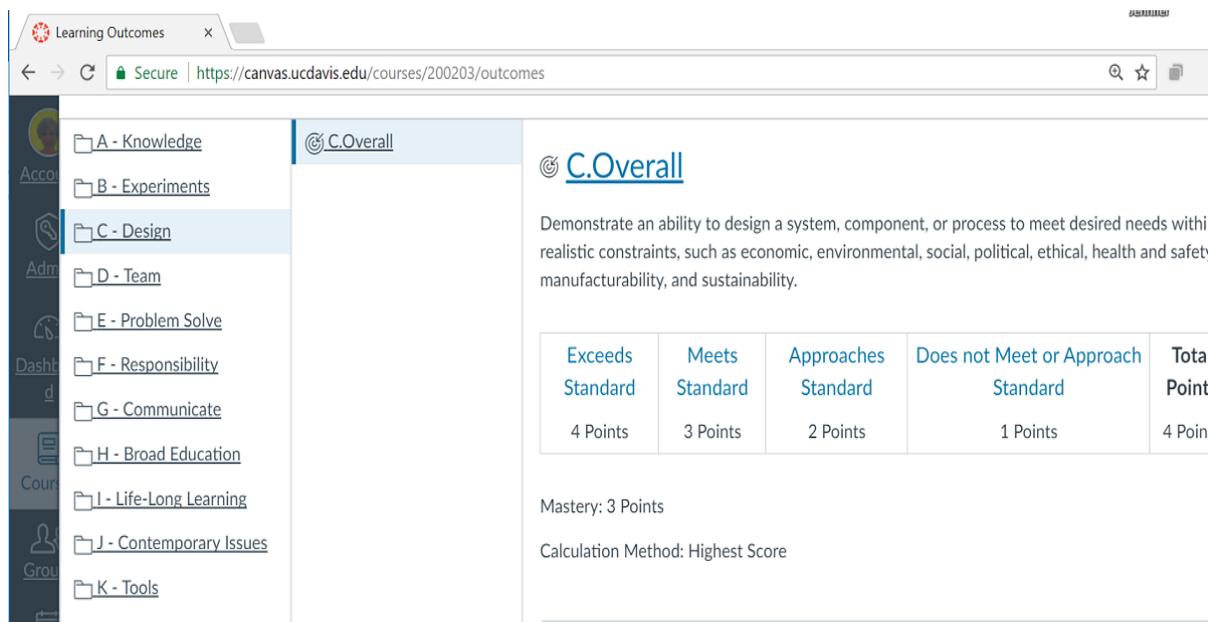
Once imported into a course, the outcome is attached to a rubric or scoring criteria as part of the course assignment. Instructors and their TA's score outcomes in Canvas, just as they score any other aspect of the assignment, using the Speedgrader tool. Data from outcomes scored in Canvas are stored under the "Learning Mastery" tab that appears in the Gradebook, making the data available for further analysis.

Once an instructor imports an outcome it remains available in their account for future assignments.

With the nested structure of sub-accounts in place in Canvas, CoE instructors participating in the pilot are importing the same outcomes. They are, in essence sharing outcomes. This structure allows for aggregate reporting of data across all levels—programs, departments, and the college.

Reports in Canvas

The schedule for ABET assessments of student outcomes was determined by ABET coordinators in each department. Instructors follow the determined assessment schedule, attaching a student outcome to their assessment and scoring the assignment and outcome in Canvas. Doing so makes outcomes data available for reporting.

Several reports are available in Canvas, including the Outcome Results report. An administrator interested in understanding student outcomes by course, program, or department can construct an Outcomes Results report by using filters.

Building a Canvas report

Part of the Canvas-CoE Pilot involved testing Outcome Results report. Applying the filter "Past Terms/Academic Year 2016-2017" produces outcomes data from the year, excluding data from courses taught during summer sessions.
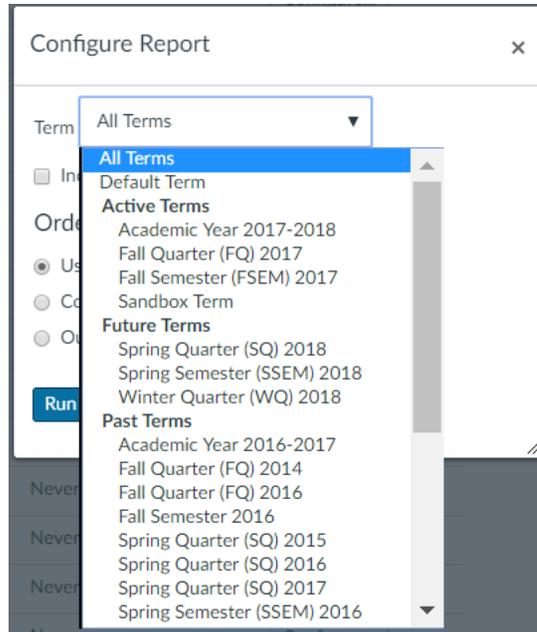
The above filter produces report comes in the form of a .csv file. The report is accessed by clicking a link that comes in an email. An example of an Outcome Results report follows.

	student name	student id	student sis id	assessment title	assessment id	assessment type	submission score	learning outcome name	learning outcome id	outcome score	course name	course id	course sis id
1	student name	student id	student sis id	assessment title	assessment id	assessment type	submission score	learning outcome name	learning outcome id	outcome score	course name	course id	course sis id
2	student_1	ID_1	SIS_1	Report 4: Final Design	78063	assignment	93.85	J - Contemporary Issues	637	2	x	id_x	sis_x
3	student_2	ID_2	SIS_2	Report 4: Final Design	78063	assignment	95	J - Contemporary Issues	637	4	x	id_x	sis_x
4	student_3	ID_3	SIS_3	Report 4: Final Design	78063	assignment	92.5	J - Contemporary Issues	637	3	x	id_x	sis_x
5	student_4	ID_4	SIS_4	Major Experimentation Project	86333	assignment	100	I.12.Problem	655	4	y	id_y	sis_y
6	student_4	ID_4	SIS_4	Major Experimentation Project	86333	assignment	100	I.13.Scope	656	3	y	id_y	sis_y
7	student_4	ID_4	SIS_4	Major Experimentation Project	86333	assignment	100	I.14.Analysis	657	2	y	id_y	sis_y
8	student_4	ID_4	SIS_4	Major Experimentation Project	86333	assignment	100	I.15.FollowUp	658	3	y	id_y	sis_y
9	student_4	ID_4	SIS_4	Major Experimentation Project	86333	assignment	100	I.11.Plan	680	4	y	id_y	sis_y
10	student_4	ID_4	SIS_4	Major Experimentation Project	86333	assignment	91	I.12.Problem	655	3	y	id_y	sis_y
11	student_5	ID_5	SIS_5	Major Experimentation Project	86333	assignment	91	I.13.Scope	656	3	y	id_y	sis_y
12	student_5	ID_5	SIS_5	Major Experimentation Project	86333	assignment	91	I.14.Analysis	657	2	y	id_y	sis_y
13	student_5	ID_5	SIS_5	Major Experimentation Project	86333	assignment	91	I.15.FollowUp	658	3	y	id_y	sis_y
14	student_5	ID_5	SIS_5	Major Experimentation Project	86333	assignment	91	I.11.Plan	680	4	y	id_y	sis_y
15	student_6	ID_6	SIS_6	Report 4: Final Design	78063	assignment	95	J - Contemporary Issues	637	4	x	id_x	sis_x
16	student_7	ID_7	SIS_7	Report 4: Final Design	78063	assignment	69.5	J - Contemporary Issues	637	3	x	id_x	sis_x
17	student_7	ID_7	SIS_7	Major Experimentation Project	86333	assignment	91	I.12.Problem	655	2	y	id_y	sis_y
18	student_7	ID_7	SIS_7	Major Experimentation Project	86333	assignment	91	I.13.Scope	656	2	y	id_y	sis_y
19	student_7	ID_7	SIS_7	Major Experimentation Project	86333	assignment	91	I.14.Analysis	657	3	y	id_y	sis_y
20	student_7	ID_7	SIS_7	Major Experimentation Project	86333	assignment	91	I.15.FollowUp	658	2	y	id_y	sis_y
21	student_7	ID_7	SIS_7	Major Experimentation Project	86333	assignment	91	I.11.Plan	680	0	y	id_y	sis_y
22	student_8	ID_8	SIS_8	Report 4: Final Design	78063	assignment	95.85	J - Contemporary Issues	637	2	x	id_x	sis_x
23	student_9	ID_9	SIS_9	Report 4: Final Design	78063	assignment	81.3	J - Contemporary Issues	637	3	x	id_x	sis_x
24	student_10	ID_10	SIS_10	Major Experimentation Project	86333	assignment	100	I.12.Problem	655	3	y	id_y	sis_y
25	student_10	ID_10	SIS_10	Major Experimentation Project	86333	assignment	100	I.13.Scope	656	4	y	id_y	sis_y
26	student_10	ID_10	SIS_10	Major Experimentation Project	86333	assignment	100	I.14.Analysis	657	4	y	id_y	sis_y
27	student_10	ID_10	SIS_10	Major Experimentation Project	86333	assignment	100	I.15.FollowUp	658	4	y	id_y	sis_y
28	student_10	ID_10	SIS_10	Major Experimentation Project	86333	assignment	100	I.11.Plan	680	4	y	id_y	sis_y
29	student_11	ID_11	SIS_11	Major Experimentation Project	86333	assignment	95	I.12.Problem	655	4	y	id_y	sis_y

The Outcome Results report contains the following headings: student name, student id, student sis id, assessment title, assessment id, assessment type, submission type, submission score, learning outcome name, learning outcome id, outcome score, course name, course, id, and course sis id.

Canvas is a new Learning Management System for the University of California, Davis. Currently, outcomes data reporting at the administrative level is available from courses involved in the Canvas-CoE pilot study. However, the pilot study has produced encouraging findings and a process exists for other colleges and departments to follow.

As part of the Canvas-CoE pilot, data from Outcomes Results reports pulled in Canvas were further analyzed using the statistical software SPSS.

Analysis and Approach

Initial inquiry of the raw percent of students who met or exceeded an outcome standard was examined by course. The data were manipulated using Excel formulas and functionality. The result produced descriptive statistics about outcomes results. The column "Meets Standard", a binary indicator, gives the overall percent of students who met or exceeded the standard. In the example that follows, an average outcome score, out of 4 points, was 2.91 with 76% of students meeting or exceeding standard.

Student Name	SIS	ABET I: An ability to engage in life-long learning	Meets standard
Student1	10101	2	0
Student2	10101	3	1
Student3	10101	1	0
Student4	10101	3	1
Student5	10101	3	1
Student6	10101	4	1
Student7	10101	3	1
S...	...01	2	0
Stud...			
Student195	10101	3	1
Student196	10101	2	0
Student197	10101	2	0
Student198	10101	3	1
Student199	10101	3	1
Student200	10101	2	0
Student201	10101	2	0
		2.91	76%

Participation in the Canvas-CoE Pilot in spring and summer of 2017 yielded 390 assessments of student outcomes over six course and three departments.

Quarter	Number of Students	ABET Outcome	Department
Spring	71	J - Contemporary Issues	Mechanical and Aerospace Engineering
Spring	51	D – Teamwork	Mechanical and Aerospace Engineering
Spring	51	G - Communication	Mechanical and Aerospace Engineering
Spring	93	G - Communication	Civil and Environmental Engineering
Spring	83	J - Contemporary Issues	Materials Science
SS1	41	I - Life-long Learning	Mechanical and Aerospace Engineering
SUM =	390		

Measurement tools, reliability and validity

The Canvas-CoE Pilot study produced two main recommendations for improving the use of student outcomes data for continued program improvement by the college. The first recommendation has been addressed—finding a structure in Canvas that allows for aggregating student outcomes data at different levels—program, department and college. According to tests done during the pilot study, when instructors import outcomes from their program level into their course, attaching them to a rubric, Outcomes Results reports in Canvas aggregate data across courses depending upon the filter applied.

The second recommendation involves improving the reliability of assessment data and, in turn, validity and use of those data for making informed program changes. This work is ongoing within the College of Engineering and better supported because of adoption of the Learning Management System, Canvas. Instructors using Canvas are learning to use rubrics and to operationalize student outcomes, moving beyond a holistic assessment approach to define student performance that demonstrates the outcome. By engaging in exercises in face validity and researching established rubrics, instructors are learning to build and score their own rubrics in Canvas. Instructors are engaging in the process of defining and aligning assignments to assessments and providing a rationale for criterion-referenced analytic approach toward measurement. All of these activities support improved assessment practices that support student learning.

For many instructors within the College of Engineering (CoE) they are assessing student outcomes using rubrics for the first time, and developing rubrics as their measurement tool of choice. The department of

Biomedical Engineering (BIM) has developed an analytic rubric for each of the 11 student outcomes. Instructors in BIM can use the department's suggested rubrics as a template, tailoring their criteria specifically for their course assignment.

The Canvas-CoE pilot led to application of new technology and new tools that support best assessment and evaluation practices across the college. One example of evidence of an improved assessment culture within the CoE is the sharing of resources, rubrics, and assessment information, such as here, on the website https://engineering.ucdavis.edu/facpi/ (Formative Assessment for Continued Program Improvement). This website allows instructors to post rubrics for other instructors in other programs and departments. The rubrics are loaded into Box folders according to student outcome and made available to anyone interested in knowing how another instructor thinks about and operationalizes the objective. Faculty can use the website to look across departments and courses and learn how their colleagues identify and operationalize different learning goals.

During the Canvas-CoE pilot, instructors from the Department of Mechanical and Aerospace Engineering established the following rubric for measuring skills of life-long learning. It is available for all instructors to find on the FACPI website.

	4 (Exceeds Standard)	3 (Meets Standard)	2 (Approaches Standard)	1 (Does not Meet or Approach Standard)
Identify Problem	Identifies and well defines a unique need or deficiency. Provides relevant context to the problem. Evaluates counter arguments that will arise.	Identifies and well defines a unique need or deficiency. Provides relevant context to the problem. Does not provide all evidence for counter arguments.	Problem needs greater definition OR requires more contextual information.	Problem is not well defined and not well supported.
Define Scope of Work	Identifies appropriate methodology, present resources needed and fully addresses constraints.	Identifies appropriate methodology. One resource is missing OR one constraint is not addressed.	Identifies methodology that is insufficient to the work OR more than one resource or constraint is missing.	Methodology is insufficient or inappropriate AND scope of work is incomplete.
Conduct Analysis	Performs accurate analysis based on scope, with no deficiencies.	Performs mainly accurate analysis based on scope, with one small deficiency.	Performs analysis, but includes an important misunderstanding or mistake.	Performs mainly inaccurate analysis OR analysis is incomplete.
Formulate Follow-up	Identifies and justifies important problems that arise because of previous analytical findings and limitations. Accurately prioritizes most pressing problems.	Identifies and justifies related problems because of previous analytical findings and limitations. Does not adequately prioritize problems.	Identifies one or more related problem, but fails to provide adequate justification.	Does not adequately identify problems related to previous analysis.

Scoring Scale

More evidence of an improved culture of assessment following the Canvas-CoE pilot is in the rubrics, themselves. Prior to the Canvas-CoE Pilot study, instructors applied different scoring scales. Since implementation of the pilot and because of increased collaboration between instructors, the college standard has become a 4-point scale. The 4-points are 4 = Exceeds standard; 3 = Meets standard; 2 = Approaches standard; 1 = Does not meet or approach standard. Relying on the same scale and descriptors makes comparing outcomes data between courses more reliable, devoid of equating.

During the Canvas-CoE pilot, instructors from the Department of Mechanical and Aerospace Engineering established the following rubric for measuring skills of life-long learning. It is available for all instructors to find on the FACPI website.

Rubrics in Canvas

In Canvas, instructors create their measuring tool or rubric. In Canvas, the rubric is published and available to the students just as all information about the assignment.

The following Canvas rubric assesses communication and is analytical with six criteria operationalizing the student outcome. The seventh score, indicated by the large red arrow, is the outcome score, ABET G or Communication. The outcome, imported into the course as an "Overall" indicator and scored on a 4-point scale, does not contribute to the overall grade on the assignment.

Outcomes in Canvas as sets

There have been many discoveries during the Canvas-Coe pilot that support improvement in using student data. These include variety in operationalizing and loading outcome in Canvas. The process of making assessment decisions within a department holds great value for improving assessment practices, reliability and validity of data use.

This discovery during the study resulted in the loading of outcomes as operationalized "sets". The following is available for instructors assessing the outcome life-long learning. It has been operationalized by four criteria—Problem, Scope, Analysis, and Follow-up with each level for the criterion "Problem" seen below.

| | | | | Back | + Outcome | + Group | Q Find | ... |

I.Set1.LifeLearning	I.11.Problem	
A.Overall.Knowledge	I.12.Scope	**I.11.Problem**
B.Overall.Experiment	I.13.Analysis	
C .Overall.Design	I.14.FollowUp	
D.Overall.Team		
E.Overall.Solve		
F.Overall.Responsibility		
G.Overall.Communicate		
H.Overall.BroadEducati…		
I.Overall.LLLearning		
J.Overall.Contemporary…		
K.Overall.Tools		

Exceeds Standard: Identifies and well defines a unique need or deficiency. Provides relevant context to the problem. Evaluates counter arguments that will arise. 4 Points	Meets Standard: Identifies and well defines a unique need or deficiency. Provides relevant context to the problem. Does not provide all evidence for counter arguments. 3 Points	Emerging: Problem needs greater definition OR more contextual information OR problem is not well supported. 2 Points	Does Not Meet Standard: Problem is not well defined AND is not well supported. 1 Points	Total Points 4 Points

Mastery: 3 Points

Calculation Method: Decaying Average

Reliability and Validity Analysis in Support for Continued Program Improvement

Because of Outcomes Results reports available in Canvas, the Canvas-CoE Pilot study included new analysis. For example, the following analysis compares two different outcomes assessments. In the first assessment, ABET outcome J, demonstrate knowledge of contemporary issues, is assessed holistically as a single measure. In the second assessment, ABET I, demonstrate skills of life-long learning, was operationalized as a set of five criteria.

Outcome ABET J: Holistic approach, demonstrate knowledge of contemporary issues.
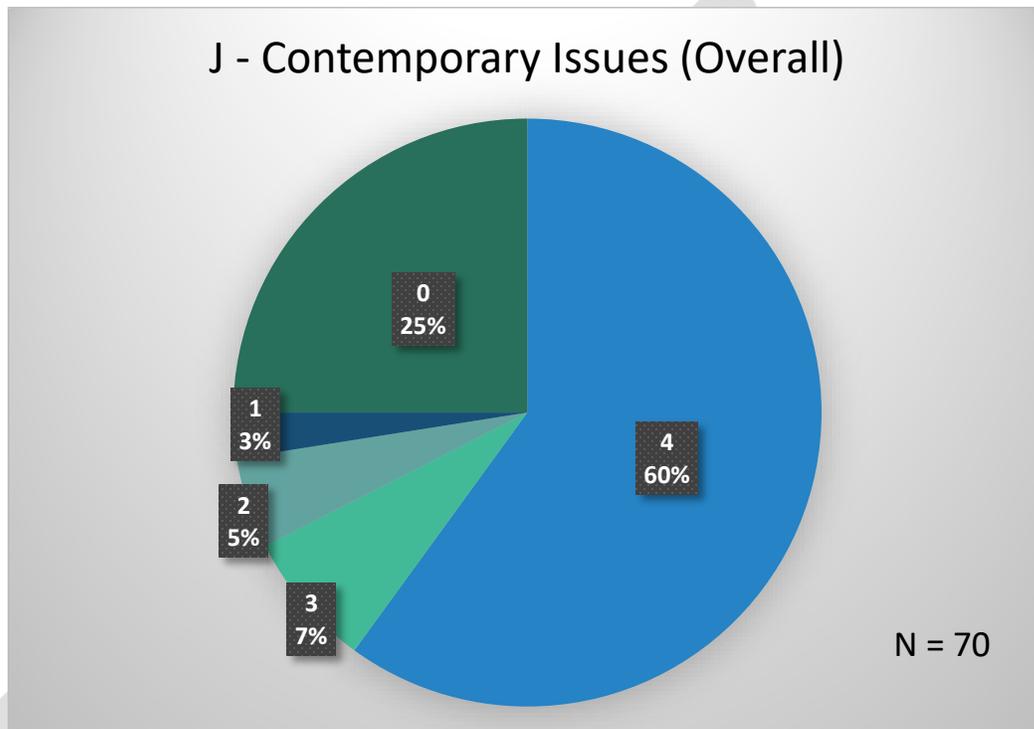
For this assessment, 67% of students met standard, receiving a score of 3 or 4. There were 70 students assessed on this outcome in this course.

Outcome ABET I: Analytic Approach, Demonstrate a recognition of the need for, and ability to engage in, life-long learning.

I - Life-long Learning (Set of 5 Criteria)

0/5 15%
1/5 7%
5/5 54%
4/5 24%
N = 41
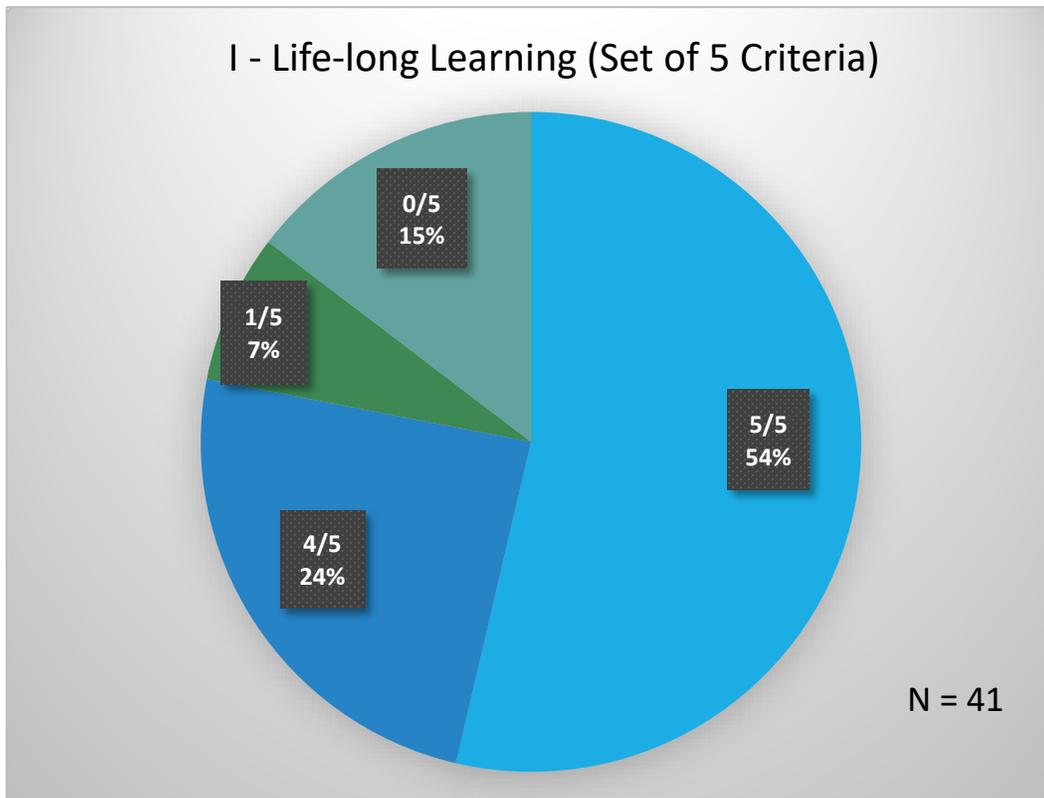
For this assessment, there were five criteria assessed. There were 41 students assessed on this outcome in this course. From the above chart, 54% of all the students met standard on all five criteria. From the above chart, 15% of all students met standard on none of the criteria. When assessing an outcome analytically, programs need to decide what is required to meet standard on the outcome, overall. From the chart above, 24% of all students met standard on four out of the five criteria. They did not meet standard on one criteria. From this chart, we cannot know which criteria was most problematic, but programs can answer that question given the data, and use the exercise to improve student learning and program delivery.

Correlation Coefficient or Relationship between Class Assignment and Outcome Scores

Outcome Results reports generated by Canvas provide not only outcome score data, but also the overall score for the graded assignment. These data points provide information programs can use to improve reliability of their assessment practices and reliability of their rubric measures. When departments enter into a process for improving reliability of their measures, they create a culture of assessment that supports improved student learning at the department level.

Alignment

The new Learning Management System, Canvas, adopted by the University of California, Davis, provides a new opportunity to analyze student outcomes data by program and by department. During the recent Canvas-Coe pilot, Outcomes Results reports were made available. n Canvas were pulled to analyze alignment between assignment and outcome. The Canvas-CoE pilot allowed for new analysis of student outcomes data for improves assessment practices. If the student learning goals for an instructor's assignment align well with the student outcome measured within the assignment, a relationship should be evident between assignment score and outcome score. If such a relationship does not exist, programs and departments are encouraged to question why not, and to employ a process of face validity to the assignment and to the assessment tool. It may be necessary for the instructor to provide greater justification for why a lack of relationship exists between the assignment score and outcome assessment score, and to justify the outcome assessment scores. The relationship between assignment score and outcome score provides evidence that programs can use to improve their assessment processes and their program.

The following analysis looks at two different outcomes assessments conducted in the spring of 2017. The data come from different courses and instructors in the Department of Mechanical And Aerospace Engineering.

Case 1

In the first case, the instructor holistically assessed the outcome, *Knowledge of Contemporary Issues*, resulting in a single, overall score.

Case 2

In the second case, the outcome, *Life-long Learning*, was assessed analytically, resulting in a set of five scores for each student, one for each of the criteria the instructor used to operationalize the outcome.

Method

The statistical software SPSS was used to calculate correlation coefficients statistics and the strength and direction of association between the two variables, Assignment and Outcome. Because these variables are considered scale and ordinal, and not continuous, the Spearman Rho statistic was used.

J – Knowledge of Contemporary Issues (Assessed holistically)
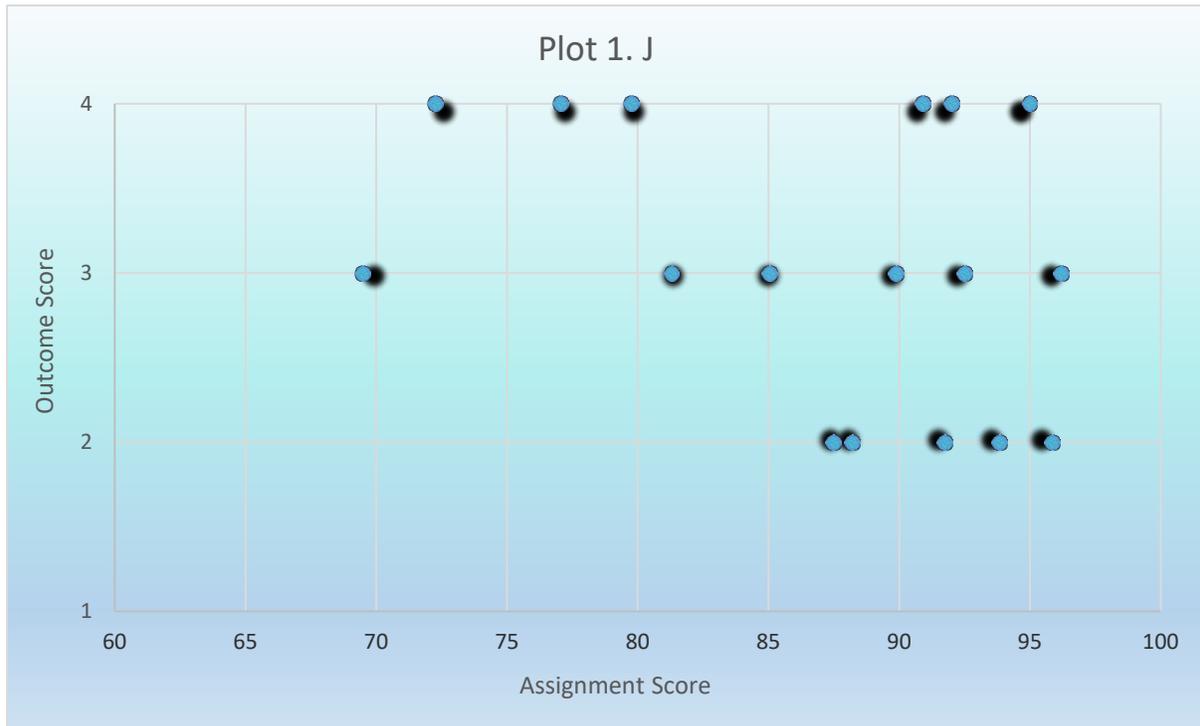
The correlation coefficient is significant at the 0.05 level (2-tailed).

$\rho = -0.26$, N = 70

*The test statistic is statistically significant and negative, meaning that as scores for students improved on the assignment, their score on the student outcome measure decreased.

I – Life-long Learning (Assessed analytically)

Plot 2
I.11 - Professional Plan

The correlation coefficient is significant at the 0.01 level (2-tailed).

$\rho = 0.65$, N = 41

Scores on this criterion positively relate to scores on the course assignment. The high Spearman Rho Correlation Coefficient (ρ) of 0.65 indicates, in general, that students who did well on the assignment, tended to also score well on this criterion, Professional Plan.

Plot 3
I.12 - Problem
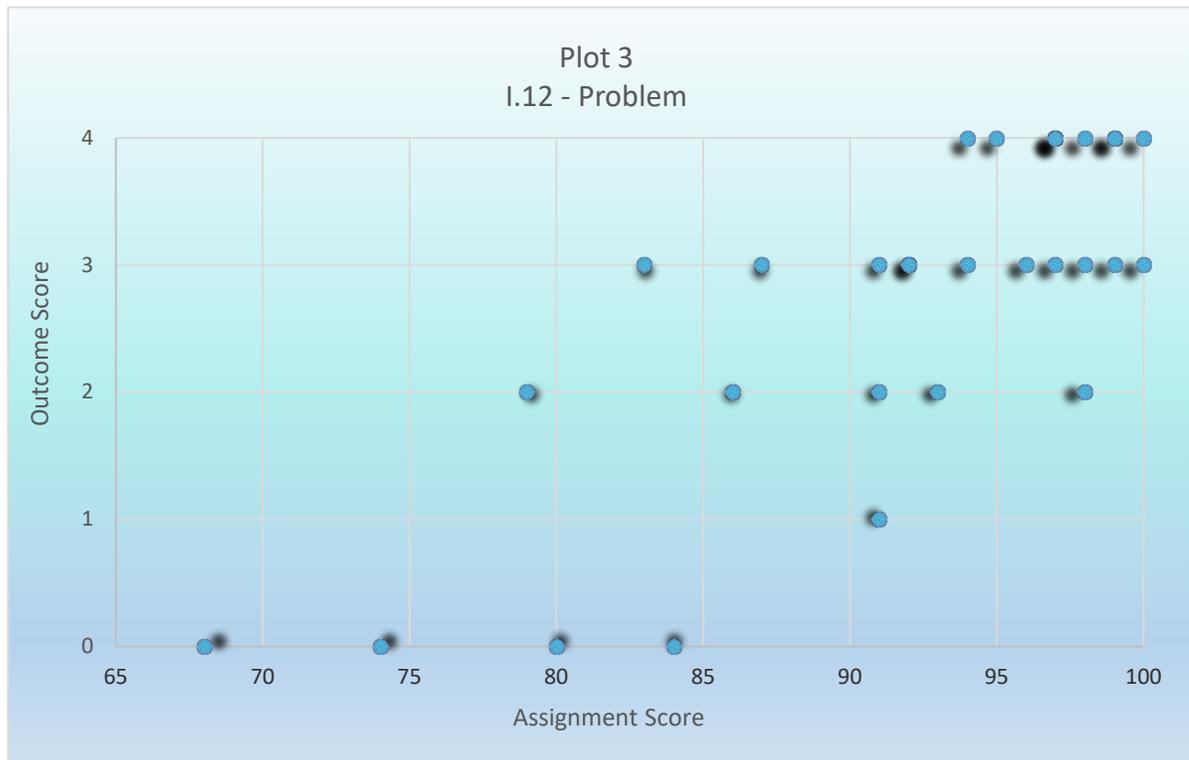
The correlation coefficient is significant at the 0.01 level (2-tailed).

$\rho = 0.77$, N = 41

Scores on this criterion positively relate to scores on the course assignment. The high Spearman Rho Correlation Coefficient (ρ) of 0.77 indicates, in general, that students who did well on the assignment, tended to also score well on this criterion, Problem.

Plot 4
I.13 - Scope
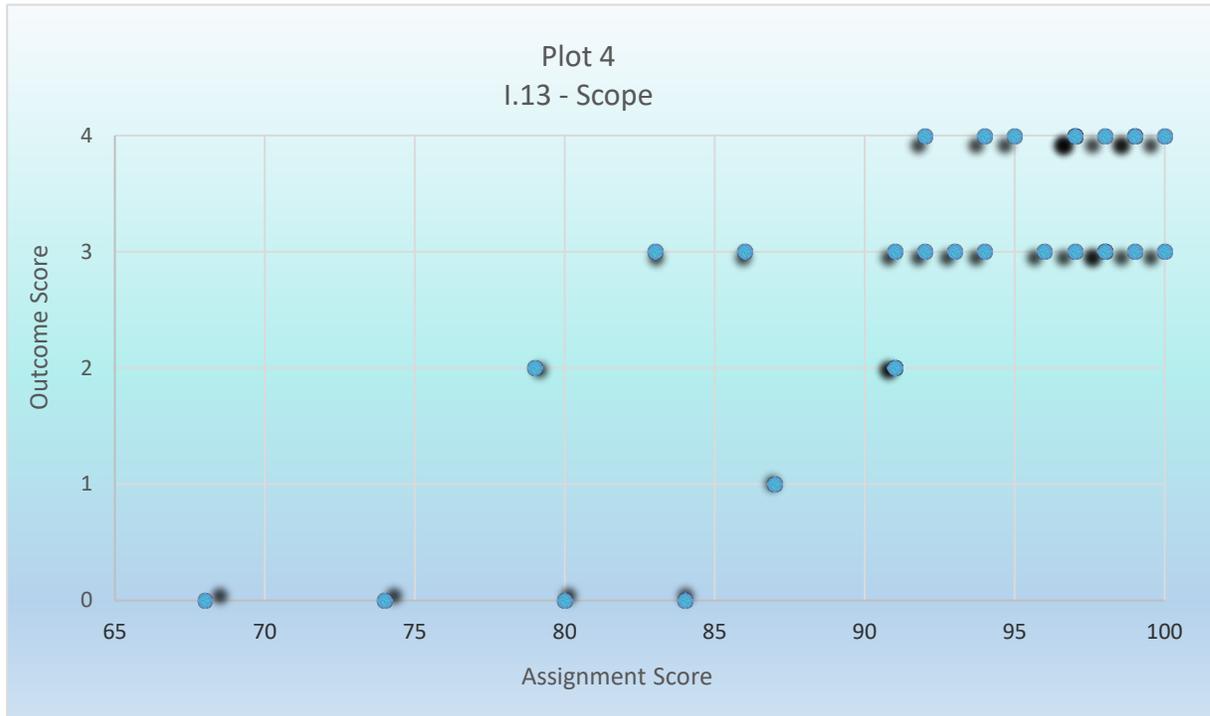
The correlation coefficient is significant at the 0.01 level (2-tailed).

$\rho = 0.74$, N = 41

Scores on this criterion positively relate to scores on the course assignment. The high Spearman Rho Correlation Coefficient (ρ) of 0.74 indicates, in general, that students who did well on the assignment, tended to also score well on this criterion, Scope.

Plot 5
I.14 - Analysis
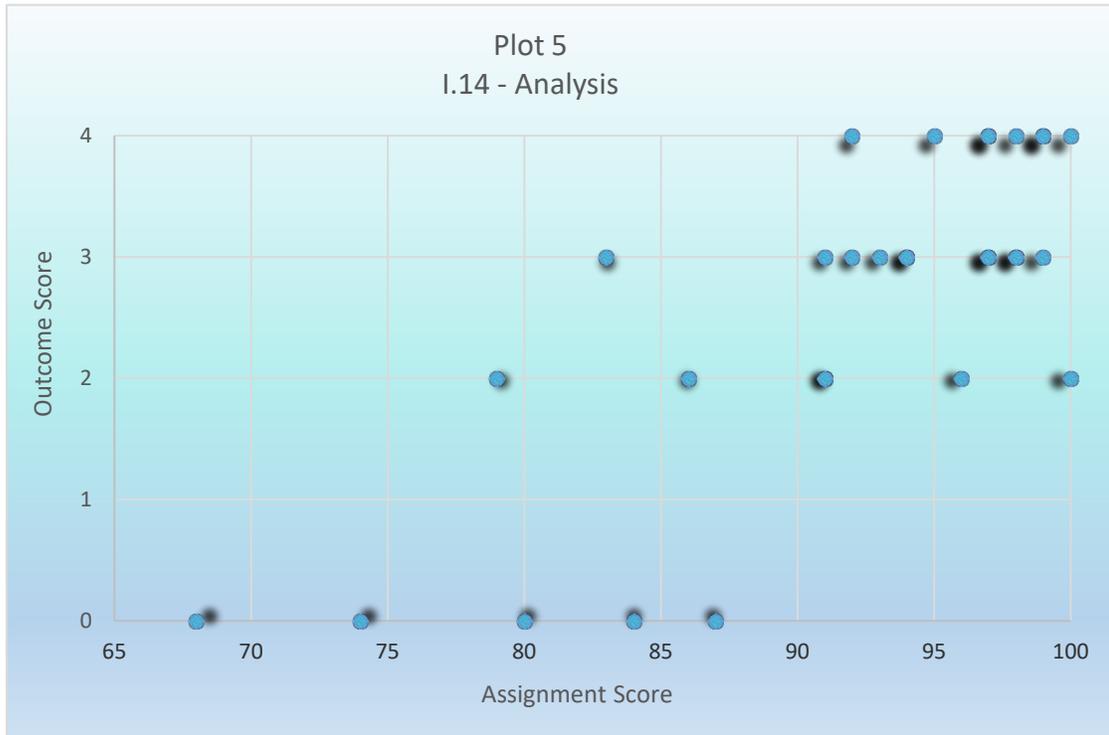
The correlation coefficient is significant at the 0.01 level (2-tailed).

$\rho = 0.75$, N = 41

Scores on this criterion positively relate to scores on the course assignment. The high Spearman Rho Correlation Coefficient (ρ) of 0.75 indicates, in general, that students who did well on the assignment, tended to also score well on this criterion, Analysis.

Plot 6
I.15 - Follow-up
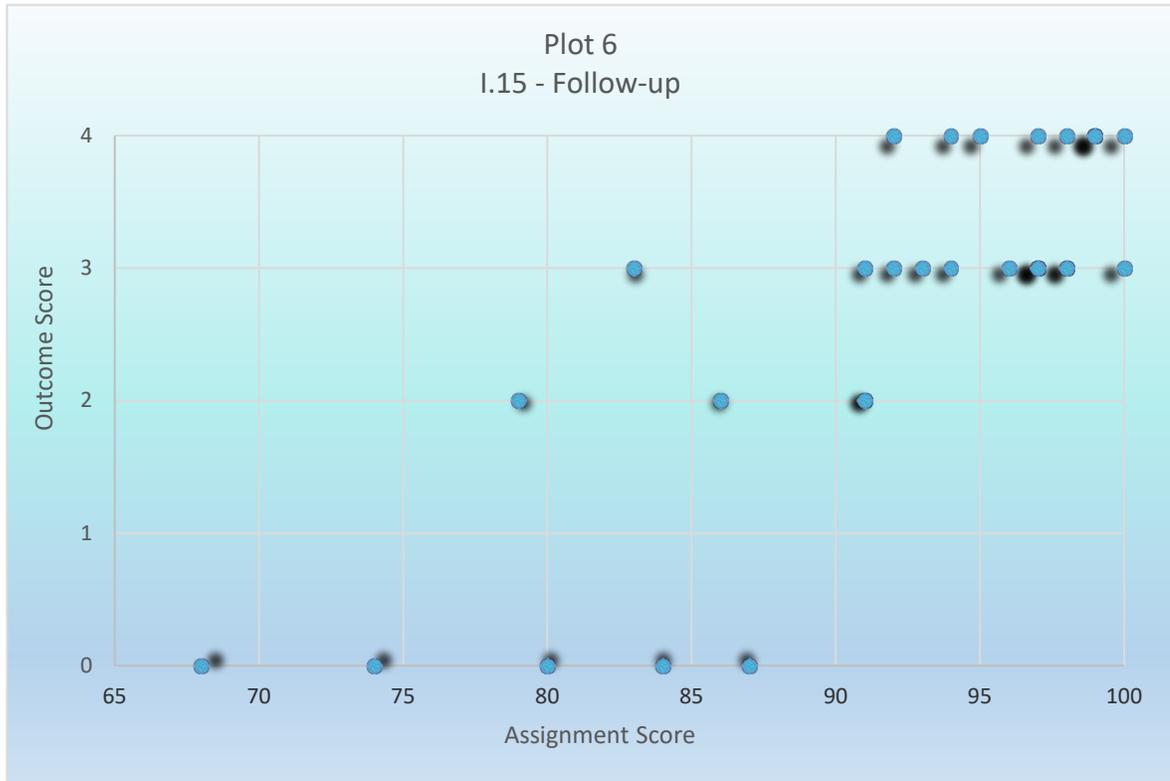
The correlation coefficient is significant at the 0.01 level (2-tailed).

$\rho = 0.69$, N = 41

Scores on this criterion positively relate to scores on the course assignment. The high Spearman Rho Correlation Coefficient (ρ) of 0.69 indicates, in general, that students who did well on the assignment, tended to also score well on this criterion, Follow-up.

Summary of Canvas-CoE Pilot

Technical, assessment, and program information emerged from the Canvas-CoE Pilot, an action-research study undertaken in spring of 2017 by the College of Engineering (CoE), Office of Undergraduate Education (UE), and Academic Technology Services (ATS). A main inquiry for this pilot involved collecting student outcomes data in Canvas, to understand the process through the eyes of ABET coordinators and instructors across departments in the CoE. During the study, Canvas emerged as a successful tool for building rubrics in courses, attaching student outcomes, assessing student outcomes, and providing outcomes reports. Reports in Canvas aggregated student outcomes data, providing learning evidence that departments and programs used to improve existing evaluation tools and assessment practices.

Prior to the pilot, faculty conducted student outcomes assessment in greater isolation to their colleagues. Committees reviewed assessment data, by course. The pilot demonstrated that assessing student outcomes can be embedded into instruction and become a more transparent and frequent event within courses, supplying more data and providing evidence for more than course improvement, but program and department improvement. Using Canvas, student outcomes data can be easily collected and reports produced in Canvas can provide departments data for more formative and frequent, constructive and collaborative conversations. All of this advances the culture of assessment within a department. Anecdotal evidence taken during assessment meetings with pilot participants supported more progressive and collaborative conversations within the CoE.

The pilot study conducted by the College of Engineering demonstrated the importance of nesting Canvas sub-accounts to produce reports that aggregate outcomes data across programs. The nested design allows for instructors to share outcomes loaded into Canvas, and for reporting of outcomes at different levels within the college. The Outcomes Results report in Canvas provides outcomes scores as well as assignment scores so that relationships between these two variables are analyzable. These relationships allow departments to make assessment decisions that improve the reliability and validity of existing assessment tools and practices. Correlation coefficients for two scores, assignment and outcome, were tested as part of this study. The correlation coefficient, Spearman's Rho (ρ), the appropriate test statistic for non-continuous data, provides necessary assessment reliability evidence. When correlation coefficients are weak, such as when students do poorly on the assignment, but well on the outcome, the assignment and outcome are misaligned. The pilot revealed that instructors and departments are open to the use of this type of analysis and that they will include these findings when making decisions to improve assessment processes and tools. As one example, instructors teaching aerodynamics and scoring students on ABET G, ability to function on multidisciplinary teams, discussed the validity of assessing team skills that they had not addressed in the course. Within departments, correlation coefficient evidence spurred critical conversations around how to teach and assess the skills and knowledge represented by various student outcomes. For when instructors assess student outcomes untaught in a course, low correlation coefficients between assignments and outcomes scores are expected.

Findings from the pilot study show how Canvas, a shared student assessment tool, supports assessment processes and improves the collaborative assessment culture within a department. Findings also show that the pilot and that Canvas leverage improved reliability and validity of assessment tools and processes within a department. Prior to the pilot, instructors were creating assessment tools in isolation to each other, and certainly only within their program. The pilot demonstrated measurement principles, such as the importance of clearly operationalizing student outcomes.

The previous analysis presented two cases. The first was holistic and very general, while the second was analytic, operationalized using a set of five criteria. All correlations produced statistically significant, two-tailed results. The correlation coefficient from the holistic measure was significant and negatively related to the actual score given by the instructor on the assignment. Students who did well on the assignment tended to not do well on the outcome assessed. This data has been presented to the program and has created energy around how to improvement by operationalizing outcomes and revisiting the assignment and measurement tool.

The second case assessed a different outcome analytically, using five criteria. The five correlation coefficients produced are positive and strong in relation to the actual scores students received on the assignment.

During the pilot, some instructors chose to assess using a holistic outcome and assessed the student skill or knowledge in very general terms, often not clearly communicated to their colleagues. The use of correlation coefficients identified how holistic assessment could be significant and negatively correlated with the variable assignment score, and that that phenomenon would need to be further explained by the instructor, such as in the Department of Mechanical and Aerospace. Identifying the inverse relationship between assignment and assessment scores needed to be discussed by the ABET administrators and led follow-up actions to operationalize the outcome within the department for future assessments. The instructor was able to re-evaluate the assessment tool and process. Examining correlation coefficients is just one example of a validity exercise that, when undertaken, allows programs to critically consider their assessment practices and how they collect and use student outcomes data. This, too, was discovered during the pilot and using Canvas.

During the pilot, the Learning Management System, Canvas, a cloud-based platform, produced direct-measures evidence of student outcomes in real-time. ABET coordinators did not have to wait to collect outcomes data from instructors. Programs can regularly pull student outcomes reports in Canvas. Canvas supports a consistent and less constrained approach to data collection. Canvas supports departments to make outcomes-data checks, to analyze the data, and respond with decisions that benefit current students. Canvas supports a model of embedding student outcomes assessment into programs.

The Canvas-CoE pilot renewed interest for programs to use assessment data for improving program effectiveness. The pilot study consisted only of volunteers who regularly met to share measurement tools and assessment dilemmas. Instructors participated in a collaborative approach to analyzing and explaining data. During meetings, instructors exchanged and developed new tools and advanced their assessment processes. Meetings between pilot volunteers strengthened the assessment community across the CoE by providing shared experience and building research practice into assessment. The Canvas-CoE pilot has established within the CoE a greater emphasis on scrutinizing the tools and process involved in collecting student outcomes data. Collaborative work among instructors has improved reliability and validity of tools and assessment practices. The sharing of assessment tools and processes produced by the pilot will be shared beyond the College of Engineering with other colleges. Analytic exercises that support student learning, reliability, and validity will continue to be developed by departments within the College of Engineering and available for adoption by other colleges at UC Davis.

Data from Canvas reports pulled during the pilot advanced validity by requiring justification for use of measurement tools and alignment of assignments and assessments. Findings from analysis support critical, inter-program conversations about student learning goals or outcomes, instructional content, and assessment, and alignment of all of these. Correlation coefficients provide instructors, programs, and departments information about alignment. When programs build in an opportunity to use data for analyzing the quality of alignment, this is the heart of building a culture of assessment and ensuring that student learning is supported and improved within a program.

Overall, programs that approach assessment of student outcomes as criterion-referenced and analytic create more informed data points. These points hold detailed information for programs on what to focus on to support student learning and improve program effectiveness. The criteria chosen provide programs immediate feedback needed to make measureable improvements over time.

Findings from the Canvas-CoE pilot are not limited to the College of Engineering. They are available to other departments and programs at the University of California, Davis. From the pilot study, it was learned that Canvas provides a platform for analyzing student outcomes data across programs and, specifically, for improving the reliability and validity of assessment tools and processes. These activities support and improve a culture of assessment within departments.

Appendix D: Revealing Expectations for Student Learning – Analyzing Program Learning Outcomes Statements with Bloom's (Revised) Taxonomy

UC**DAVIS**

program outcomes
ASSESSMEN

Revealing Expectations for Student Learning – Analyzing Program Learning Outcomes Statements with Bloom's (Revised) Taxonomy

BACKGROUND

In the mid-20th Century, a group of college examiners published a framework[1] which categorized educational objectives as a means of improving alignment between curricular design and assessment. As Bloom, Engelhart, Furst, Hill, and Krathwohl (1956) explained: educational objectives are the "explicit formulations of the ways in which students are expected to be changed by the educative process" (Anderson, Krathwohl, Airasian, Cruikshank, Mayer, Pintrich *et al.*, 2001). Bloom's Taxonomy focused on the cognitive domain, and arranged associated learning objectives along a continuum from lower to higher levels of complexity. Figure 1 (below) shows the original objectives.

Figure 1: Bloom's Taxonomy (1956)

| Remember | Comprehend | Apply | Analyze | Synthesize | Evaluate |

Anderson *et al.* (2001) revised the initial framework to incorporate the "numerous changes in American society since 1956 [which] have influenced the way we think about and practice education" (p. xxii). The revised framework includes two dimensions: cognitive processes and types of Remember.[2] The six cognitive process dimensions are shown in Figure 2 below.

Figure 2: Bloom's Revised Taxonomy (2001)

| Remember | Understand | Apply | Analyze | Evaluate | Create |

The cognitive process dimensions in Bloom's Revised Taxonomy (hereafter: BRT) are depicted along a continuum of increasing cognitive complexity, where the verbs on the left-hand side represent lower-order skills and those on the right represent higher-order skills. Table 1 (below) includes the key questions that are associated with each level of cognitive process.

Table 1: Objectives Aligned to Cognitive Process Dimensions

	REMEMBER	UNDERSTAND	APPLY	ANALYZE	EVALUATE	CREATE
Students can...	Retrieve, recognize, and recall relevant Remember from memory.	Construct meaning from oral, written, and / or graphic messages.	Carry out or use a procedure in a given situation.	Break material into constituent parts, determine how the parts relate to one another and to an overall structure or purpose.	Make judgments based on criteria and standards.	Put elements together to form a coherent or functional whole; reorganize elements into a new pattern or structure.

---

[1] The framework bears the name of its primary editor educational psychologist Benjamin Bloom.
[2] The four Knowledge dimensions are: factual, conceptual, procedural, and meta-cognitive; they are not included here.

METHOD

Data Collection

Undergraduate Student Assistant Researchers (StARs) compiled the list of PLOs from program / department websites, beginning in February 2017. In some cases, the PLOs were impossible to locate, so the Assessment Lead followed up with contacts in those programs to request the most current lists of expectations for student learning. In total, 104 sets of learning outcomes were included in the analysis.

Data Analysis

An initial analysis was completed by two StARs, who read through all of the PLO statements and coded the verbs according to the color-scheme seen in Appendix A. For example, if the statement included the verb *describe*, it was coded as belonging to the Remember dimension. The StARs compared their analyses with each other, and produced a joint tally, which informed the second analysis, which is the subject of this report. The Program Evaluation Specialist collaborated with the Center for Educational Effectiveness (CEE) Lead Programmer to create a counting script which compared the verbs present in the PLO data set with the lists in Appendix A.

PRELIMINARY RESULTS

Campuswide

Verbs associated with the cognitive process dimension *apply* were the most common across all Colleges n=354). Figure 3 (below) shows the frequency of verbs associated with all dimensions.

Figure 3: Verbs Associated with Cognitive Process Dimensions (All Colleges)
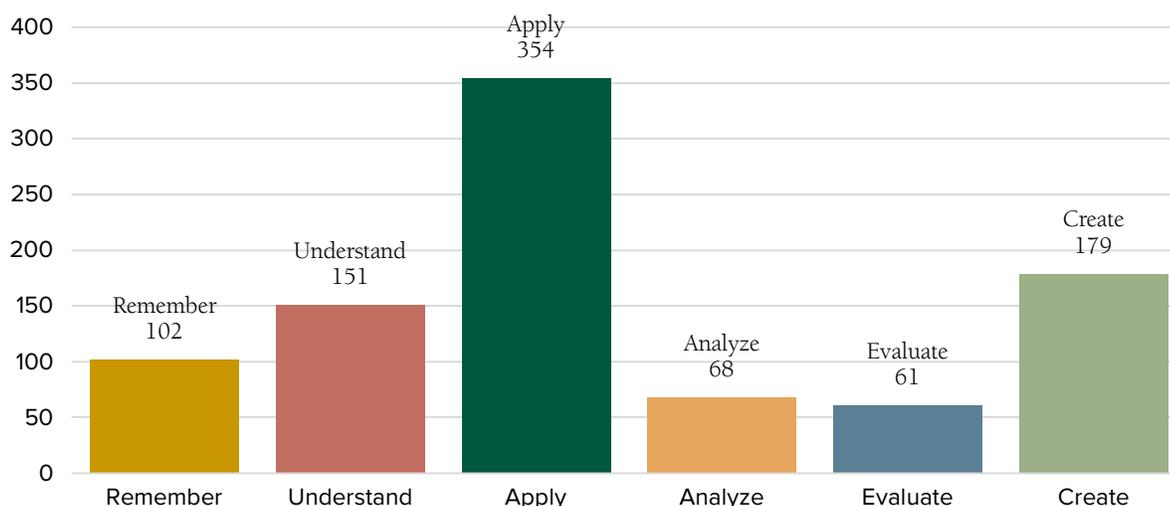
Table 2 (below) shows the most commonly used[3] verbs across all Colleges.

Table 2: Most Commonly Used Verb by Domain (All Colleges)

Remember		Understand		Apply		Analyze		Evaluate		Create	
Describe	43	Research	73	Demonstrate	140	Analyze	48	Evaluate	31	Design	54
Identify	36	Interpret	30	Apply	57	-	-	Assess	16	Develop	31

LIMITATIONS

At the time of the analysis, the script only counted words in the PLOs, which appeared in the exact form as the words on the list (e.g., *apply* was counted, but *application* was not). Future analyses will include derivations of the words to provide a more accurate count.

---

[3] The top three words per category are shown, unless the count total for a word was less than 10.

The lists against which the PLO data were compared were not equal in number. As shown on the list in Appendix A, "Create" had the most words associated with it (43), followed by "Apply" (35), "Remember" (30), "Analyze" (29), "Evaluate" (28), and "Understand" (22). As seen in Appendix B, words associated with the "Apply" dimension are the most commonly used words within university PLOs (354 instances), with almost twice as many counts as the next-highest category, "Create" (179 instances).

RECOMMENDATIONS FOR FUTURE ANALYSES

Ensure script includes discipline-specific language, as well as all reasonable derivations thereof.

APPENDIX A

Table 3: Verbs Aligned to Cognitive Process Domains

Remember	Understand	Apply	Analyze	Evaluate	Create
copy	ask	act	advertise	argue	adapt
define	associate	administer	analyze	assess	anticipate
describe	cite	apply	appraise	choose	arrange
duplicate	classify	articulate	break down	conclude	assemble
enumerate	convert	calculate	calculate	consider	choose
examine	discuss	change	categorize	convince	collaborate
identify	explain	chart	compare	criticize	compile
label	express	choose	connect	critique	compose
list	extend	classify	contrast	debate	construct
listen	give examples	collect	correlate	decide	create
locate	group	complete	deduce	defend	design
match	indicate	compute	diagram	editorialize	develop
memorize	interpret	demonstrate	differentiate	evaluate	devise
name	paraphrase	determine	discover	find errors	estimate
observe	represent	dramatize	discriminate	grade	experiment
omit	research	employ	dissect	judge	facilitate
quote	restate	establish	distinguish	justify	formulate
read	review	examine	divide	measure	hypothesize
recall	rewrite	generalize	focus	order	imagine
recite	trace	illustrate	infer	persuade	integrate
recognize	transform	interview	organize	rank	intervene
record	translate	manipulate	outline	rate	invent
repeat		operate	point out	recommend	make
reproduce		paint	prioritize	reframe	manage
retell		practice	question	score	modify
select		prepare	separate	summarize	negotiate
state		relate	subdivide	support	originate
tabulate		report	survey	weigh	plan
tell		schedule	test		predict
visualize		show			produce
		sketch			propose
		solve			rearrange
		teach			reorganize
		transfer			report
		use			revise
					role-play
					schematize
					simulate
					speculate
					structure
					substitute
					validate
					write
30 words	22 words	35 words	29 words	28 words	43 words

REFERENCES

Anderson, L. W., Krathwohl, D. R., Airasian, P. W., Cruikshank, K. A., Mayer, R. E., Pintrich, P. R., . . .
Wittrock, M. C. (Eds.). (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives* (Abridged ed.). New York: Longman.

Appendix E: PLO Assessment Rubric

UCDAVIS
Program Learning Outcomes Assessment Rubric

program outcomes
ASSESSMENT

Initial	Emerging	Developed	Highly Developed
Program Learning Outcomes (WSCUC CFR: 2.3)			
Outcomes statements describe expectations for demonstration of learning that include "unmeasurable" verbs (e.g., know, understand) and may be difficult to measure.	Most outcomes statements indicate what students can do to demonstrate learning, but generally characterize, but do not clearly articulate intended disciplinary outcomes.	Each outcomes statement describes how students can demonstrate learning through the use of precise verbs (e.g., evaluate, summarize, construct) which reflect higher-order thinking.	The outcomes statements clearly articulate the breadth and depth of expected knowledge, skills, attitudes, competencies, and / or habits of mind that students will be able to demonstrate. Outcomes statements reflect aspirational and achievable expectations. Outcomes focus on observable student performance.
Planning (WSCUC CFR: 2.4)			
Plan is described as "in development" and/or is limited in its range of learning outcomes.	Plan for assessing student learning outcomes is limited to the program review cycle.	Program is implementing multi-year assessment plan which identifies when and how each outcome will be assessed. Desired result specified (e.g., 80% of responses to exam items *aligned to specific PLO* are correct).	Program is implementing a fully-articulated, sustainable, multi-year assessment plan that: reflects guiding question or focus; describes when and how each outcome will be assessed (including explanation of sampling methods); includes contextually-relevant, faculty-developed targets for student learning outcomes; forecasts how findings will used to inform improvement efforts.
Program Coherence (WSCUC CFR: 2.3, 2.5)			
Learning opportunities (activities / courses) listed, but link to program's desired learning outcomes is unclear.	Relationship between the program's desired learning outcomes, curriculum, and / or opportunities-to-learn not full developed.	Curriculum design reflects alignment between program's desired learning outcomes and students' opportunities-to-learn.	Curriculum map depicts explicit and intentional alignment between program curriculum and opportunities-to-learn and master each outcome. Curriculum map depicts effective distribution of opportunities across program.

Initial	Emerging	Developed	Highly Developed
Data Collection -- validity, sampling, tools (WSCUC CFR: 2.6)			
Evidence not optimal to produce actionable information about student learning. Evidence may have been collected for individual faculty use, rather than to assess student performance against programmatic criteria and standards.[1]	Data aligned to PLO but does not include direct evidence of student learning. Sample usefulness may be limited by size and/or selection.	Program collects valid and relevant evidence for each outcome, including both indirect and direct evidence. Describes methodology for sampling student work for analysis at program level; sample accurately represents student population of program as a whole. Program uses mixed-methods, where appropriate.	Program collects evidence needed to fully align student achievement with the program's goals. Detailed description of data collection process, including alignment to desired results and selection criteria for multiple lines of appropriate evidence. Assessment criteria have refined over time, ideally with input from students. Assessment instruments (e.g., rubrics, assignment guidelines) depict clear and intentional alignment to outcomes.
Analysis & Interpretation (WSCUC CFR: 4.1)			
Interpretations need to be more connected to methodology and/or results.	Results are presented without clear explanation of how they demonstrate achievement of outcomes. May lack discussion of validity or reliability.	Thorough interpretation of results supported by alignment between PLO, assessment criteria, and evidence.	Results clearly delineate each line of evidence, indicating various levels of achievement against faculty-defined goals for student learning. Includes critical discussion of validity and reliability of results. Interpretation conducted by multiple faculty. Interpretation considers how classes / activities might have influenced results.
Application of Results to Continuous Improvement Efforts (WSCUC CFR: 4.2, 4.3, 4.4)			
Program needs to develop plans for using results to improve student learning outcomes.	Recommendations mainly focus on program improvement; opportunities for improving student learning could be considered (e.g., learner-centered pedagogy, course delivery methods, etc.).	Describes general plan—informed by results—for improving student learning outcomes via curricular, pedagogical, and/or other appropriate avenues.	Includes specific plans to implement changes informed by findings results. Plans clearly aligned to goal of improving student learning outcomes. Includes: timeline for implementation, schedule for evaluating effectiveness; and resources (human and/or capital) necessary.

[1] **Criteria** are the specific skills or abilities to be measured. **Standards** describe levels of performance for a given criterion (ex. initial - highly developed).

Appendix F: Assessment of Student Knowledge (ASK) Grant Report Template

UC**DAVIS**

OFFICE OF UNDERGRADUATE EDUCATION
UC DAVIS DIVISION ACADEMIC SENATE

Grant for Assessment of Student Knowledge (ASK)
Funding for the direct assessment of student work within program assessment

The Vice Provost of Undergraduate Education, the leadership of the Academic Senate, and the Director of Academic Assessment have collaborated to offer a pilot program open to all undergraduate programs. Thirteen programs will have access to $5000 unrestricted research funds to be shared among up to two lead faculty (and a graduate student if so desired) within the selected programs. Three programs in the process of completing the required self-review for the Faculty Senate (in 2013, this is Cluster 7) will be selected, and ten programs will be selected from the remaining undergraduate programs.

With help provided by the Office of Academic Assessment (OAA), participating programs will ASK what and how their students are learning. They will be expected to:
1.] establish learning outcomes at the course level in required courses;
2.] indicate in course syllabi how the course learning outcomes relate to program learning outcomes;
3.] create a program assessment plan that includes a curriculum map (indicating how required courses address the various learning outcomes) and a timeline for regular assessment leading up to program review;
4.] begin to implement the assessment plan by assessing at least one program learning outcome using both indirect (surveys) and direct evidence (student work); and
5.] demonstrate this work for other faculty either through a short podcast or a sample on the OAA website.

To apply for this pilot grant, please fill out the application below, and return it to Karen Dunn-Haley (kdunnhaley@ucdavis.edu). Programs in Cluster 7 have a deadline of May 10; remaining undergraduate programs have a deadline of June 14. For further information about assessment, see the OAA website: http://oaa.ucdavis.edu. Questions about the parameters of the grant and assessment practices should also be addressed to Karen Dunn-Haley, Director of Academic Assessment.

Program: Click here to enter text.   **Program Review Cluster:**   Click here to enter text.

Who will coordinate the pilot?

Faculty Name: Click here to enter text.
Email: Click here to enter text.

Faculty Name: Click here to enter text.
Email: Click here to enter text.

Has your program created an assessment plan already? How far along are you in assessment implementation, and given the long-term needs of your program, how will this grant help with progress?
 Click here to enter text.

Meaningful assessment asks questions about student learning that faculty want to address. What questions do you want to investigate about student learning in your program?
Click here to enter text.

Which program learning outcome(s) (PLOs) do you plan to assess in this ASK grant?
Click here to enter text.

What type of direct evidence (student work) do you plan to use? ([Some examples of direct evidence are capstone projects, final papers, signature assignments, or pre- and post-tests](#). Note: in the case of assignments, a sampling of student work is appropriate, not all student work in a class or program.)
Click here to enter text.

Please indicate a basic outline of the budget and any other relevant information, e.g. any plans to use grad student assistance. (The OAA is happy to assist you with questions about the budget.)

As an example, your budget might include one or more of these lines:

- Faculty summer salary
- Graduate student summer support (no benefits)
- Speaker on assessment from a similar program at another university
- Room costs and refreshments for a faculty retreat to cover assessment issues

Click here to enter text.

Appendix G: Departmental Assessment Reports and Presentations

1. **Marine and Coastal Science Assessment Update**

2. **Establishing Learning Outcomes and Assessments to Structure and Enhance the Student Farm's Internship Program**

3. **Department of Communication: Five steps to launching a sustainable assessment program**

4. **History Department: Assessment of program learning outcomes in History**

5. **Department of Psychology: Assessment of Program Learning Objectives Case Study – Fostering critical thinking in a lower division course (PSC041 - Research Methods in Psychology)**

Marine and Coastal Science Assessment Update
October 26, 2017

Introduction: *Marine and Coastal Science* is a new major that was approved by the Academic Senate in 2013 and first offered Fall 2013. The first freshman class entered the program in Fall 2015. The program tends to recruit 20-30 students per year, with enrollment currently at 80 students. The program is the first of its kind to offer students a truly interdisciplinary approach to *Marine & Coastal Science*, incorporating the strengths of 6 departments representing three colleges and the Bodega Marine Laboratory. The major also bears the unique stamp of UC Davis in offering courses, fieldwork and research opportunities that highlight the terrestrial-marine interface, coastal issues, and human impacts on the marine environment.

Learning Outcomes & Assessment
To create a successful interdisciplinary program, we incorporated Program Learning Outcomes and assessment early on in the major development. Learning Outcomes were developed through a process that was supported by the Center for Educational Effectiveness (Undergraduate Instructional Improvement Program Grant). This funding provided support for a graduate student to assist core MCS faculty in researching, developing, and approving Program Learning Outcomes. Through this process, the MCS program drafted Learning Outcomes, compared these to Learning Outcomes for other majors at UCD and other Marine Science programs around the country, revised and refined the Learning Outcomes, and acquired approval through all of the core faculty in the program (Table 1). A second phase of this process was to align Program Learning Outcomes with a list of 14 'core' courses for the program. This was done through multiple rounds of faculty feedback and refinement, resulting in a matrixed set of PLOs with classes.

The first evaluation of this new program is ongoing (2017-2018 academic year). As part of this process, a committee of faculty and staff were assembled to assess the PLOs and whether courses were meeting objectives as stated in the matrix. The committee evaluated over 30 pieces of student work contributed by faculty in the program that aligned with 7 of the 14 'core' courses. The committee established a rubric for assessment, and each piece of student work was evaluated based upon this rubric by at least two of the committee members. Analyses and interpretation of these data are ongoing, and will be included in the MCS report to the Academic Senate and review team (Due December 2017). An additional outcome of this first assessment effort was also a list of recommendations for future assessment that will be included in the MCS review. Faculty involved in the assessment process noted that this exercise made them reevaluate not only the way in which they assess students in their classroom but the effectiveness of their assessments at getting at the learning outcomes that matter.

Table 1: Program Learning Outcomes for Marine & Coastal Science

Understand and integrate fundamental principles, including:
development and evolution of modern ocean/earth system
distribution, diversity and abundance of marine life, and special adaptations to ocean environment
impact of ocean circulation on climate, atmosphere, biosphere
biogeochemical cycles, ocean productivity
processes at terrestrial-marine interface and in the coastal zone
anthropogenic impacts and management of ocean resources

Utilize the scientific method to answer questions and investigate the natural world
Successfully communicate scientific information through
oral presentations
papers/writing
Interpret and discuss scientific data, critically evaluate published scientific literature
Experience the marine environment in field, research or internship opportunities
Explain and evaluate major issues that are facing the modern marine environment

Student Farm Assessment Work Report
October 26, 2017

About the UC Davis Student Farm

The Student Farm began in 1977, when a small group of dedicated students planted their first crops on a 20-acre parcel on the west side of campus. Their goal was to explore and learn about alternative farming and gardening through shared physical work, experimentation, and problem solving. Soon students initiated a number of projects which allowed them to gain practical skills, knowledge and experience in several areas related to organic farming, ecological horticulture and environmental education. These projects have developed over time and now each quarter scores of students participate in them as volunteers and interns and through formal courses which use the farm for field-based learning.

The Student Farm is centered on experiential learning and strives to provide context and a learning community in which students can apply the content knowledge they are gaining in academic coursework. Today, the farm is guided by a team of five permanent staff, three short-term staff, two graduate students, and 16 student employees. The non-student staff support student initiatives and provide long-term stability and institutional memory for the farm's ongoing operations and teaching programs. They work together to ensure that all UC Davis students continue to have diverse opportunities for learning about and experimenting with sustainable agriculture and food systems.

The Student Farm is supported by a number of campus units: the College of Agricultural & Environmental Sciences (CA&ES), the Plant Sciences (PLS) Department, and the Agricultural Sustainability Institute (ASI). CA&ES has long been a primary supporter of the Student Farm staff and programs, and a critical link to the larger campus in terms of academic affairs and student performance. The current assessment work taking place at the Student Farm is a direct result of ongoing advice and support from CA&ES Undergraduate Academic Programs. In complement, Plant Sciences provides the institutional mechanisms that enable student learning at the farm; our courses, internships, and lecturer positions are all hosted by the department.

About the Agricultural Sustainability Institute

The Student Farm has been a program of the Agricultural Sustainability Institute (ASI) since ASI's founding in 2007. The Agricultural Sustainability Institute at UC Davis brings together the expertise of more than 70 UC Davis faculty, staff, postdoctoral fellows, graduate student researchers, and undergraduate student assistants to address big and emerging issues related to food and farming sustainability. Its mission is to ensure access to healthy food and to promote the vitality of agriculture today and for future generations. ASI does this through integrative research, education, communication, and early action on big, emerging issues. ASI partners with farmers, ranchers, agribusiness, non-profits, policy makers, and local communities to ensure that its research and teaching respond to the needs of the people of California and the world. The Student Farm fulfills the education and leadership mission of the ASI.

Situating Assessment at the Student Farm

As a special academic program committed to experiential learning and student experimentation, the Student Farm carries out assessment activities with all students who engage here. These assessments range from informal to formal and, taken together, help us chart a course for providing meaningful, effective learning experiences for our students, complementing their more formal academic experiences at UC Davis. The following is an overview of these assessment activities, explaining their value in our unique, field-based context; we'll share the process we followed, and lessons learned to this point, in systematizing learning assessment at the Student Farm.

Main Narrative

Any student can come out to the Student Farm and participate in a harvest, pick up new skills in the garden, and join our vibrant community of learners. Students have always been able to do this as volunteers and interns but over the last five years we have gone through a period of tremendous growth and development in the number, diversity and quality of those formal offerings, with new mechanisms for sustained engagement via tiered internships and courses.

As we've gotten better at creating unique, well-articulated internships—more than a dozen, each with their own outcomes and related assessment strategies (see Appendix I)—participation in our programs has grown. This has been an iterative process and in it, we wrestle with a core tension. We know students find something special out here—the magic of experiential learning—that grows out of authentic relationships with peers and mentors in a community of learners, situated in a rich and dynamic environment. This is the history and essence of the Student Farm and we don't want to explain that magic away, codifying the life out of it through rigorous assessment. But we've also seen over time that it can be disorienting, counter-productive, even exclusionary, when we run our programs without enough of a roadmap for ourselves and the learners we serve. Furthermore, we know that we can partner most effectively with other campus programs when we can clearly describe the kinds of learning that take place here.

Likewise, when students make the journey out of the structured classroom and onto the Student Farm, they need clear information from us that can help them a) choose the learning experiences that best fit their own goals; b) identify opportunities for growth and advancement across a continuum of roles and responsibilities in our programs, and c) reflect on and better understand their own development as learners. This means we've needed to work programmatically, as a whole staff, to draw our curriculum map (see Appendix I) and make it navigable; to develop processes for transmitting these contours to everyone in our community; and institute mechanisms that allow us all—students included—to see how effectively, and inclusively, we're orienting learners to our programs and facilitating meaningful, effective learning experiences. From this terrain, an awareness of real growth and development, as learners and people, develops within our students. We see it happening and want to learn how to support it to the best of our ability.

Although in the past, we might not have used the word assessment to describe this last component of our work, that's exactly what we are talking about. Again, we don't want to compromise the quality of the direct experience. At first glance, assessment activities seem to require that — an interruption and a distraction from learning for everyone involved. In keeping to our values as a learning community, and working with skilled staff in our Center for Excellence in Education (CEE)—we have developed assessment tools we would not have imagined on our own. We've found a way into something that is

actually improving the quality of the experience for everyone involved; and we are beginning to deliver invaluable insights as to what's really happening in our fields and gardens.

Assessment for Novice Interns

As we first sought to systematize assessment and outcomes at the Student Farm, it made sense for us to begin at the beginning, with our novice interns. This was also the part of our program that most clearly mapped onto existing frameworks, some developed for the Sustainable Agriculture and Food Systems major's internships and migrated into the Student Farm context, and others borrowed from various departments' and programs' internship requirements & documents. As we'd been hosting student internships for decades based on departmental requirements, we had lots of material to draw from. Still, it was clear that we needed to create a system that worked for our unique context, one that would emphasize mentor relationships and student-directed learning.

Our process really coalesced when we were able, with foundation funding, to add a graduate student position that was responsible for working with staff to coordinate this system. The first students in that position worked to develop practices that would function effectively in the field. Now that team member is responsible for bringing new students into the process, being a point person for all student assessment/formal mentorship, and tracking students across our spaces.

Once they've connected an interested student with the right learning opportunity, this liaison also connects them to the staff who will be supervising that experience and helps the student set a meeting with the Student Farm faculty sponsor to complete internship paperwork. This meeting is like an orientation for new students, where the process of being a Student Farm intern is made clear. The next person the student connects with is their mentor. This is the person, either a staff member or lead student, who will support the student assessment process in the most direct way. The quarter begins with a check-in, which in turn provides an opportunity for students to do a quick self-assessment. The assessment (see Appendix II) asks students to think about prior

knowledge and experience and do some goal setting for the quarter based on a range of typical experiences/tasks available during that internship.

From that point, the students begin working in the field, completing weekly journal entries throughout the quarter. The journals usually reference new skills learned, interactions with mentors, and further examination of questions mentors have posed in the field. The mentors are the ones who read those journals and then reconnect with students for a mid-quarter check-in and updated self-assessment. This check-in is a formative assessment, allowing students and mentors to set new goals, correct course if needed, and further develop the relationship.

Weekly journals continue and the quarter wraps up with a final self-assessment, final journal review by the mentor, and communication that lets students know they've met the requirements for a passing grade, or instructions on how to make up work hours, or address any missing components of the process.

That's the process for novice interns. For each internship we offer, the self-assessment corresponds to both the learning outcomes we've mapped—for the farm as a whole and also for that particular internship—as well as the practical tasks that happen in that part of the farm. Through the check-ins and in reading student journals, we're able to get a sense of how much students are learning, and how well that corresponds to our intended outcomes. We're generating insights about our novice interns and can share results of that inquiry soon.

<u>The Field Learning Demonstration</u>

Wading into assessment has us excited about what we can learn from student work, in order to ensure the quality of their learning experiences and our programs, and to communicate the value of our methodology to campus partners. One especially rich source of information comes from a suite of newer assessment activities for returning interns that we call the Field Learning Demonstration (FLD). This assessment strategy has been so effective, and valuable, that we've developed specific FLD internships so students can opt into a general internship but structure it around these activities.

Students and their mentors perceive these internships as opportunities for deeper inquiry and higher-order skill development.

When signing up for an FLD internship, students know they need to select a task of particular interest where they will demonstrate skill to others later in the quarter (See Appendix III). In preparation, they identify—and communicate to their mentor—what they already know and what they will need to find out in order to successfully complete the demonstration. This may include training or knowledge-sharing from mentors and others in the community, outside research, or even just repeated exposure to related tasks over the quarter. This intentional preparation transforms the learning experience from passive, guided participation with a mentor leading, to active construction and meaning-making on the part of the student. The FLD requires students to test their ability to operationalize what they've learned. In doing so, they develop a nuanced understanding about the skill/activity, and related concepts and contexts. A student demonstrating drip irrigation repair techniques thinks not only about how to make the repair but also what happens in the garden when repairs fail, what materials are best suited to the task, the importance of targeted and uniform water distribution, mechanical/kinesthetic know-how and so on.

We've seen anecdotally, in the FLD itself, and in the follow-up report the student makes, that students show greater awareness of how that activity fits into overall ecological management; and how they can take an active, lead role in that management; demonstrate competency in communication and problem solving; lead others competently in this task; and in doing so, make meaningful contributions to their learning community. All of these outcomes correlate directly to our Student Farm curriculum map. We are working with the assessment team at CEE to develop a more-than-anecdotal analysis of the data, and will be able to provide the products of the analysis in Spring 2018.

The FLD embodies two very important principles we hope will one day guide most of the assessment activities we do. First, it's embedded in the student learning experience and the field-based context. Students are always working on the FLD in one form or another throughout their internship because they are enacting and receiving feedback on the skill before they go to perform it, and the performance itself is another instance of field-

based, experiential learning. The demonstration is an assessment but it's also about getting the work done—students are being assessed, continuing to learn, and taking care of required tasks that keep the system running. This drives the second principle—that our assessment strategies be not only formative or summative assessment, but transformative. The FLD doesn't merely benchmark student learning or help us decide whether a concept has been mastered. In performing the demonstration, students gain awareness of their own proficiency and progress, transforming as learners, not only in the moment, but also during the reflection that follows. It's this kind of assessment that helps us keep the Student Farm magic intact, while providing opportunities—to students and mentors alike--to better understand, and own, the process. And all the while, we continue to accomplish the daily tasks of gardening and farming.

Specialized Internships

Students who have interned at the student farm for two quarters and who have completed an FLD are eligible for one of the specialized internships that we offer. These require the intern to focus the majority of their internship hours on a single area or effort. Examples of specialized internships that we offer are greenhouse management, composting, pest management, flower project, and winter tree-pruning. These interns build on their general familiarity with the Student Farm gained through novice and FLD internships. This gives the student the ability to work with some independence on their specialized internship. These internships require completion of a written product at the end of the quarter. This is meant to be something that can be used by our programs and that extend our program effectiveness. Examples of the kind of products students develop are harvesting instructions for a species of flower, pruning instructions for one of our tree crops, or annual updates to our plant list database. Student learning in specialized internships is currently assessed by successful completion of the work and the quality of the written product.

Leadership Development

One of the challenges we experience at the farm is a very dynamic student population. Students have widely varying schedules, available number of hours, levels of experience and interest, and tenure duration at the farm. It's not like Chem 2A, where 600 students

file into the same lecture hall, the same hours each week, and sit for the exams at the same time under the same conditions. We're dealing with an entirely different beast, though one with tremendous upsides. How do we develop a coherent framework for student learning and assessment when our students are literally all over the map?

We've found that one of the best ways to serve a population with such varying needs is to make everyone a learner and a leader. When we use the word mentor we aren't just talking about our non-student staff members. We train and empower our lead student farmers, graduate and undergraduate, to mentor. They play a major role in supporting student learning and assessment, including performing check-ins, guiding students in self-assessment activities and organizing FLDs. The benefits for those mentors are obvious, but we're also learning how proximal experience and proficiency levels actually benefit the student mentees too. This is something we're excited to learn more about as we analyze student journals and FLD reports, a primary source of information on student experience of mentor-mentee relationships.

These elements of our larger effort to systematize learning and assessment at the Student Farm, represent the types of strategies we're finding most beneficial and in alignment with the values of our learning community and broader institution. They also represent our general thinking on the role of assessment in our programs: that assessment is most valuable when it's a part of the learning experience and that its ultimate goal is to teach us and our students how to make and share a community of learning with each other.

Next Steps and Challenges for Assessment at the Student Farm

Our efforts to assess learning at the Student Farm are critical at this time. With the right assessments in place, we have the potential to improve learning in this environment and better support the students who participate here. We hope it will also help our colleagues across this campus better understand what we do and how it complements and fits with other programs. There's also a growing interest among colleagues on other UC campuses in how UCD does experiential learning in food and agricultural systems and in our sharing the assessment tools we are developing.

Our next effort will be to work to analyze some of the results of assessment that we are generating. We will continue our work with CEE to develop a simple rubric for reviewing student field journals. This will help Student Farm mentors to quickly identify certain indicators as they read journals and discuss progress with student interns. We are also exploring with CEE the use of a word search programs to be applied to journals and FLD reports to quantify and characterize critical thinking skills that students may be developing and using throughout their internships. Our primary challenge is securing the needed staff time to support ongoing assessment and analysis of data.

Appendices

Appendix I: Curriculum Map and Internship Objectives_Assessments

Appendix II: General Internship Tracking and Self-Assessment Forms

Appendix III: FLD Internship Tracking and Self-Assessment Forms

OBJECTIVES	OUTCOMES	PERFORMANCE INDICATORS	EG1	EG2	EG3	SEG1	SEG2	MG1	MG2	MG3	SMG1	SMG2	KinG1 PLS 193	KinG2	KinG3	LSG	LSF	PLS 49	PLS 15	PLS 190	SLLC PLS 190
			Opportunities for Learning at the Student Farm (see Key for complete titles)																		
			Assessment Methods Used to Measure Learning and Progress during each Opportunity (J=Journal, CI=Check-in, SA=Self-assessment, FLD=Field Learning Demonstration, WOR=Written product, See Key for more)																		
			J, CI, SA	FLD, CI, FLDR,	FLD, FLDR, CI	WOR, CI	WOR, CI	J, CI, SA	FLD, FLDR, CI	FLD, FLDR, CI	WOR, CI	WOR, CI	P/NP	success	success	CI	CI	P/NP	grade	P/NP	P/NP
			When Concept is Introduced (I), Practiced (P), Demonstrated (D), and then Led to others (L)																		
1. Apply systems-based thinking and skills to promote sustainability	1.1 Manage ecological garden to optimal conditions for plant growth	1.1.1 Dig beds in adherence to current ecological horticultural practices	I	P, D	D	L	L						I	I		L,			I,P		
		1.1.2 Maintain beds through successful harvest	I	P, D	D	L	L						I	I		L		I	I,P		
		1.1.3 Identify several species and understand their role within the garden ecosystem	I	P, D	D	L	L						I	P		L	L		I,P		
	1.2 Manage market garden to satisfy demand from the campus food system (CSA and dining)	1.1.1 Transplant and protect seedlings						I,	P,D	D	L	L	I	I		L	L	I,P	I,P		
		1.1.2 Manage irrigation system						I,	P,D	D	L	L	I	I		L	L	I,P	I,P		
		1.1.3 Protect crops from pests through to harvest						I,	P,D	D	L	L	I	I		L	L	I,P	I,P		
	1.3 Manage marketing for our produce within the campus food system	1.3.1 Produce is harvested and delivered in timely fashion; obligations met												P		L		I,P			
		1.3.2 Food Safety practices and policies are understood used appropriately											I	P, D	L	D	L	I,P			
2. Demonstrate student farm values (e.g., empathy, leadership, communication, wellness)	2.1 Student employees demonstrate leadership	2.1.1 Facilitate weekly meetings in which all participants have opportunity to contribute											I	P,D	L	D, L	D, L			I,P	I,P
		2.1.2 Give appropriate feedback that improves individual performance and program success											I	P,D	L	D, L	D, L	I		I,P	I,P
	2.2. Students display empathy for other people	2.2.1 Strong community where students choose to attend events and activities outside of academic unit or work hours	I-L	I-L	I-L	D-L	D-L						I	P	L	D, L	D, L	I	I	I,P	I,P
	2.3 Students display empathy for other species	2.3.1 design appropriate ecological habitats for symbiotic relationships that are also productive											I	P, D	L	D, L	D, L	I,P,D	I		I,P
3. Develop professional competencies that allow for success in future settings	3.1 Demonstrate effective oral communication skills	3.1.1 Student employees lead crews and meetings successfully												P, D	L	D, L	D, L				I,P
	3.2 transdisciplinary work, complex problems solved	3.2.1. More effective Student Farm farm and garden managements systems											I	P,D	L	D, L	D, L		I,P		I,P
	3.2 Students demonstrate characteristics of life-long learning	3.3.1. Identify problems and suggest solutions											I	P	D, L			I	I,P,D	I,P	I,P
	3.4 More Diverse Student Farm Community	3.4.1. Student employees demonstrate inclusiveness in mentoring and management											I	P	D, L					I,P	I,P
		3.4.2. Student Employees communicate effectively with range of students from various backgrounds and fields of study											I	P	D, L					I,P	I,P

1

Student Farm Curriculum Map Key					
Exposure/Proficiency Level					
I = concept introduced					
P= concept practiced					
D= skill demonstrated					
L=led others in concept					
Learning Experience					
EG1= Ecological Garden semester one internship, EG2 is second sem					
SEG1 = Specialized internship in the Ecological Garden first semeste					
SEG2 = Specialized internship in the Ecological Garden second seme:					
MG1=Market Garden semester one internship, MG2 is second semest					
SMG1 = Specialized internship in the Market Garden first semester					
SMG2 = Specialized internship in the Market Garden second semeste					
KinG1= Kids in the Garden first semester=PLS 193 Methods in Garden					
KinG2= Kids in the Garden second semester					
KinG3= Kids in the Garden third semester					
LSG=Lead Student Gardener					
LSF=Lead Student Farmer					
PLS 49=Organic Crop Production Practices					
PLS 15=Introduction to Sustainable Agriculture					
PLS 193=Methods in Garden and Farm-based Experiential Education					
PLS 190=Alternatives in Agriculture Seminar					
SLLC = PLS190=Sustainable Living and Learning Communities Semina					
words in red= where concepts within the UCD Undergraduate Educat					
Assessment Methods					
J= Journal					
CI=Checkin					
SA=Self-Assessment					
FLD=Field Learning Demonstration					
FLDR= Field Learning Demontration Report					
WOR= Written Work Product, unique contribution to SF					

Five steps to launching a sustainable assessment program

A model from the Department of Communication

Assessment Symposium

October 19, 2017

Heather J. Hether, Ph.D.

Department of Communication

Step 1: Establish Organizational Structure

- New LPSOE assigned as point person

- Committee involvement

- Seek counsel from those in the know
  - Undergraduate Education

Step 2: Refine Program Learning Outcomes (PLOs)

- Existing PLOs provided a good foundation

- Refined PLOs by Committee
  - Department vote for final approval

Former PLOs

1. Communication Competence. Communication graduates should have excellent oral and written communication skills as evidenced by the capacity to inform and persuade others with clear, organized, logical and compelling messages that adapt to the values, beliefs, attitudes, and motivations of the audience and context in which communication occurs.

2. Intercultural Communication Skills. Communication graduates should have the ability to communicate and collaborate effectively with others from diverse cultural backgrounds. Such skills are evidenced by an awareness and understanding of differences in beliefs, values, and communication practices across cultures, as well as an enhanced knowledge of ways to overcome barriers in intercultural communication.

3. Critical Thinking Skills. Communication graduates should have logical and critical thinking skills as evidenced by the ability to make purposeful and reflective judgments about what to believe and how to respond to the claims of others, determine the meaning and importance of observations and experiences, and draw valid conclusions based on available information.

UCDAVIS

Former PLOs

4. Media Literacy. Communication graduate should be able to apply their critical thinking skills as consumers of media messages. These messages can be manifest or latent, visual or verbal, and distributed through traditional or new media. Media literacy is evidenced by the ability to assess the values expressed by and the claims made in news, entertainment media and advertising.

5. Research Skills. Communication graduates should be critical, insightful, and effective consumers of social research. These skills are evidenced by an understanding of the scientific methods used and the capacity to evaluate social research. They should have the ability to design and conduct research, including the ability to collect, analyze, report, and interpret data. For example, they should be able to conduct surveys of customers, clients and employees; and carry out basic market/audience analyses. They should be well versed in the use of the computer as a research tool for data collection, mining, manipulation and analysis, as well as its use to facilitate the process of reporting research results.

UCDAVIS

Revised PLOs

After completing an undergraduate degree in Communication from UC Davis, students should be able to:

1. Describe the communication discipline and the central questions that drive the discipline.
   - Explain the areas of inquiry of the discipline
   - Identify the current opportunities and challenges facing the field of Communication
   - Differentiate the Communication discipline from other areas of study
   - Identify career options relevant to Communication

2. Demonstrate effective oral and written communication skills to inform and influence others.
   - Prepare and deliver oral presentations effectively
   - Write clearly, critically, and effectively
   - Collaborate effectively in teams toward a common goal
   - Apply theoretical principles and practices to develop strategic communication messages appropriate for the communicative goal
   - Select and use appropriate modalities and technologies to accomplish communicative goals

UCDAVIS

3. Communicate and collaborate effectively with others from diverse backgrounds.
- Identify principles of communication in diverse environments.
- Identify differences in beliefs, attitudes, and values that impact communicative practices.
- Create messages that are sensitive to diverse audiences.
- Demonstrate sensitivity when exposed to diverse contexts and people.
- Demonstrate effective behaviors to overcome barriers in communicating to diverse audiences.

4. Apply critical thinking and media literacy skills to support purposeful and reflective judgments as they pertain to interpersonal and mediated communication.
- Analyze Communication research and theory
- Evaluate Communication theories, perspectives, principles, and concepts
- Identify the intentions and effects of communication messages on individuals
- Apply critical thinking skills as consumers of media messages

5. Critically evaluate and assess communication research that employs social scientific methods.

- Identify methods employed for Communication research
- Recognize ethical standards for research
- Evaluate the validity of methods employed
- Evaluate the accuracy of research conclusions
- Collect and interpret data

Step 3: Create Curriculum Matrix

- Qualtrics faculty survey

- Measured how well each course supports each PLO at each level

  - Introduce

  - Practice

  - Demonstrate mastery

Qualtrics – Faculty Survey

To what extent does your course introduce the performance indicator to students?

Introduced: students are introduced to what they will be expected to know and be able to do as a result of the course/program. Coursework requires a basic ability to remember and understand.

To what extent does your course allow students to practice the performance indicator?

Practiced: students have opportunities to consolidate their learning through practice in varying contexts. Coursework requires students to develop ability to apply and/or analyze.

To what extent does your course allow students to demonstrate mastery of the performance indicator?

Demonstrated: students are expected to demonstrate mastery of the Learning Outcomes. Course work requires an advanced ability to evaluate and/or create.

You can now continue with this questionnaire. Feel free to go back to this page at any point while completing the questionnaire.

UCDAVIS

Qualtrics – Faculty Survey

Focusing on PLO 1a, please answer the following questions.

PLO_1a

Program Learning Outcome (PLO) #1: Describe the communication discipline and the central questions that drive the discipline.

1a. Explain the areas of inquiry of the discipline

To what extent does your course (CMN ${q://QID9/ChoiceGroup/SelectedChoices}) introduce students to 1a?

To what extent does your course (CMN ${q://QID9/ChoiceGroup/SelectedChoices}) provide opportunities for students to practice 1a.

To what extent do students have the opportunity to demonstrate mastery of 1a in your course (CMN ${q://QID9/ChoiceGroup/SelectedChoices})?

Focusing on PLO 1b, answer the following questions.

PLO_1b

Program Learning Outcome (PLO) #1: Describe the communication discipline and the central questions that drive the discipline.

1b. Identify the current opportunities and challenges facing the field of Communication

To what extent does your course (CMN ${q://QID9/ChoiceGroup/SelectedChoices}) introduce students to 1b?

To what extent does your course (CMN ${q://QID9/ChoiceGroup/SelectedChoices}) provide opportunities for students to practice 1b?

To what extent do students have the opportunity to demonstrate mastery of 1b in your course (CMN ${q://QID9/ChoiceGroup/SelectedChoices})?

UCDAVIS

Curriculum Matrix: Step 1

	CMN 1	CMN 3	CMN 10Y	CMN 76	CMN 101	CMN 102	CMN 110	CMN 111	CMN 112	CMN 114	CMN 120	CMN 121	CMN 122	CMN 123	CMN 130	CMN 131	CMN 132	CMN 136	CMN 139	CMN 140	CMN 141	CMN 142	CMN 143	CMN 144	CMN 145	CMN 146	CMN 147	CMN 148
1. Describe the communication discipline and the central questions that drive the discipline.																												
1a. Explain the areas of inquiry of the discipline	3	4	4	5	4.67	3	4.5	2	1	3	2	2	3	4	3	3.5	5	3	5	4	3	4	3	3	3	3	5	4
1b. Identify the current opportunities and challenges facing the field of Communication	2	4	3	2	3.67	3	3.5	2	1	2	2	2	2	4	2	3	4	2	4	4	2	3	3	3	2	3	3	4
1c. Differentiate the Communication discipline from other areas of study	1	3	3	1	4.33	2.5	3	2	1	4	3	2	1	4	2	4	4	1	3	2	2	4	3	1	2	2	2	4
1d. Identify career options relevant to Communication	2	2	2.5	3	3	2.5	2.5	1	1	1	1	1	1	4	1	3.5	3	3	3	3	1.5	4	2	1	2	2.5	3	5
2. Demonstrate effective oral and written communication skills to inform and influence others.																												
2a. Prepare and deliver oral presentations effectively	5	4	1.5	1	3.33	1	3.5	2	1	3	1	2	1	4	3	2	4	1	3	2	1	3	2	1	1	3	1	5

| ▷ | | Introduce PLOs | PRACTICE PLOs | **MASTER PLOs** | ⊕ | | |

UCDAVIS

Step 1: Close-up

	CMN 1	CMN 3	CMN 10Y	CMN 76	CMN 101	CMN 102	CMN 110	CMN 111	CMN 112	CMN 114
1. Describe the communication discipline and the central questions that drive the discipline.										
1a. Explain the areas of inquiry of the discipline	3	4	4	5	4.67	3	4.5	2	1	3
1b. Identify the current opportunities and challenges facing the field of Communication	2	4	3	2	3.67	3	3.5	2	1	2
1c. Differentiate the Communication discipline from other areas of study	1	3	3	1	4.33	2.5	3	2	1	4
1d. Identify career options relevant to Communication	2	2	2.5	3	3	2.5	2.5	1	1	1

Curriculum Matrix: Step 2

	CMN 1	CMN 3	CMN 10Y	CMN 76	CMN 101	CMN 102	CMN 110	CMN 111	CMN 112	CMN 114	CMN 120	CMN 121	CMN 122	CMN 123	CMN 130	CMN 131	CMN 132	CMN 136	CMN 139	CMN 140	CMN 141	CMN 142	CMN 143	CMN 144	CMN 145	CMN 146	CMN 147	CMN 148	CMN 150V	CMN 161	CMN 165	CMN 170V	CMN 172	CMN 174	CMN 178
1. Describe the communication discipline and the central questions that drive the																																			
1a. Explain the areas of inquiry of the discipline	P	D	D	D	D	I	D		I	I	P		P	D	P	P	D	I	D	D	I	D	I	P	P	P	D	D	D	I	I	P	D	D	P
1b. Identify the current opportunities and challenges facing the field of Communication		D	I		I			P	I	I	I		I	D	P	P	D	I	D	D	I	P	I	P	I	P		D	D	I		D		D	I
1c. Differentiate the Communication discipline from other areas of study			I		D		I		I	D	P		I	D	I	D	D	I		P		D	I		I			D					I	D	I
1d. Identify career options relevant to Communication									I					D		I	P	I	I	P		D						D	D			D		D	
2. Demonstrate effective oral and written communication skills to inform and influence others.																																			
2a. Prepare and deliver oral presentations effectively	D	D			I									D	I	P	D										P		D					D	
2b. Write clearly, critically, and effectively	D		P	D	I		D		P				P	I	D	D	P	D		D				D	D	D		D	D	D	D	D		D	D
2c. Collaborate effectively in teams toward a common goal		D		D			D			D				D	D	D	D		D	D				D		D	I		D			D		D	
2d. Apply theoretical principles and practices to develop strategic communication messages	D	D		D	D		D	P	P		I	P		D	D	D	D	I				P			P	D	P	D	I	I	I			I	D	P

Step 2: Close-up

	CMN 1	CMN 3	CMN 10Y	CMN 76	CMN 101	CMN 102	CMN 110	CMN 111	CMN 112	CMN 114
1. Describe the communication discipline and the central questions that drive the										
1a. Explain the areas of inquiry of the discipline	P	D	D	D	D	I	D		I	I
1b. Identify the current opportunities and challenges facing the field of Communication		D	I		I			P	I	I
1c. Differentiate the Communication discipline from other areas of study			I		D		I		I	D
1d. Identify career options relevant to Communication										I
2. Demonstrate effective oral and written										

Step 4: Collect & Analyze Assessment Data (Pilot Program)

- Identify courses that support mastery of PLOs

- Reach out to faculty

- Minimize extra burden of data collection and analysis

Step 5: Keep Forward Momentum

- Create long-term assessment plan
- Collect, analyze, and revise
  - Keep collecting and analyzing data
  - Consider course and curriculum implications of assessment data
- Participate in on-going discussions
  - Vertical and horizontal

UCDAVIS

QUESTIONS & DISCUSSION

UCDAVIS

Assessment of program learning outcomes in History:

The Department does not have an explicit curriculum matrix. Fundamentally, the four PLOs identified for the department correspond loosely to three levels of coursework, with writing skills building progressively through all three levels. Introductory level courses focus more on factual knowledge, though we begin intensive work on writing skills at this level as well. Upper division courses emphasize a mix of factual knowledge, with emphasis on a deeper and richer understanding of the coherence and diversity of historical cultures; and these courses emphasize writing skills quite heavily. Upper division lecture courses also focus more heavily than lower division courses on the methods, traditions, habits of thought, and kinds of questions that historians ask, and on how to interpret competing interpretations of the past. (This last issue in particular is an important part of lower-division courses as well; in upper division courses the focus is more often on *developing* competing interpretations, rather than merely assessing them). Finally, undergraduate seminars (History 101, 102, 103) and the Honors track consolidate that engagement with the methods, traditions, and concerns of the discipline; and they require very extensive written work (at Honors level, approximately 50 pages at the end of the History 104A-B-C year).

The Department continuously verifies that our courses are achieving our learning outcomes by reviewing papers and final exams from four randomly-selected courses every three years. Beyond this sampling, the Department does not explicitly do this; the assumption is that there is consensus on the aims and methods appropriate for courses at each level. Peer review of teaching at promotion does give the Department the opportunity to provide guidance in this respect, as do informal discussions of teaching problems and methods. If problems arise with individual faculty, we direct them to on-campus resources. Concretely, in recent years this has worked very well for faculty, and problems in teaching have been thoroughly and quickly addressed.

This year, for the purposes of the review, the department established a subcommittee of the chair's Advisory Council to assess whether student work in our capstone courses indicates that students are achieving our PLOs. For this first assessment, the department did not develop a rubric designed to measure the <u>degree</u> of student success in meeting our PLOs (for example outstanding, strong, mediocre, weak, failing). Instead we adopted a minimum standard: is the student was able to demonstrate adequate competency in each of the four areas identified by our PLOs?

The subcommittee's assessment of capstone projects indicates that the Department achieves outstanding success in overall student mastery of program learning outcomes (again, for this year measured against a minimum standard of adequate training in our discipline). The subcommittee assessed 16 randomly-selected papers (out of just over 100 graduating majors) by students taking capstone courses in the Winter and Spring quarters of 2016 (six from 102/senior seminar; five each from 103/independent study and 104/honors thesis). The sample included eight papers concerning American history in various eras; five concerning Europe (including Russia); and one

each concerning the Middle East, Africa, and Latin America. They were supervised by eleven different professors representing all ranks of the faculty.

All sixteen of these papers demonstrated an adequate level—and many of them an outstanding—mastery of all four of our learning objectives.

- Factual knowledge – the fundamental who/what/when/where – is the building block for more complex historical skills, and we noted no significant factual errors in the sample. These were all empirically rich and painstaking essays, all of them making use of primary sources.
- Students consistently demonstrated mastery of writing proficiency by developing complex arguments about, for example, the changing perceptions of homosexuality in Iranian literature, or the baleful environmental consequences of the narrow, field-specific training that Soviet engineers received. Many of these papers (particularly History 104 Honors theses) were based on an impressive range of primary sources: not just published books but archival documentation, comic books, and film. Others (particularly History 102 seminar essays or where language proficiency issues made it difficult for some students to work with primary sources) used some sources in translation and cast a critical eye over secondary sources they identified with faculty assistance. The technical quality of student prose (grammar, syntax, word-choice, punctuation) varied fairly substantially; but all these papers were structurally sound and conceptually clear.
- All 16 papers demonstrated an awareness of cultural issues within historical context. For example, one student shattered the stereotypes that have formed around the *tonte*, the shaving of the heads of alleged female collaborators with the Nazis in France after World War II. With a searching exploration of gender theory and 20th century French culture, the same student was able to explain why these stereotypes have persisted and propose an alternative explanation for the phenomenon. Another made a path-breaking analysis of the divergent narratives of domesticity and patriarchy in comics written for teenage white and African-American girls in the United States after 1945. The depth of student engagement with the secondary literature varied some, as did particularly the sophistication with which students made use of sociological, anthropological, or political theory; but all were effective in placing their specific research findings in broader historical context.
- Finally, all 16 papers were focused on the question of change over time and developed research questions that could address this fundamental issue, thus demonstrating mastery of the historical method. Of course the chronological framing of essays varied radically—from months to decades. But the question of change over time was central to all of them, and was handled uniformly with analytical intelligence. One senior asked for example how the change from second- to third-wave feminism in the United States had changed feminist perceptions of transgendered individuals; another traced the changing relationship between the artistic imagination and scientific work in the Russian Empire and Soviet Union; a third examined the ways in which the experience of front-line pastors in the British Army contributed to important debates and changes in theology and internal politics in the Church of England between the 1900s and the 1920s.

For the next iteration of this direct assessment exercise (planned for 2 years from now), the department will develop a graduated assessment matrix, using measures and standards appropriate to each of the PLOs. We will draw on the experience of this year's assessors in developing that approach; but since there is some discussion of revising our PLOs substantially in the next academic year in light of this year's exercise, we will not tackle that until 2018/2019. We will also assess student work earlier in the curriculum (at both lower-division and upper-division levels) in order to gain a better understanding of where and when our students master different PLOs, and whether our implicit curriculum matrix is implemented as effectively as we want.

The subcommittee also assessed indirect evidence of student learning. The forms of indirect evidence available confirm the overwhelmingly positive impression conveyed by our direct assessment of capstone projects.

Student teaching evaluations in the Department are consistently very strong (see section 4, above), suggesting that students are satisfied with their learning in Department courses.

Alumni and student survey data support the same conclusion. Our alumni believe that we teach communication and cognition skills especially well. The most important of these to our discipline is writing, and 93% of our alumni consider themselves satisfied with the training that we provide in this area. This figure exceeds the campus average by 12%. Students were less satisfied with the way that we teach interpersonal skills (72%) and speaking skills (62%), but these are ancillary to the study of history. We do an excellent job teaching the communication skill that is at the core of our discipline.

Of the cognitive skills evaluated in the alumni survey, the one we most focus on teaching is research skills. Here again our alumni rate us very highly. The 89% satisfaction rate is a 5% improvement on our previous program review and exceeds the campus-wide average by 13%.

Discussing history necessarily involves the consideration of ethical and moral issues as intrinsic to our evaluation of the past. Courses on warfare, gender relations, environmental history, and genocide force students to grapple with their own conceptions of a good society even as they form arguments about the past. Unsurprisingly, our majors rate us well here too. The 83% satisfaction rate is a 17% improvement on our previous program review, exceeds the campus-wide average by 12%, and only lags Philosophy and two small departments among departments reviewed in this review cycle.

Our depth of discipline is excellent and helps students to succeed in our baseline PLO, developing factual knowledge of the past. Our rate of student satisfaction on this score is stable at 89%, exceeding the campus average by 9%, and second only to Anthropology among departments reviewed in this cycle.

Our discipline is better suited to training students in some leadership skills than others. History is a discipline where most research is done independently. Unsurprisingly, 94% our alumni were satisfied with the training they received in doing so, slightly above the campus average. We

generally do not assign group projects (67% satisfaction on preparation for teamwork) or assess leadership/management skills (63% satisfaction) as such. Again, these data indicate that we succeed extremely well on the metrics traditional and appropriate for our discipline.

Developing an awareness of global cultural issues is one of our PLOs, and our students find that we train them successfully in this respect. 84% believe they received good or excellent training in developing awareness of global context, higher than the campus average by 15%; we also are above the campus average in development of cross-cultural skills (71%). We do not require foreign language training. Clearly, this is an area in which we have much to offer the university community and in which we succeed.

Lifelong learning assessments, finally, were positive with one exception. 87% of students were satisfied with their ability to acquire new knowledge, just over the campus average, and 91% with their ability to find new information, significantly better than the campus average. Just over half were satisfied with our training in "computer skills," but it is unclear what students understood by this. Most research today in history involves use of the computer, especially specialized databases like JStor and Project MUSE, and since students were satisfied with their ability to find new information, it follows that they are well trained in this respect. It is possible that they were not including this valuable skill, the one most relevant to our discipline, in their discussion of "computer skills."

Overall, the department appears to have an extremely strong record in setting and achieving student learning objectives. Some colleagues have mentioned concerns with burned-out, overworked graduate TAs as an obstacle to achieving our PLOs. Although the rate of student satisfaction with TAs (66%) is the second-highest in the division, the raw number is low enough to consider it an area of some concern. We plan to address it through additional graduate student training and through the ongoing assessment of our graduate program as a whole.

As a first approach to assessment of learning outcomes, the department is satisfied that this was a productive exercise. Given the very positive findings, we plan a limited response at the departmental level. In particular, while we were very satisfied with student mastery of program learning outcomes, in the course of this exercise we came to believe that it might be fruitful to refine the PLOs themselves. While we have not yet developed a formal process, we have plans for informal, brown-bag discussions of how we might make our PLOs more detailed, and in particular more discipline-specific. The aim would be to clarify what, why, and how the discipline of history can and should teach—that is, what distinctive and discipline-specific benefits our department offers/adds to undergraduate education in the twenty-first century, and specifically at our institution. Whether or not these discussions lead to a revision of our PLOs, we hope that it will be useful in encouraging faculty to reflect collectively on their teaching aims and methods, and on the distinctive qualities and "value-add" of our discipline, again specifically on this campus. That may ultimately have implications for curriculum development and pedagogical innovation, again regardless of the outcome specifically with regard to our PLOs.

Student Learning Outcomes for History

FACTUAL KNOWLEDGE
Students will demonstrate a basic grasp of important people, places, and events in the past. They will be able to identify the who, what, when, where, why, and historical significance of key actors and moments in history.

WRITING PROFICIENCY
Students will demonstrate an ability to use primary documents to write an essay interpreting the past. They will show that they can develop a clear thesis that is supported by evidence, and construct an essay that is analytical rather than merely descriptive.

CULTURE
Students will demonstrate knowledge of cultural concepts within a historical context, ability to compare different cultures, and awareness of cultural issues.

HISTORICAL METHOD
Students will demonstrate an understanding of change over time. They will show that they grasp the basics how historians work, how to frame historical questions, the difference between primary and secondary sources, and the various ways of constructing interpretations of the past.

CURRICULUM MAP
The Department does not have a course-by-course curriculum map. Fundamentally, the four PLOs identified for the department correspond loosely to three levels of coursework in our program, with writing skills building progressively through all three levels. Introductory, lower-division courses focus more on factual knowledge, though we begin intensive work on writing skills at this level as well. Upper-division courses emphasize a mix of factual knowledge with a deeper understanding of the coherence and diversity of historical cultures; and these courses emphasize writing skills quite heavily. Upper-division lecture courses also focus more heavily than lower-division courses on the methods, traditions, habits of thought, and kinds of questions that historians ask, and on how to interpret competing interpretations of the past. Finally, undergraduate seminars (History 101, 102, 103) and the Honors track consolidate that engagement with the methods, traditions, and concerns of the discipline; and they require very extensive written work (at Honors level, approximately 50 pages at the end of the History 104AB-C year).

UCDAVIS

Department of Psychology

Assessment of Program Learning Objectives

Case Study – Fostering critical thinking in a lower division course (PSC041- Research Methods in Psychology)

Undergraduate Student Learning Goals
(http://psychology.ucdavis.edu/undergraduate/psychology-major/learning-goals)

I. Knowledge about the Science and Application of Psychology

   A. Characterize the nature of psychology as a discipline
1. Understand why psychology is a science
2. Understand the primary objectives, assumptions, and methods of psychology
3. Understand the history of psychology (e.g., the recognition of historical figures, important theoretical foundations and conflicts)

   B. Demonstrate Knowledge in Selected Content Areas
1. Biological bases of behavior and mental processes (e.g., physiology, comparative psychology, motivation, emotion, and evolution)
2. Developmental changes in behavior and mental processes
3. Learning and cognition
4. Personality and social psychology, including sociocultural issues
5. Abnormal behavior (e.g., mental illness, substance abuse, neurodevelopmental disorders, brain disease and trauma)

II. Research Methods in Psychology

   A. Understand the variety of research methods used in psychology:
1. How different research designs address different kinds of research **questions.**
2. The strengths and limitations of different research methods
3. Issues in cross-cultural research (e.g., translation of measures, experimenter bias)
4. Distinguish the features of designs that permit causal inferences from features of those that do not permit these inferences
5. Understand internal and external validity

   B. Evaluate the conclusions drawn from psychological research
1. Interpret statistical results
2. Distinguish between statistical significance and practical significance
3. Understand the APA ethics code regarding the treatment of human and nonhuman animals

III. **Critical Thinking Skills in Psychology**
    A. **Evaluate the quality of information**
        1. Distinguish between empirical evidence and speculation
        2. Evaluate the credibility of claims about behavioral claims
        3. Identify claims that arise from myths, stereotypes, or untested assumptions
        4. Evaluate popular media reports of psychological research

PSC041 Research Methods in Psychology

Our lower-division course in research methods introduces students to many of the Undergraduate Student Learning Goals (USLG). Particularly, it serves to introduce students to the nature of psychology as a science (IA1), to introduce students to methods in Psychology (IIA1-5; IIB1-3), and to initiate the training of critical thinking skills (IIIA1-4).

PSC041 Research Methods in Psychology was radically redesigned in 2010-11. This redesign incorporated a coherent and explicit focus on training in critical thinking (USLG IIA4 and 5, IIIA1-4). Since this redesign, I have been investigating the success of different instructional techniques (making critical thinking instruction more explicitly taught, scaffolding early assignments, including additional examples) in effecting increases in performance on critical thinking exercises in this course.

It is important that we do not see the group "students" as a heterogeneous unit. Our institution is specifically recruiting students from diverse backgrounds. We find ourselves trusted with the responsibility to educate students from a wide range of ethnicity (including increasing number of underrepresented minorities), of income (including increasing numbers of low-income students), of preparedness (including increasing numbers of underprepared and first generation students).

I have been investigating the differences between the students that predict their ability to perform these skills across the quarter. I am now investigating additional teaching adaptations to assess the impact on the development of critical thinking skills within different student groups.

Fostering critical thinking

Critical thinking and being able to evaluate claims is an essential component of being an autonomous thinker (Brookfield, 1987) and is the foundation of scientific thinking. A large part of PSC041 involves fostering critical thinking skills; particularly, the ability to think critically about internal validity and to clearly articulate a study's strengths and weaknesses. Assignments encourage students to practice, understand, and apply the scientific reasoning that allow causal inferences to be drawn (USLG IIA4: Distinguish the features of designs that permit causal inferences from features of those that do not permit these inferences). These

assignments draw from both published research and media accounts of that research (USLG IIIA4: Evaluate popular media reports of psychological research).

There is a huge range in student ability to think critically when they register for PSC041. Many students enter PSC041 with this skill firmly in place, some have the basic skill but need practice in articulating their understanding, others have no idea what thinking critically might entail. My initial approach to teaching critical thinking skills was to give examples of critical thinking in class and to assign further examples on homework and exams. I felt that I was spoonfeeding the examples in class, but this is a lower-division course, some spoonfeeding is to be expected. This approach worked for most of the students but it took quite a few iterations of homework examples before the students had mastered this skill. I thought to myself, and explained to students, that this was a skill that they did not yet have and that they would learn it through this series of assignments and feedback. But I also wondered if I might be able to speed up the process.

In addition to wanting to speed up the process, I also wanted to be sure that I was reaching those at the bottom of the curve. A handful of students would routinely end the class mystified by the concept of critical thinking. They would end the class frustrated that the grading seemed nonsensical and arbitrary.

There were times when I questioned if critical thinking is something that can be taught. Perhaps some people have it and others simply don't. I resolved myself to teaching what can be taught and hoping that the process would produce true critical thinking. I lead the proverbial horse to water, I spoon feed that horse, sometimes I even got the eye dropper out to deliver what seem like miniscule amounts of water, all the while hoping that he will discover that he can drink on his own. And, once he has discovered that, he will never be able to turn it off – that is a thought that keeps me and the TAs going as we grade homework after homework. Once someone knows how to think critically, they can never turn it off. They will be able to question every claim presented to them. They will be better students, better scholars, and better citizens.

By Winter Quarter 2014, I was determined to try some other approaches to see if I could speed up the students' understanding of critical thinking and reach out to those who really struggle with these concepts. I made multiple changes to PSC041 with remarkable results. Firstly, I lecture much more explicitly on the process of critical thinking. Secondly, I worked with a graduate student to record a series of 17 short videos that walk students through the process of critical thinking and through four optional examples. These optional examples are carefully scaffolded, with each example increasing the students' responsibility to generate the answers. The first optional worksheet is all multiple choice, asking the students to recognize which answer shows critical thinking, by the forth worksheet, the students are completely generating their own answers. Lastly, I have provided more guidance on the first critical thinking exercise on the assigned homework. It is more scaffolded, with the students being asked to recognize examples before being asked to generate their own examples. My goal was to provide support

for students who needed it while not getting in the way of students who had already mastered this skill. I implemented these changes during the summer of 2014.

To track the impact of these changes, I have compared the students' performance on a critical thinking exercise due on the 10th day of instruction (see appendix). Before the intervention, the average score on this exercise was 67%. After the intervention, the average score is 84%. After the changes to the course, the students performed significantly better in the first 10 days of instruction (t(489)=7.73, p<0.0000). Before the intervention, 22.3% of the students earned full marks on that assignment. After the intervention, that number doubled (44.5%).

Winter 2014
n=260
Mean = 67.02%, sd =27.78
Median = 72.22%
22.3% earned full marks

Histogram (n=260)
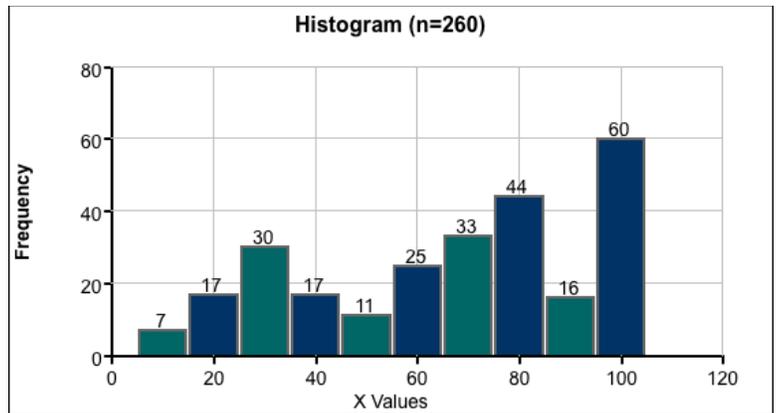
Fall 2014
n=283
Mean = 83.65%, sd =21.71
Median = 94.44%
44.5% earned full marks

Histogram (n=283)
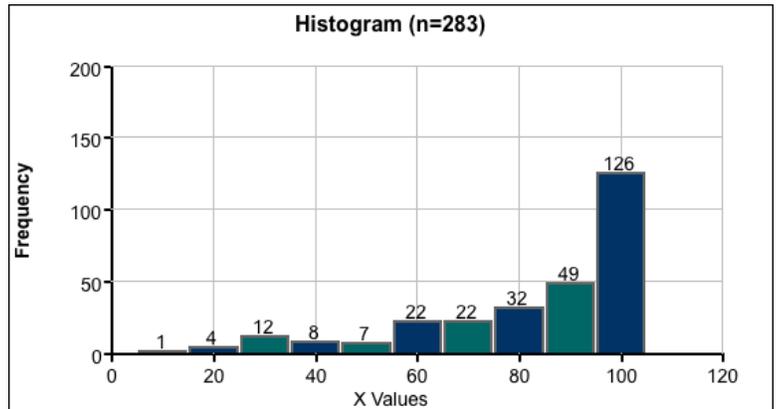
Low Performing Students

Though I have clearly sped up the students' ability to master answering these questions, there are still a handful of students huddled at the bottom of the curve, earning less than 30% on this question. I have tracked a couple of them across the quarter to demonstrate their improvement with tackling these concepts. Here are the answers from two students from that group. Both of these students passed the class with a 'C'. This improvement gives me hope that these skills can taught, and that the process I am providing is effective.

Student1. Assignment 2, due after week 2. (score: **17%**)
> a. I am being asked to believe that the early the babies start reading the better will be in their life.
> b. evidence: "the reading grade progression"
> c. Babies starting reading in the earlier age, the better reading skills they will have.
> d. additional evidence: use the reading cards to help babies learning reading skills.
> e. yes, it is true. No, they have not.

Student1. Assignment 5, due after week 5. (**67%**)
> a. We are asked to believe "Excess Television Watching as a Toddler Increases the Risk of ADHD as a Child"
> b. "The study showed that for each hour of television watching daily by toddlers is linked to a 10 percent higher risk at age 7 of ADHD behavior."
> c. parents might selected different types of tv shows to their children.
> d. ask participants watch same type of tv show when they participate the experiment, just change time period for each group

Student2. Assignment 2, due after week 2. (**28%**)
> a. I am being asked to believe that the "Your Baby Can Read Deluxe" kit can enhance my child's reading abilities.
> b. There is a reading grade level progression chart, mentioning the developer of the program Dr. Robert Titzer, and mentioning a national panel of reading specialists and educators in their description.
> c. You should start teaching your children other languages when they are young because they will retain it more easily.
> d. Having a reading program in different languages, quoting scientific studies that children are more easily to learn a new language when they are young, and examples of people who have grown up multilingual because they were taught at a young age.
> e. No, I do not believe that it is true because they site no scientific evidence of research studies that have been done, nor do they have any proof that this program works (children who have gone through the program and con now read better).

Student2. Assignment 5, due after week 5. (**71%**)
> 1. I am being asked to believe that excess television watching as a toddler increases the risk of Attention Deficit Hyperactivity Disorder as a child.
> 2. There was a study done where researchers asked mothers of toddlers at age 1 and 3

how much television their child typically watched. The study also mentions the Children's Hospital in Seattle as a credible source from where they gathers some of their information.

   3. The two groups being compared were not equal to begin with. Some children who watched more television could have less entertainment resources then the children who didn't watch television as often. One group could have board games or other entertainment systems, or could simply be at home less hours than the children who spend a lot of time watching television.

   4. I more appropriate control group would be gathering information from children who do not have any other accessible sources of entertainment besides television. Also, making sure that the children being studied are all home for the same amount of time.

Fostering Critical Thinking in First-Generation Students

Parental education is a strong predictor of student performance on the critical thinking portion of the first midterm exam.

Based on the students enrolled during the 2014-15 academic year, the average performance on the first exam was predicted by self-reported parental education level ($r(688) = .2$, $p < .01$). The students from families with college degrees performed significantly higher (M=84%) than those with either some college (79%) or no college (72%).

The achievement gap closed for the second exam. Parental education was not related to performance on the second exam ($r(688) = .06$, n.s.). Performance dropped on the third exam. Performance on the third exam was positively related to parental education ($r(688) = .15$, $p < .05$). There was a significant main effect of both Parental Education ($F(2,688) = 6.95$, $p = .001$) and Exam ($F(2,688) = 3.29$, $p = .04$) on Critical Thinking Grade. There was no interaction ($F(4,686) = 1.63$, n.s.)

Average Critical Thinking Grade Across the Exams by Parental Education
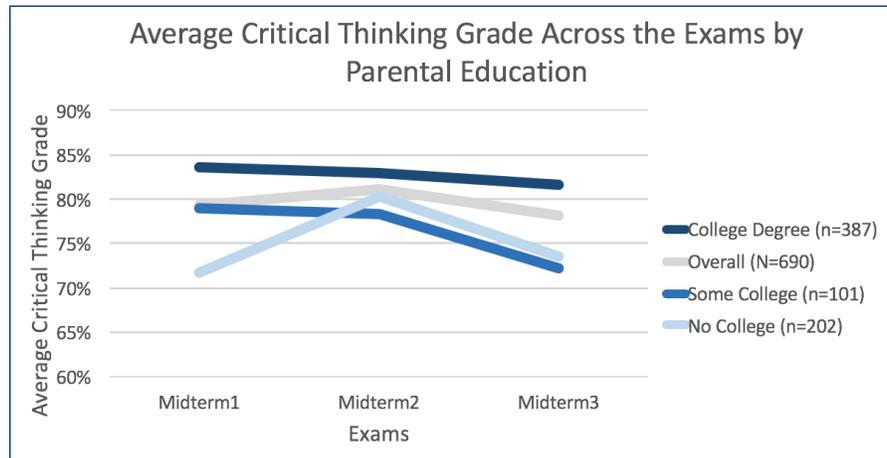
Interventions

Discovering this initial gap based on parental education led me to make two additional instructional interventions. I have started to require that all students complete the video examples detailing critical thinking. I am also taking advantage of email list features to reach out to students who are at risk of failing on a more individual level. In the Spring Quarter 2016, all students who did not turn in an assignment received an email asking them what happened, giving them instructions on late submission, and impressing upon them the importance of completing the assignments. Additionally, all students who performed below 70% on the first two midterms were also contacted through email and invited to reflect on their performance and goals and to attend dedicated review hours. These review sessions included content information and also both study habit and test taking advice.

Comparing Spring 2015 (before these interventions) to Spring 2016 (after the interventions), there is still a performance gap based on parental education, but the gap has narrowed. The large gap (13%) that was seen on the first midterm exam has narrowed to a consistent 5% across the quarter.

It is important to note that the additional assignments are all completed shortly before the first midterm. Based on performance across the quarter, it appears that students need to be more consistently reminded of their nascent critical thinking skills across the quarter.

Average Critical Thinking Grades Across the Quarter by Parental Education (Spring 2015)
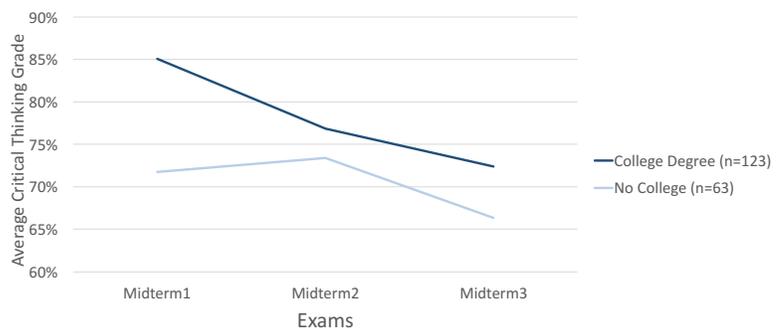
College Degree (n=123)
No College (n=63)

Average Critical Thinking Grades Across the Quarter by Parental Education (Spring 2016)

College Degree (n=169)
No College (n=61)
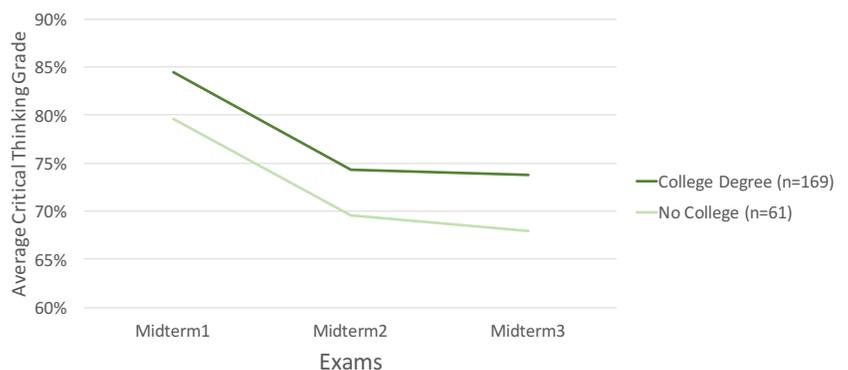
References

Brookfield, S. D. (1987). *Developing critical thinkers*. San Francisco: Jossey-Bass.

Appendix H: Curriculum Matrices and Assessment Planning Documents

1. **Environmental Policy Analysis and Planning Core Curriculum**
2. **Viticulture and Enology**
3. **Animal Science and Animal Science and Management**
4. **College of Engineering Program Learning Outcomes Curriculum Mapping**
5. **Human Development**
6. **Landscape Architecture**
7. **Marine and Coastal Science**
8. **Plant Biology**

Matrix of Environmental Policy Analysis and Planning (EPAP) Core Curriculum

I= introduce, D = develop, M = master

	Knowledge based outcomes		Performance skill based outcomes	
	Student will develop competence in basic environmental sciences, economics, and theory of the policy process.	The student will acquire an understanding of how public policy and planning decisions are made and their effectiveness is evaluated.	The student will master a variety of quantitative and qualitative methods for analyzing environmental issues and policies.	The student will learn to apply this knowledge to analyzing actions to address environmental problems.
ESP 1	I	I	I	I
ESP 110	D	D	D	D
ESP 160	M		D	D
ESP 161				D
ESP 163			M	
ESP 165		M		M
ESP 166		M		M
ESP 167			M	
ESP 168A		M	M	M
ESP 168B		M	M	M
ESP 169				M
ESP 171				M
ESP 172				M
ESP 175		M		
ESP 178		M		
ESP 179		M	M	
ECI 165				M
STA 103		D		
LDA 150		D		
Assessment	The outcome will be measured based on student performance in ESP 1, ESP 110, ESP 160 as well as grades in basic courses in biology, chemistry, physics and economics.	The outcome will be measured based on student performance in courses with M.	The outcome will be measured based on student performance in courses with M.	The outcome will be measured based on student performance in courses M.

Curriculum Matrix – Viticulture and Enology (December 2016)

PLO	2	3	101A	101B	101C	110	111	115	118	123	123L	124	124L	125	125L	126	126L	128	128L	135	140
1	I		P,D																		
2	I	I		P,D																	
3	I	I			P,D	P,D		P,D													
4		I					P								D						
5	I	I				P,D								P,D							
6	I							P,D													
7	I			P,D					P,D												
8										I	P,D	I	P,D								
9												I	P,D			P,D	P,D			P,D	
10												I	P,D								
11														I,P	D						
12							I,P								D						
13										P,D	P,D		P,D		P,D		P,D				P,D
14												I	P					I	P,D		
15													I			P	D				
16																				I,P	
17		I																P	D		
18													I,P,D		I,P,D		I,P,D		I,P,D		
19											I,P		I,P,D				P,D				
20												I,P	D			I	P,D				

Responses to Assessment Questions – Spring 2017 – Animal Science (ANS) and Animal Science and Management (ANM)

Have you reviewed and updated your Program Learning Outcomes since 2014?

Yes. The PLOs have been reviewed and updated in 2016. An exercise was conducted with the ANS faculty in Spring 2016 to have them provide information about their course content which addressed the PLOs of the University that were not addressed by ANS learning outcomes. For example, it was identified that we seek to develop strong leadership traits in our students, but we had not established a PLO that addressed this aspect of our curriculum. Therefore, the PLOs were updated to allow us to then develop assessment strategies to measure our department's effectiveness of teaching these traits. The original and updated PLOs are as follows:

ANS Original:

The outcome goals for our students are:

1. Understanding of the scientific principles and physiological mechanisms associated with the disciplines in Animal Science
2. Ability to describe the application of these principles to the care and sustainable management of domestic and captive animals
3. Demonstrate the basic skills necessary to perform practical tasks associated with animal care
4. Illustrate the basic skills necessary to interpret information gathered in a research setting
5. Demonstrate the ability to communicate through writing, speech and graphical displays

ANS Updated:

1. ANS graduates will be able to properly describe key concepts, analyze relevant information, and integrate their knowledge of key scientific principles and physiological mechanisms associated with the core disciplines (nutrition, behavior, genetics, reproduction, endocrinology) in Animal Science.
2. ANS graduates will have the ability to apply their knowledge of the core disciplines in animal science to the proper care and sustainable management of domestic and captive animals; and be able to describe and demonstrate the basic skills necessary to perform practical tasks associated with animal care.
3. ANS graduates will be able to interpret and evaluate information gathered in a research setting and demonstrate critical thinking skills which prepare them for life-long learning
4. ANS graduates will effectively communicate through written, oral, and graphical presentations.

5. ANS graduates will recognize their ethical and professional role as animal scientists and exhibit strong interpersonal and leadership skills.

ANM – Program Learning Outcomes

The goals for our students are:

1. Understanding of the scientific principles and physiological mechanisms associated with the disciplines in animal science as well as an understanding the principles of managerial economics.
2. Ability to describe the application of these principles to the care and sustainable management of domestic and captive animals and the application of these principles to small businesses.
3. Illustrate the basic skills necessary to interpret, gather and process information in an agricultural business setting.
4. Demonstrate the ability to communicate through writing and speech.

2. Have you mapped your PLOs to your curriculum?

Yes. Mapping was conducted in Spring/Summer 2016 and is attached in a PDF document. This first draft will be reviewed in Fall 2017 as new the new curriculum plan for Animal Science is continued to be put into place. The curriculum map for ANS currently includes all core animal science courses, but doesn't yet address support courses which high numbers of ANS students take in biology, chemistry, etc. The first draft of a map for ANM is developed, but does not yet include courses taken by students in managerial economics.

3. Do you have an assessment plan for collecting evidence of student learning for each PLO?

Yes. This plan for ANS has been established in 2014 and revised in 2017. See attached PDF document. ANM is currently developing their assessment plan for 2017-2018.

4. Have you begun to collect evidence of student learning and/or used the information to review/modify your curriculum in some way or to act on evidence obtained?

Yes. Our department has been collecting indirect assessment data from graduating seniors since 2009-2010. Our graduating senior survey asks students to reflect on the courses they have taken

and the experiences they have gained in major areas of animal science study. This data had led the faculty in ANS to address some of the biggest concerns and initiate large changes in our curriculum. For examples, students have commonly noted that their courses in our program have lacked enough focus on animal behavior and animal nutrition. These discipline areas will now have newly required core courses in our curriculum which must be taken by all of our ANS students.

More recently writing competency has begun to be assessed in our incoming freshmen, with the thought that we can measure the technical writing proficiency of our new students before and after they are engaged in a targeted writing assignment project in ANS 1. This cohort of students can then be assessed at other points in our curriculum during their academic career to identify the effectiveness of teaching technical writing basics in their first animal science course as freshmen. Writing samples have been collected for scoring and rubric development is underway for this effort.

5. Have your department or major/s engaged in additional assessment activities that are not reflected in any of the above?

Yes. Our Animal Science Advising Center has undertaken small projects to indirectly assess student success in some of our core ANS courses. For example, they have collected data on student grades in ANS 1 and 2 as indicators of student academic success later in their careers. This data has not yet been used or published within the department, but has initially given insight to their advising efforts for students who might struggle in those courses.

6. What challenges have your faculty or your department/major experienced with regard to assessment and/or PLOs?

One of the specific challenges of assessment in ANS is the size/scope of the department. Assessment efforts take time in any department, yet to collect meaningful data in a large department, more examples of student work/responses/presentations/writing/etc. must be sampled and scored. The time required of faculty/staff to consistently maintain assessment efforts is high, however this is being addressed in recent years with the hiring of more teaching-focused faculty within the department (LPSOE).

For ANM, one of the challenges of collecting meaningful assessment data is that many of the core courses within the curriculum are taught outside of the department. Typical assessment tools, like embedded questions, become more difficult to enact. However, collaboration with faculty teaching those courses is possible and can allow for assessment data collection to occur.

College of Engineering Program Learning Outcomes (here known as Student Outcomes) Curriculum Mapping

The Program Learning Outcomes for each of the College of Engineering programs are the ABET-defined Student Outcome (SOs) listed below:

(a) an ability to apply knowledge of mathematics, science, and engineering
(b) an ability to design and conduct experiments, as well as to analyze and interpret data
(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
(d) an ability to function on multidisciplinary teams
(e) an ability to identify, formulate, and solve engineering problems
(f) an understanding of professional and ethical responsibility
(g) an ability to communicate effectively
(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
(i) a recognition of the need for, and an ability to engage in life-long learning
(j) a knowledge of contemporary issues
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Each program must have documented SOs that prepare graduates to attain the program educational objectives that are consistent with the mission of the institution and the needs of the program's various constituencies. The program must regularly use appropriate, documented processes for assessing and evaluating the extent to which the student outcomes are being attained. The results of these evaluations must be systematically utilized as input for the continuous improvement of the program.

Below are the mappings for most of the ABET-accredited engineering programs:

Aerospace Science and Engineering

Course	Description	Student Outcomes										
		a	b	c	d	e	f	g	h	i	j	k
ENG 004	Engineering Graphics	x		x	x			x				x
ENG 102	Dynamics	x				x						x
ENG 103	Fluid Dynamics	x				x		x				x
ENG 105	Thermodynamics	x				x	x	x				x
ENG 190	Professional Responsibilities						x	x	x	x	x	
EME 106	Thermo-Fluid Dynamics	x				x		x				x
EME 108	Measurement Systems	x	x	x	x	x		x				x
EME 109	Experimental Methods for Thermal Fluids	x	x	x	x	x		x	x	x		x
EME 165	Heat Transfer	x		x		x		x				x
EME 172	Automatic Control of Engineering Systems	x	x	x		x						x
EAE 127	Applied Aircraft Aerodynamics	x		x		x		x			x	x
EAE 129	Stability and Control of Aerospace Vehicles	x	x	x	x	x						x
EAE 130A	Aircraft Performance and Design	x		x	x	x	x	x	x	x	x	x
EAE 130B	Aircraft Performance and Design	x		x	x	x	x	x	x	x	x	x
EAE 133	Finite Element Methods in Structures	x				x						x
EAE 135	Aerospace Structures	x	x	x	x	x	x		x	x	x	x
EAE 138	Aircraft Propulsion	x		x						x	x	x

Biochemical Engineering

Student Outcome	Course	Quarter/Year	Instructor(s)
a. Ability to apply knowledge of mathematics, science and engineering	ECH 142 ECH 161A	S 2016 W 2016	Phillips Longo
b. Ability to design and conduct experiments, as well as to analyze and interpret data	ECH 145B ECH 161L	S 2016 S 2016, 2017*	Ristenpart White
c. Ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	ECH 161B	W 2016, 2017	White
d. Ability to function on multidisciplinary teams	ECH 158C ECH 145A ECH 161C ECH 145B	S 2016 W 2016 W 2017 S 2017*	McDonald Miller McDonald Ristenpart
e. Ability to identify, formulate, and solve engineering problems	ECH 152B ECH 157 ECH 158C	W 2015 F 2016* S 2017*	Faller El Farra Nandi
f. Understanding of professional and ethical responsibility	ECH 80 ECH 80 ECH 80 ECH 158C	F 2014* F 2015* F 2016* S 2017*	Kuhl/Tseregounis Kuhl/Tseregounis Kuhl/Tseregounis Nandi
g. Ability to communicate effectively	ECH 161L ECH 158C	S 2015 S 2016	Leth McDonald
h. Broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	ECH 161C ECH 161C	W 2016 W 2017	McDonald McDonald
i. Recognition of the need for, and an ability to engage in life-long learning	ECH 158A ECH 158C	F 2016 S 2016	Palazoglu/White McDonald
j. Knowledge of contemporary issues	ECH 80 ECH 80 ECH 158A ECH 158C	F 2014* F 2015* F 2016 S 2017*	Kuhl/Tseregounis Kuhl/Tseregounis Palazoglu/White Nandi
k. Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice	ECH 152B ECM 6 ECH 158C	S 2009 S 2017* S 2017*	Faller/Moule Moule Nandi

* denotes that the assessment is not yet complete/available

Biological Systems Engineering

Course	Student Outcomes										
	(a) Apply math, science and engineering.	(b) Design and conduct experiments	(c) Design systems, components & processes	(d) Function on teams	(e) Identify, formulate and solve problems	(f) Understand professional responsibility	(g) Communication	(h) Understand engr. in the broader context	(i) Engage in life-long learning	(j) Know about contemp. issues	(k) Use skills necessary for engr. practice
EBS 1, Foundations of BSE			X	X		X			X		
EBS 75, Props. of biol. matls.	X	X					X (wr)				
EBS 103, Fluid dynamics	X				X						X
ENG 106, Engr. economics								X	X	X	
EBS 125, Heat transfer		X			X		X				
EBS 127, Mass trans. & kinetics			X					X		X	
EBS 130, Dynamic modeling	X				X						X
EBS 165, Bioinstrument. & control		X	X	X							X
EBS 170A, Engr. design/prof. resp.			X			X				X	
EBS 170B-BL-C-CL			X				X (wr+oral)	X	X		

Biomedical Engineering
Forthcoming

Chemical Engineering

Outcome	Course	Quarter/Year	Instructor
a	ECH 142	S 2016	Phillips
	ECH 158B	W 2017	Palazoglu/White
b	ECH 145B	S 2016	Ristenpart
	ECH 155	W 2017*	Gates
c	ECH 148B	W 2015	Gates
	ECH 158B	W 2016	Palazoglu/White
d	ECH 158C	S 2016	White
	ECH 145B	S 2017*	Ristenpart
e	ECH 152B	W 2015	Faller
	ECH 157	F 2016*	El Farra
	ECH 158C	S 2017*	White
f	ECH 80	F 2014*	Kuhl/Tseregounis
	ECH 80	F 2015*	Kuhl/Tseregounis
	ECH 80	F 2016*	Kuhl/Tseregounis
	ECH 158C	S 2017*	White
g	ECH 158C	S 2016	White
	ECH 158C	S 2017*	White
h	ECH 158B	W 2016	Palazoglu/White
	ECH 158C	W 2017*	White
i	ECH 158C	S 2016	White
	ECH 158A	F 2016	Palazoglu/White
j	ECH 80	F 2014*	Kuhl/Tseregounis
	ECH 80	F 2015*	Kuhl/Tseregounis
	ECH 158A	F 2016	Palazoglu/White
	ECH 158C	S 2017*	White
k	ECH 152B	S 2009	Faller/Moule
	ECM 6	S 2017*	Moule
	ECH 158C	S 2017*	White

* denotes that the assessment is not yet complete/available

Civil Engineering
Forthcoming

Computer Engineering

	A	B	C	D	E	F	G	H	I	J	K
EEC1						X		X	X	X	
EEC70	X		X		X						X
EEC100	X	X	X		X		X				X
EEC110A	X				X						X
EEC110B	X				X						X
EEC112	X	X	X		X						X
EEC116	X				X						
EEC118	X	X			X						X
EEC119	X	X	X	X	X		X	X			X
EEC130A	X										X
EEC130B	X										X
EEC132A	X		X								X
EEC132B	X	X	X		X		X				X
EEC132C	X	X			X						X
EEC133	X		X		X			X			X
EEC135	X		X	X	X		X				X
EEC136		X		X	X	X	X	X		X	
EEC140A	X				X						X
EEC140B	X		X		X					X	X
EEC146A	X	X					X				X
EEC146B	X	X		X	X						
EEC150A	X										X
EEC150B	X	X									X
EEC152	X	X	X	X	X		X				X
EEC157A	X		X		X						X
EEC157B	X	X	X		X						X
EEC158	X	X		X	X						X
EEC160	X	X			X		X		X	X	X
EEC161	X	X									X
EEC165	X	X	X		X						X
EEC170	X	X			X						X
EEC171	X	X			X						X
EEC172	X	X			X						X
EEC173A	X	X			X	X	X			X	X
EEC173B	X	X			X	X	X			X	X
EEC180A	X	X			X						X
EEC180B	X	X	X		X						X
EEC181	X	X	X	X	X		X	X			X
EEC183	X	X	X	X	X		X				X
EEC195	X	X	X	X	X		X	X			X
EEC196						X		X	X	X	
ENG6	X				X						X
ENG17	X										
ENG100	X										X

Computer Science and Engineering

Courses (Required courses noted in BLUE) *Students can choose between ECS 120 & 122A	a	b	c	d	e	f	g	h	i	j	k
ECS 20: Discrete Mathematics for Computer Science	x								x		x
ECS 30: Programming and Problem Solving		x			x						x
ECS 40: Software Development and Object-Oriented Programming			x		x						x
ECS 50: Computer Organization and Machine-Dependent Programming			x		x					x	
ECS 60: Data Structures and Programming	x		x		x				x		x
ECS 120: Theory of Computation*	x				x				x		X
ECS 122A: Algorithm Design and Analysis*	x								x		X
ECS 122B: Algorithm Design and Analysis	x	x	x		x				x		X
ECS 124: Theory and Practice of Bioinformatics	x				x						X
ECS 127: Cryptography	x				x				x		X
ECS 129: Computational Structural Bioinformatics	x					x	x	x			X
ECS 130: Scientific Computation	x				x		x				X
ECS 132: Probability and Statistical Modeling for Computer Science	x	x				x				x	
ECS 140A: Programming Languages	x		x		x				x		X
ECS 140B: Programming Languages				x	x				x		X
ECS 142: Compilers	x		x		x						X
ECS 145: Scripting Languages and Their Applications			x		x				x	x	X
ECS 150: Operating Systems and System Programming	x	x	x	x	x		x		x		X
ECS 152A: Computer Networks	x	x		x					x	x	
ECS 152B: Computer Networks		x	x	x			x	x		x	X
ECS 152C: Computer Networks		x	x	x			x	x			X
ECS 153: Computer Security	x				x	x	x	x	x	x	x
ECS 154A: Computer Architecture	x	x	x	x	x				x	x	x
ECS 154B: Computer Architecture	x	x	x	x	x			x	x	x	x
ECS 158: Programming on Parallel Architectures	x	x	x							x	
ECS 160: Software Engineering			x	x	x	x	x	x		x	x
ECS 163: Information Interfaces	x	x	x	x			x	x	x	x	
ECS 165A: Database Systems	x	x			x				x	x	x
ECS 165B: Database Systems	x	x	x		x				x	x	x
	a	b	c	d	e	f	g	h	i	j	k
ECS 170: Artificial Intelligence	x	x		x	x			x		x	x
ECS 171: Machine Learning	x	x			x					x	x
ECS 173: Image Processing and Analysis	x		x			x	x	x			x
ECS 175: Computer Graphics	x		x		x				x	x	
ECS 177: Scientific Visualization	x		x		x				x	x	
ECS 178: Geometric Modeling	x		x		x			x	x	x	x
ECS 188: Ethics in an Age of Technology				x		x	x	x	x	x	
ECS 193A: Senior Design Project	x	x	x	x	x	x	x	x		x	x
ECS 193B: Senior Design Project	x	x	x	x	x	x	x	x		x	x

Electrical Engineering

Course Number	Course Name	ABET Sos
ENG 6	Engr Problem Solving	a,e,k
EEC 1	Intro ECE	f, **h, i, j**
EEC 10	Intro Anal Dig Systems	a,b,c,k
ENG 17	Circuits I	a
EEC 100	Circuits II	a,b,c,e,g,k
EEC 110a	Electronic Circuits I	a,e,k
EEC130a	Intro Electromagnetics I	a,k
EEC140a	Prin Device Physics I	a,e,k
EEC150a	Intro Signals Systems I	a,k
EEC 161	Probabilis Anal E&C Sys	a,b,k
EEC180a	Digital Systems I	a,b,e,k
EEC 196	Issues Engr Design	f,**h,i,j**
EEC 1xxa,b	Senior Design Proj	a,b,**d**,e,g,**h**,k(c,f,j)

Mechanical Engineering

Course	Description	Student Outcomes										
		a	b	c	d	e	f	g	h	i	j	k
ENG 004	Engineering Graphics	x		x	x			x				x
ENG 102	Dynamics	x				x						x
ENG 103	Fluid Dynamics	x				x		x				x
ENG 105	Thermodynamics	x				x	x	x				x
ENG 190	Professional Responsibilities						x	x	x	x	x	
EME 050	Manufacturing Processes	x		x		x						x
EME 106	Thermo-Fluid Dynamics	x				x		x				x
EME 108	Measurement Systems	x	x	x	x	x		x				x
EME 109	Experimental Methods for Thermal Fluids	x	x	x	x	x		x	x	x		x
EME 150A	Mechanical Design	x		x	x	x	x	x		x	x	x
EME 165	Heat Transfer	x		x		x		x				x
EME 172	Automatic Control of Engineering Systems	x	x	x		x						x
EME 185A	Mech. Eng. System Design Project	x		x	x	x	x	x	x	x	x	x
EME 185B	Mech. Eng. System Design Project	x		x	x	x	x	x	x	x	x	x
or												
EAE 130A	Aircraft Performance and Design	x		x	x	x	x	x	x	x	x	x
EAE 130B	Aircraft Performance and Design	x		x	x	x	x	x	x	x	x	x

Materials Science and Engineering

Student Outcomes	EMS 2	EMS 160	EMS 162	EMS 162L	EMS 164	EMS 172	EMS 172L	EMS 174	EMS 174L	EMS 180	EMS 181	EMS 188A	EMS 188B	ENG 190	Other
a. an ability to apply knowledge of mathematics, science, and engineering		X	X		X		X								
b. an ability to design and conduct experiments, and to analyze and interpret data				X			X		X						E45
c. an ability to design systems, components, processes or materials to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability											X	X	X		
d. an ability to function on multi-disciplinary team				X						X		X	X		
e. an ability to identify, formulate, and solve engineering problems		X	X		X	X	X								
f. an understanding of professional and ethical responsibility												X	X	X	
g. an ability to communicate effectively							X		X		X	X	X		E45
h. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context												X	X		
i. a recognition of the need for, and an ability to engage in life-long learning												X	X		
j. a knowledge of contemporary issues										X		X	X	X	
k. an ability to use the techniques, skills and modern engineering tools necessary for engineering practice		X		X			X			X					ECM6

Human Development Learning Outcomes Assessment

1. Have you reviewed and updated your Program Learning Outcomes since 2014 (a list of the current PLO's for each major is available at the following link: http://assessment.ucdavis.edu/what/PLOs-UG.html)?
    a. Yes. The learning outcomes were reviewed as a faculty (6/2/17), and within the curriculum committee (5/17/17; 6/14/17).
2. Have you mapped your PLO's to your curriculum (see for example page 13 in the attached 'Assessment_Summary' document)?
    a. Yes. Please see the below program map. This map was discussed and approved on 6/2/17.
3. Do you have an assessment plan for collecting evidence of student learning for each PLO (see for example pages 14-18 in the attached 'Assessment_Summary' document)?
    a. Yes. Please see the below assessment plan. This plan was approved on 6/2/17
4. Have you begun to collect evidence of student learning and/or used the information to review/modify your curriculum in some way or to act on evidence obtained (see for example page 19 in the attached 'Assessment_Summary' document)?
    a. Yes, we are currently in the process of collecting evidence of student learning to review the curriculum. Specifically, we are collecting student work from 2 introductory courses, 2 midlevel courses, and 2 upper level courses.
5. Have your department or major/s engaged in additional assessment activities that are not reflected in any of the above?
    a. Yes, we are also assessing the student's perception of learning outcomes. We created a short survey soliciting student feedback on the extent to which they have mastered the outcomes as well as provided a platform for students to provide constructive feedback on the overall program. See student survey below. Likewise, we are assessing the faculty's perception and satisfaction with the program. See faculty survey below.
6. What challenges have your faculty or your department/major experienced with regard to assessment and/or PLO's? Please provide a brief description of the challenges—just a few sentences are all that is needed.
    a. The primary challenge we have faced is that our program is currently under review. This assessment process has been eye opening for many of the faculty, and we are energized to make positive changes to our program. However, given that we are currently under review we are not able to make these changes at this time. We hope to maintain our momentum, and enact positive change once the review period has completed.

Curriculum Map:

Program Learning Outcome	Emerging/Introduced (I)	Developing/practiced (P)	Competent/demonstrated (D)
PLO 1	100A, 100B, 100C	101, 102, 103, 110, 130, 163	140L, 141, 142, 143, 161, 162
PLO 2	100A, 100B, 100C	120	120
PLO 3	100A, 100B, 100C	103, 110, 140L, 141, 142, 143, 161, 162	140L, 141, 142, 143, 161, 162

Assessment Plan:

We plan to assess both the faculty and the students in the HD program. For the faculty assessment we administered a questionnaire targeting the faculty's perception of the learning outcomes, their ability to teach the learning outcomes, and students' ability to meet the outcomes. For the student portion of the assessment we administered a questionnaire assessing student satisfaction with the program. We plan on administering this questionnaire at the end of each year. Additionally, we will be assessing student work. To do this, we are in the process of collecting 10 randomly selected pieces of students' written assignments each from two introductory courses, two midlevel courses, and two advanced courses. We have created a rubric based on the learning outcomes which assesses the degree to which students at each course level are meeting learning outcome expectations. Moving forward we hope to create a system by which at the end of each quarter, the faculty randomly selects 10 pieces of student work and grades the work based on the learning outcomes. An outline of the plan is below:

1. Assessment of faculty perceptions: questionnaire
    a. Assessment of student and faculty ability to meet learning outcomes
    b. Assessment of curriculum
2. Assessment of students
    a. Student perceptions: Assessment program satisfaction
    b. Student work: Assess student work in core and depth in meeting the learning outcomes

Student Survey:

1. What year are you?

         1   2   3   4   5   Alum

2. How many years have you been an HDE major?

         1   2   3   4   5

3. How many years have you been at UCDavis?

         1   2   3   4   5

4. Did you transfer to Davis from another university or college?
   a. Yes
   b. No

5. Did you transfer from another major while at Davis?
   a. Yes
   b. No

6. Because of the HDE program I am able to identify key issues and concepts relevant to the understanding of how human behavior develops over the life cycle and be able to explain them to a layperson.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree

7. Because of the HDE program I am able to generate a hypothesis using a conceptual model relevant to a developmental question and identify an appropriate test of that hypothesis.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree

8. Because of the HDE program I am able to understand how research findings can be applied in real-life settings.
   a. Strongly disagree
   b. Disagree
   c. Neither agree nor disagree
   d. Agree
   e. Strongly agree

Not at all	Slightly	Somewhat	Moderately	Extremely
1	2	3	4	5

9. Rank the degree to which you are satisfied with the HDE program

       1   2   3   4   5

10. Rank the degree to which each of the following is a strength of the HDE program
    a. The faculty   1   2   3   4   5
    b. Internships/research   1   2   3   4   5
    c. Course work   1   2   3   4   5
    d. Advising staff   1   2   3   4   5
    e. Class size   1   2   3   4   5
    f. Program flexibility   1   2   3   4   5
    g. Breath of course offerings   1   2   3   4   5
    h. Class time of day   1   2   3   4   5
    i. Other _____

11. Rank the degree to which each of the following is an area in need of improvement for the HDE program
    a. The faculty   1   2   3   4   5
    b. Internships/research   1   2   3   4   5
    c. Course work   1   2   3   4   5
    d. Advising staff   1   2   3   4   5
    e. Class size   1   2   3   4   5
    f. Program flexibility   1   2   3   4   5
    g. Breath of course offerings   1   2   3   4   5
    h. Class time of day   1   2   3   4   5
    i. Other _____

12. If I could change one thing about the HDE program it would be _____.

    Optional
13. Are you the first in your family to go to college?
    a. Yes
    b. No
    c. Prefer not to answer
14. Which best describes your gender identity?
    a. Male
    b. Female
    c. Transgender
    d. Neither male, female, or transgender
    e. Prefer not to answer
15. Do you come from a race or ethinic group which has been historically underrepresented in higher education (e.g., Black or African American, Hispanic or Latino, American Indian or Alaska Native, Native Hawaiian and other Pacific Islander)?
    a. Yes

b. No

c. Prefer not to answer

Faculty Survey:

The Program Learning Outcomes for the HD major are:

1. Students will be able to identify key issues and concepts relevant to the understanding of how human behavior develops over the life cycle and be able to explain them to a layperson.

2. Students will be able to generate a hypothesis using a conceptual model relevant to a developmental question and identify an appropriate test of that hypothesis.

3. Students will be able to see how research findings can be applied in real-life settings.

For faculty who have taught 100A, 100B, or 100C

1. What percentage of your students **COMPLETE** your class with the basic ability to remember and understand how human behavior develops over the life cycle (i.e., learning objective 1 was introduced and these skills are emerging)? *Examples: provide definitions, list key ideas, summarize readings, explain a theory.*

_____

a. Is this objective directly assessed? ___Yes/No____
b. If Yes, how?
    i. multiple choice questions
    ii. short answer questions
    iii. essays questions
    iv. in class activities
    v. Papers
    vi. Other _____

2. What percentage of your students **COMPLETE** your class with the ability to apply human behavior theory, or analyze behaviors, or apply knowledge learned in class (i.e., learning objective 1 was practiced and these skills are developing)? *Examples: make a presentation, use a theory or model, compare and contrast theories or evidence, draw connections between theories or evidence.* If you do not know, answer N/A.

_____

a. Is this objective directly assessed? ___Yes/No____
b. If Yes, how?
    i. multiple choice questions

      ii.   short answer questions
     iii.   essays questions
     iv.   in class activities
      v.   Papers
     vi.   Other _____

3. What percentage of your students **COMPLETE** your class with the basic ability to identify/explain a hypothesis, identify/explain a conceptual model relevant to a developmental question (i.e., learning objective 2 was introduced and these skills are emerging)? *Examples: provide hypotheses, list key ideas, summarize readings, explain a model/theory.* If you do not know, answer N/A.

        _____

   a. Is this objective directly assessed? ___Yes/No____
   b. If Yes, how?
       i.   multiple choice questions
      ii.   short answer questions
     iii.   essays questions
     iv.   in class activities
      v.   Papers
     vi.   Other _____

4. What percentage of your students **COMPLETE** your class with the ability to apply a hypothesis using a conceptual model relevant to a developmental question and analyze data based on their hypotheses (i.e., learning objective 2 was practiced and these skills are developing)? *Examples: make a presentation, generate a hypothesis, use a theory or model, compare and contrast theories or evidence, draw connections between theories or evidence.* If you do not know, answer N/A.

        _____

   a. Is this objective directly assessed? ___Yes/No____
   b. If Yes, how?
       i.   multiple choice questions
      ii.   short answer questions
     iii.   essays questions
     iv.   in class activities
      v.   Papers
     vi.   Other _____

5. What percentage of your students **COMPLETE** your class with the ability to identify how research findings can be applied in real-life settings (i.e., learning objective 3 was introduced and these skills are emerging)? *Examples: list key ideas, explain an observed behavior, explain a theory.* If you do not know, answer N/A.

_____

    a. Is this objective directly assessed? ___Yes/No____

    b. If Yes, how?

        i. multiple choice questions

        ii. short answer questions

        iii. essays questions

        iv. in class activities

        v. Papers

        vi. Other _____

6. What percentage of your students **COMPLETE** your class with the ability to apply research findings to real-life settings (i.e., learning objective 3 was practiced and these skills are developing)? *Examples: make a presentation, use a theory or model, compare and contrast, draw connections between theories or evidence.* If you do not know, answer N/A.

_____

    a. Is this objective directly assessed? ___Yes/No____

    b. If Yes, how?

        i. multiple choice questions

        ii. short answer questions

        iii. essays questions

        iv. in class activities

        v. Papers

        vi. Other _____

For faculty who have taught 101, 102, 130, 163:

7. What percentage of your students **BEGIN** your class with the basic ability to remember and understand how human behavior develops within the life stage taught (i.e., learning objective 1 was introduced and these skills are emerging)? *Examples: provide definitions, list key ideas, summarize readings, explain a theory.* If you do not know, answer N/A.

_____

8. What percentage of your students **BEGIN** your class with the ability to apply human behavior theory, or analyze behaviors, or apply knowledge learned in class (i.e., learning objective 1 was practiced and these skills are developing)? *Examples: make a presentation, use a theory or model, compare and contrast, draw connections between theories or evidence.* If you do not know, answer N/A.

_____

9. What percentage of your students **COMPLETE** your class with the ability to apply human behavior theory, or analyze behaviors, or apply knowledge learned in class (i.e., learning objective 1 was practiced and these skills are developing)? *Examples: make a presentation, use a*

theory or model, compare and contrast, draw connections between theories or evidence. If you do not know, answer N/A.

_____

    a. Is this objective directly assessed? ___Yes/No____
    b. If Yes, how?
        i. multiple choice questions
        ii. short answer questions
        iii. essays questions
        iv. in class activities
        v. Papers
        vi. Other _____

10. What percentage of your students **COMPLETE** your class with the ability to evaluate human behavior theory/research, or develop an argument surrounding knowledge learned in class (i.e., learning objective 1 was demonstrated and these skills are mastered)? *Examples: make evaluative judgments based on criteria and standards, tied different pieces of research together into a coherent whole.* If you do not know, answer N/A.

_____

    a. Is this objective directly assessed? ___Yes/No____
    b. If Yes, how?
        vii. multiple choice questions
        viii. short answer questions
        ix. essays questions
        x. in class activities
        xi. Papers
        xii. Other _____

For faculty who have taught 120:

11. What percentage of your students **BEGIN** your class with the ability to apply a hypothesis using a conceptual model relevant to a developmental question and analyze data based on their hypotheses (i.e., learning objective 2 was practiced and these skills are developing)? *Examples: make a presentation, use a theory or model, compare and contrast, draw connections between theories or evidence.* If you do not know, answer N/A.

_____

12. What percentage of your students **COMPLETE** your class with the basic ability to apply a hypothesis using a conceptual model relevant to a developmental question and analyze data based on their hypotheses (i.e., learning objective 2 was practiced and these skills are developing)? *Examples: make a presentation, use a theory or model, compare and contrast, draw connections between theories or evidence.* If you do not know, answer N/A.

_____

    a. Is this objective directly assessed? ___Yes/No____

    b. If Yes, how?

        i. multiple choice questions

        ii. short answer questions

        iii. essays questions

        iv. in class activities

        v. Papers

        vi. Other _____

13. What percentage of your students **COMPLETE** your class with the basic ability to apply a hypothesis using a conceptual model relevant to a developmental question and analyze data based on their hypotheses (i.e., learning objective 2 was demonstrated and these skills are mastered)? *Examples: make evaluative judgments based on criteria and standards, tied different pieces of research together into a coherent whole.* If you do not know, answer N/A.

_____

    a. Is this objective directly assessed? ___Yes/No____

    b. If Yes, how?

        i. multiple choice questions

        ii. short answer questions

        iii. essays questions

        iv. in class activities

        v. Papers

        vi. Other _____

For faculty who have taught 103, 110:

14. What percentage of your students **BEGIN** your class with the ability to see how research findings can be applied in real-life settings (i.e., learning objective 3 was introduced and these skills are emerging)? If you do not know, answer N/A.

_____

15. What percentage of your students **COMPLETE** your class with the ability to apply human behavior theory, or analyze behaviors, or apply knowledge learned in class (i.e., learning objective 1 was practiced and these skills are developing)? If you do not know, answer N/A.

_____

    a. Is this objective directly assessed? ___Yes/No____

    b. If Yes, how?

        i. multiple choice questions

        ii. short answer questions

        iii. essays questions

iv.   in class activities
 v.   Papers
vi.   Other _____

All faculty

Not at all	Slightly	Somewhat	Moderately	Extremely
1	2	3	4	5

16. For each of the following, rate how big of an impediment each is to achieving learning outcomes in your class
    a. Student preparation   1   2   3   4   5
    b. Student aptitude   1   2   3   4   5
    c. Student engagement/motivation   1   2   3   4   5
    d. Class size is too large for effective pedagogy 1   2   3   4   5
    e. TA support is not enough   1   2   3   4   5
    f. Classroom is not structured/equipped for effective pedagogy
            1   2   3   4   5
    g. Free response _____

Extremely worse	Worse	No change	Better	Extremely better
1	2	3	4	5

17. For each of the following, indicate if the item has changed since you have been teaching the class or since the last review.
    a. Student preparation   1   2   3   4   5
    b. Student aptitude   1   2   3   4   5
    c. Student engagement/motivation   1   2   3   4   5
    d. Class size is too large for effective pedagogy 1   2   3   4   5
    e. TA support is not enough   1   2   3   4   5
    f. Classroom is not structured/equipped for effective pedagogy
            1   2   3   4   5
    g. Free response _____
18. The following changes occurred since the last review. For each, indicate if the item has impacted your ability to achieve course and programmatic objectives.
    a. Furloughs/economic downturn   1   2   3   4   5
    b. Reduction in TA allocations 1   2   3   4   5
    c. Human development merger into human ecology 1   2   3   4   5
    d. Human ecology merger into the CHEDDAR cluster 1   2   3   4
            5
    e. Retirements 1   2   3   4   5
    f. New hires 1   2   3   4   5

Preparatory subject matter required for HD majors:

Two courses from: Anthropology 1, 1Y, 2, or 15   *8-9*

One course from: Biological Sciences 2A, 10, 10V, Microbiology 10, or Neurobiology, Physiology, and Behavior 12 3-5

One course from: Molecular and Cellular Biology 10 or Biological Sciences 101   4

One course from: History 17A, 17B, 72A, 72B, or Political Science 1   4

Two courses from: Philosophy 5, 15, 30, 31, 32, or 38   8

One course from: Neurobiology, Physiology, and Behavior 10, 101, or Psychology 101   3-5

Psychology 1   4

One course from: Psychology 41 or Sociology 46A and 46B, or Statistics 10 or 13 or 13V 4-9

Strongly disagree	Disagree	Neither disagree or agree	Agree	Strongly agree
1	2	3	4	5

19. Students currently take between 38 and 47 units of non-major preparatory course work across their first two years, before beginning their HD course work in their third year. See required pre-requisite courses above.
    a. This is a reasonable **number** of preparatory units _____
    b. Students should take fewer preparatory units of Anthropology_____
    c. Students should take fewer preparatory units of Molecular and Cellular Biology_____
    d. Students should take fewer preparatory units of Philosophy_____
    e. Students should take fewer preparatory units of NPB_____
    f. Students should take fewer preparatory units of psychology_____
    g. Students should take **more** preparatory units _____
        i. If you agree, please indicate which you would add (e.g., Introductory Human Development course)

        _____
        _____

    h. This is a reasonable **timeline** for beginning HD coursework _____
    i. Students should be beginning HD course work **sooner** than they currently do _____
    j. Students should be beginning HD course work **later** than they currently do _____
    k. Pre-requisite course work prepares students to be successful in HD courses. _____

Depth subject matter required for HD majors:

Life Span: Human Development 100A, 100B, 100C

Research Methods: Human Development 120

Biological Processes: one course from: Biological Sciences 101†, Human Development 117, Nutrition 111AV, or Psychology 121

Social-Cultural Processes: one course from: Human Development 102, 110, 130, or 160

Cognitive Processes: one course from: Human Development 101, 103, 132, 161 or 163

Practicum: one course from: Human Development 140-140L, or 141 or 142 or 143

Restricted Electives: five additional courses from HD or approved elective list

Strongly disagree	Disagree	Neither disagree or agree	Agree	Strongly agree
1	2	3	4	5

20. The HD curriculum provides students with the necessary background to pursue their **career goals**. _____

21. The HD curriculum provides students with the necessary background to pursue their **educational goals**. _____

22. The courses offered reflect the current field of Human Development. _____

23. Critical Human Development courses are missing from the curriculum. _____
    a. If you agree with the above statement, please list

    _____
    _____

24. The curriculum offers the appropriate amount of flexibility such that students can chose the course work they want, while still achieving the HD learning objectives _____
    a. The curriculum should offer more flexibility in the core (e.g., require two out of the three A, B, C lifespan courses) _____
    b. The curriculum should offer more flexibility in non-core courses (e.g., require 3 HD courses rather than require 1 biological, 1 socio-cultural, 1 cognitive)

       _____
    c. The curriculum should offer less flexibility (e.g., all students should be required to take the same courses). _____
25. Comments on flexibility of course offerings.

    _____
    _____

BSLA LEARNING OUTCOMES - 6.19.2017

1. Communication and design representation:
   a. Communicate about landscapes through written, oral, and graphic means
   b. Employ 2D and 3D landscape visualization both by hand and digitally
   c. Apply professional conventions in the production of construction documents

2. Landscape Architecture history/theory:
   a. Identify major values and theories that drive landscape design
   b. Situate landscape architecture in the context of western and non-western traditions
   c. Apply theory and research methods to investigate new directions in landscape architecture

3. Application/manipulation of landscape media:
   a. Model and manipulate terrain to produce grading and drainage plans
   b. Understand the role of ecology in the planning and design of built landscapes
   c. Apply appropriate materials and construction practices to particular sites
   d. Incorporate appropriate planting palettes into landscape plans

4. Design process:
   a. Analyze all relevant characteristics of a site and its context and determine priorities
   b. Identify and involve diverse stakeholders, collaborating across disciplines as necessary
   c. Creatively plan and design sites at a range of scales so as to meet identified goals
   d. Work iteratively through the creative design process, responding to feedback and self-reflecting on progress

BSLA CURRICULUM MAPPING

COURSE	1A	1B	1C	2A	2B	2C	3A	3B	3C	3D	4A	4B	4C	4D
1	I	I		I	I	I						I		
2	I	I		I	I									
3	I			I	I									
21	I	I/P	I										I	I

23	I	P											I	I
30	P		P	P									I	
50	P				P		I/P							
60	P		P/D	I		I	P/D		I	I	P	P	P	P
70	P	P/D			P		I				I	I	P	I
102				P	P	P/D								
120	P/D	D												
150	P/D	D							D			P	P	P
160			P/D						P/D	P	P		P	P
161	P/D		D						D	P/D				
170	P/D	P/D									P	P	P	P
171	P/D	P/D				P					P	P	P	P
182	D	D				P	P	P	P	P	D	D	D	D
183	D	D				P	P	P	P	P	D	D	D	D
184	D	D				D	D	D	D	D	D	D	D	D
190				P/D	P/D	P/D								

I = introduced; P = Practiced; D = Demonstrated

BSLA CURRICULUM MATRIX

	EMERGING (I)	DEVELOPING (P)	COMPETENT (D)
1. Communication and design representation	1, 2, 3, 21, 23	21, 23, 30, 50, 60, 70, 120, 150, 160, 161, 170, 171,	60, 70, 120, 150, 160, 161, 170, 171, 182, 183, 184
2. Landscape Architecture history/theory	1, 2, 3, 60	30, 50, 70, 102, 171, 182, 183, 190	102, 184, 190
3. Application/manipulation of landscape media	50, 60, 70	50, 60, 160, 161, 182, 183	60, 150, 160, 161, 184
4. Design process	1, 21, 23, 30, 70,	60, 70, 150, 160, 170, 171	182, 183, 184

BSLA LEARNING OUTCOMES ASSESSMENT

EMERGING - Learning outcomes at the emerging phase of our curriculum are evaluated through the portfolio review process required to be admitted into the Landscape Architecture major. Faculty members of our curriculum committee are charged with reviewing student portfolios. At the end of the winter quarter of sophomore year, students are required to submit a portfolio that shows emerging skills in the four outcomes listed. Students at this point must have completed the following coursework: LDA 1, 2, 3, 21, 30, 50, and 70, which provide an introduction to each of our four learning outcomes.

In addition, Lecture+Lab courses (LDA 21 and 70) hold an open house at the end of their courses to allow faculty and guests to review emerging student learning outcomes. A rubric is provided for all faculty and guest reviewers to assess emerging skillsets.

DEVELOPING - Developing student skill sets are evaluated regularly by the LDA curriculum committee. The committee include 3-4 faculty and continuing lecturers and periodically reviews curriculum content of our LDA major. This committee meets monthly to assess student learning outcomes and make suggestions for curriculum revisions.

In addition, studio courses (LDA 160, 170, 171, 182 and 183) are evaluated through a formal final review held at the end of the quarter, to allow faculty and guests to review the developing student learning outcomes. A rubric will be provided for future faculty and guest reviewers to assess developing skillsets.

COMPETENT - The final demonstration of competent learning outcomes by students is also evaluated at the formal final review held for the capstone studio project (LDA 102 and 184) in which all faculty and continuing lecturers are required to advise in the winter and spring quarters for senior LDA students. All faculty and continuing lecturers are attend the final review and reserving time for faculty discussion at the conclusion of these reviews. This provides an opportunity to reflect collectively on the range of skillsets demonstrated by students and consider any need for curriculum revision. A rubric was employed first in the 2017 spring quarter and will continue to be employed to evaluate student competency in the stated learning outcomes.

Technical landscape architecture skills (such as grading/drainage, building materials, and construction documentation) are both practiced and demonstrated in our technical sequence of courses LDA 60, 160, and 161; these courses are taught by registered landscape architecture lecturers with expertise to instruct and evaluate the professional level standards of our student learning outcomes.

Marine and Coastal Sciences

Program Learning Objectives

PLO 1: Understand and integrate fundamental principles, including
    A. development and evolution of modern ocean/earth systems
    B. distribution, diversity and abundance of marine life, and special adaptations to ocean environments
    C. impact of ocean circulation on climate, atmosphere and biosphere
    D. biogeochemical cycles, ocean productivity
    E. processes at terrestrial-marine interface and in the coastal zone
    F. anthropogenic impacts and management of ocean resources

PLO 2: Utilize the scientific method to answer questions and investigate the natural world

PLO 3: Successfully communicate scientific information through
    A. oral presentations
    B. papers/writing

PLO 4: Interpret and discuss scientific data, critically evaluate published scientific literature

PLO 5: Experience the marine environment in field, research or internship opportunities

PLO 6: Explain and evaluate major issues that are facing the modern marine environment

PLOs and Course Alignments

PLO	On campus, required			At BML, required			At BML, upper division							Main campus, heavily used	
	GEL/ESP 116	GEL/ESP 150A	GEL 150B	GEL/ESP 150C	Research/internship units	EVE 111	ESP 152	EVE 106	EVE 114	BIS 124	ETX 127	EVE 120	ESP 124	EVE 115	EVE 112
PLO 1A	I		X									X			
PLO 1B	I/P			I/P/D				X	I/P/D	P/D	I/P/D	X	I/P/D	I/D	I/P/D
PLO 1C	I/P/D	X		I/P/D			X					X		I	
PLO 1D	I/P/D	X		I/P/D			X					X	I/P/D	I/P/D	
PLO 1E	I/P				X		X	X	I/P/D	P/D	I/P/D	X	I/P/D	I/P/D	I/P/D
PLO 1F	I/P/D			I/P/D	X	X	X		I/P		I/P/D	X	I/P/D	I/D	I/P
PLO 2	I/P/D	X	X	I/P/D	X	X	X	X	I/P/D	I/P/D	I/P/D	X		I/P/D	I/P/D
PLO 3A	I/P/D				X					I/P/D	I/P/D				
PLO 3B	I/P/D	X	X	I/P/D	X		X	X	I/P/D	I/P/D	I/P/D		I/P/D	I/P/D	I/P/D
PLO 4	I/P/D	X	X	I/P/D	X	X	X	X	I/P/D	I/P/D	I/P/D	X	I/P/D	I/P/D	I/P/D
PLO 5	I/P			I/P	X		X	X	I/P/D	I/P/D	I/P/D	X	I/P/D	P	I/P
PLO 6	I/P/D	X	X	I/P/D	X	X	X	X	I/P/D	P/D	I/P/D	X	I/P/D	I/D	I/P

	Plant Biology
Biological Sciences 2A, 2B	
Plant Sciences 2	I
Chemistry 2A, 2B, 2C	I
Chemistry 8A, 8B or Chemistry 118A, 118B, 118C	I
Physics 1A,1B or Physics 7A,7B, 7C	I
Mathematics 16A, 16B or Mathematics 17A, 17B	I
Plant Sciences 120 Applied Statistics in Ag. Sci.	
Applied Biological Systems Technology 49 Field Equipment Operation	
Plant Sciences 49 Organic Crop Prod.	
Plant Sciences 100A, 100B, 100C	P
Plant Sciences 100AL, 100BL, 100CL	P
Plant Sciences 152 Plant Genetics	P
Evolution and Ecology 100 or Plant Biology 102 or 108 or 143	P
Plant Biology 117 or Plant Sciences 147 and 147L or Plant Sciences 150 or Environmental Hort	P
Plant Pathology 120 or Entomology 110 or Nematology 100 or Plant Plant Sciences 105 or 176	P
Plant Sciences 101	
Internship or research, must be approved by master advisor	

Crop Production Option
Plant Pathology 120, Entomology 110, Nematology 100 or Plant Sciences 105 or 176, Viticulture and Enolo
Soil Science 100
Plant Sciences 171
Agricultural and Resource Economics 15 or Economics 1A
Plant Sciences 110A, 110B, 110C, 112, 113, 114, 170A, 170B, Environmental Horticulture 125
ARE 130, Hydrology 110, Hydrology 124, PLS 158, Biotech 160, Soil Science 109

Plant Breeding and Genetics Option	
Biological Sciences 101	P
Plant Sciences 154	
Biotechnology 160	
Biotechnology 161B	
Plant Sciences 171	
Plant Sciences 110A, 110C, 112, 113, 114, 141, 158, 170A, 170B, Environmental Horticulture 125, 150, Int	

Postharvest Biology and Technology Option
Plant Sciences 172
Plant Sciences 173
Plant Sciences 174
Plant Sciences 196
Agricultural and Resource Economics 100A, 130, Food Science and Technology 107, 109, 131, Plant Scienc

Applic. to Specialization	Info. Retrieval	Scientifc Method	Critical Thinking	Agric. and Society	Communication	Careers
	I	I	I			
I						
		P	P			
				I		
				I		
P	P			P	P	I
P		P	P	P	P	
				P		
				P		
				X		
	D	D	D	D	D	D

re and Enology 118

Applic. to Specialization	Info. Retrieval	Scientifc Method	Critical Thinking	Agric. and Society	Communication	Careers
				P		
				P		
P						
				P		
X						
				P		
P						
P						
P						
P						
P						

ernational Agricultural Development 170, Agricultural P

Applic. to Specialization	Info. Retrieval	Scientifc Method	Critical Thinking	Agric. and Society	Communication	Careers
P						
P						
P						
P						
P				P		P

Appendix I: Undergraduate Student Retention, Success, and Graduation: Recommendations for Campus Action – Report of the Student Retention Advisory Committee

STUDENT RETENTION
ADVISORY COMMITTEE

Undergraduate Student Retention, Success, and Graduation:

Recommendations for Campus Action

Student Retention Advisory Committee
Members and Collaborators

Milton Lang
Associate Vice Chancellor Student Affairs
Co-Chair

Helen Schurke Frasier
Assistant Vice Provost for Undergraduate
Education
Co-Chair

Deborah Agee
Financial Aid

Letia Graening
International Academic Advising

Emily Prieto-Tseregounis
Student Affairs

Julie Agosto
Advising & Retention Services

Neil Huefner
Center for Student Affairs
Assessment

Timo Rico
Center for Student Affairs
Assessment

Sheri Atkinson
Community Resource Centers

Carol Hunter
Student Academic Success
Center

Maria Saldana-Siebert
College of Biological Sciences
Advising

Arnette Bates
Student Academic Success
Center

Erika Jackson
Budget & Institutional Analysis

Jim Schaaf
Council of Associate Deans

Kayton Carter
Center for African Diaspora
Student Success

Alex Lee
Associated Students of UC Davis

Abhay Singh Sandhu
Associated Students of UC Davis

Edward Caswell-Chen
Professor of Entomology &
Nematology

Brendan Livingston
Undergraduate Admissions

David Spight
College of Engineering Advising

Cirilo Cortez
Chicanx Latinx Retention
Initiatives

Mayra Llamas
Student Recruitment &
Retention

Dawn Takaoglu
International Academic English

Michelle Villegas-Frazier
Native American Retention
Initiatives

Kristin Dees
Center for Student Involvement

Elias Lopez
Office of the University Registrar

Brenna Dockter
College of Letters & Sciences
Advising

Alma Martinez
Chicana & Chicano Studies

Donna Vivar
College of Agricultural &
Environmental Sciences
Advising

Beth Floyd
College of Letters & Sciences
Advising

Hope Medina
Transfer Reentry & Student
Veterans Success Centers

Catrina Wagner
Student Housing

Brett McFarlane
Academic Advising

Tanya Whitlow
College of Engineering LEADR
Program

Annaliese Franz
Professor of Chemistry

Marco Molinaro
Center for Educational
Effectiveness

David Garrison
Office of the University Registrar

Wesley Young
Services for International
Students & Scholars

Robert Newcomb
Professor of Spanish &
Portuguese

**Undergraduate Student Retention, Success, and Graduation:
Recommendations for Campus Action**

**Student Retention Advisory Committee
University of California, Davis
June 2017**

Table of Contents

Table of Figures

**Undergraduate Student Retention, Success, and Graduation:
Recommendations for Campus Action**

**Student Retention Advisory Committee
University of California, Davis
June 2017**

Executive Summary

The University of California, Davis is committed to the success of our students from admissions through coursework and campus life, to graduation and beyond. In 2015, the Division of Student Affairs and the Office of the Vice Provost and Dean for Undergraduate Education formed the Student Retention Advisory Committee (SRAC). The goal of the SRAC is to provide a venue where members of the campus community can come together to discuss factors that contribute to student success and retention, and to develop short and long-term strategic plans for improving the academic success of our students. Mindful of the rapid enrollment growth among all student groups—particularly our first generation, low income, and historically underrepresented students—the SRAC had a keen focus on inclusively addressing the diversity of student needs.

To address the broad range of topics that impact UC Davis students, the SRAC's membership formed three sub-committees, each charged with evaluating and formulating actionable recommendations for the consideration of the larger committee on 4-5 of the following topical areas addressing student characteristics, academic experiences, and co-curricular opportunities:

- Academic intervention process
- Case management
- English language learners
- First-year student development
- Holistic student needs
- Impact of instruction
- International students
- Integration of curricular and co-curricular opportunities
- Internship space
- Involvement in undergraduate research
- Second-year student experience
- STEM retention
- Transfer students

In addition, the SRAC engaged campus partners to explore pathways to establishing UC Davis as a High-Impact Practice/Program (HIP) campus in alignment with the guidelines produced by the Association of American Colleges & Universities (AAC&U). A set of themes emerged from the reports of the three sub-committees and the HIP group. To build on the success of existing initiatives, to facilitate the expansion of programs with greater potential to impact student success, and to align and prioritize campus efforts with best practices, the SRAC puts forth seven actionable recommendations:

1. **ANALYSIS AND ASSESSMENT:** Significantly enhance the availability of, and access to, data analyses at the course and programmatic level in order to evaluate and support High-impact Practices and improve student learning.

2. **MANDATORY ADVISING & CASE MANAGEMENT:** Implement mandatory first-year academic advising for incoming freshman and transfer students; and establish a holistic case management system that partners faculty, advisors, counselors, special program staff, academic support staff, and students themselves to intentionally address student achievement and academic success.

3. **PROGRAM EXPANSION:** Continue to support, expand, and assess potentially High-Impact Programs, including the following:

- Biology Undergraduate Scholars Program (BUSP)
- Career Discovery Group (CDG)
- Center for Leadership Learning (CLL)
- First-Year Aggie Connections (FYAC)
- First-Year Seminars (FYS)
- Language & Writing Support Services
- Leadership in Engineering Advancement, Diversity and Retention (LEADR)
- Student Academic Success Center (SASC)
- Strategic Retention Initiatives & Centers (e.g. the African Diaspora, Chicanx & Latinx, and Native American Centers)
- Student Community Center Programs & Activities
- Student Living-Learning Communities (LLCs)
- Transfer Support Services
- Undergraduate Research Center (URC)
- University Honors Program (UHP)

4. **ASSESS ORIENTATION & WELCOME OPPORTUNITIES:** Engage campus stakeholders, together with partners from the National Orientation Directors Association (NODA), to ensure that UC Davis' orientation programs introduce incoming students to the intellectual, cultural, and social climate of our institution.

5. **FIRST-YEAR ENGAGEMENT:** Implement a required first-year academic experience for all incoming freshman and transfer students that leverages the strengths of both faculty and staff.

6. **INTERNATIONAL AND MULTI-LINGUAL STUDENT SUPPORT PROGRAMS:** Review admissions criteria and implement programs that provide support services to enhance the academic experiences of international and multi-lingual students.

7. **SECOND-YEAR PROGRAM EXPANSION:** Enhance and expand programs to continue student engagement via second-year experiences.

A cornerstone of the UC Davis campus is the shared commitment of staff and faculty to student success. The work of the SRAC highlights the need for improved communication regarding the programs, initiatives, and opportunities that influence the learning and academic achievements of our students, and ultimately, their journey across the commencement stage. The SRAC members and collaborators look forward to applying these recommendations and furthering an institutional culture focused on student success.

Introduction

The Student Retention Advisory Committee (SRAC) focused on serving the larger UC Davis community to identify current and future strategies that positively impact the rate at which students persist toward a degree and graduate. The committee is a collaborative body comprising faculty, students, and staff from the four undergraduate colleges, the Office of the Vice Provost and Dean for Undergraduate Education, and the Division of Student Affairs. The goals of the SRAC were threefold. First, to align the core values of the institutional mission—teaching, research, and service—to foster the academic success of all students. Second, to look comprehensively at the potential retention issues facing our students via the different lenses and perspectives offered by the various roles and responsibilities of committee members. Third, to provide actionable recommendations to campus leadership to implement or enhance student success-driven improvements guided by best practices.

The SRAC provided a venue where faculty, staff, and students from across disciplines came together to discuss factors that contribute to student success and retention, examine data, review internal processes impeding student success, and develop short-term and long-term strategic plans. During the 2015-2016 academic year, the committee discussed topics ranging from high-impact practices to retention at UC Davis; from the UC Budget Framework Implementation Initiatives to Academic Advising and Academic Probation/Subject to Dismissal (SD) processes; from the services and opportunities of the Student Academic Success Center (SASC) to the community-building efforts of the Student Affairs Strategic Retention Initiatives; and from the collaborations with the Council of Associate Deans (CAD) to the important role of financial aid in continued student success.

The committee quickly identified that communication across units is a disruptive challenge faced by the campus community. Specifically, members noted that on several occasions, the content shared during SRAC meetings was quite valuable for student success initiatives, yet the information had not been consistently or widely disseminated within and across partner units on campus. In addition, the committee observed that it is not always clear how to engage the correct campus units when problems are observed. For instance, committee discussions of various campus processes revealed a desire for a coordinating venue where frontline staff and faculty can partner to discuss these and similar concerns, and then to direct action requests to the appropriate entity such as the Council of Associate Deans (CAD), the Council of Deans (COD), or the Academic Senate.

Mindful of the need for a communication venue for collaboration among staff, faculty, and students, during the 2016-2017 academic year, the SRAC worked to support and enhance student success initiatives by examining data, reviewing internal processes that impede student

success, and preparing the enclosed report of recommendations to campus leadership aimed at enhancing retention and graduation rates. In the next section, we briefly highlight campus data that influenced the work of the SRAC.

Campus Retention and Graduation Data

Campus leadership, faculty, and staff are mutually committed to the success of our students from admissions through coursework and campus life, to graduation and beyond. To understand the campus landscape, the SRAC looked to Budget & Institutional Analysis to provide analyses reflecting both predictive graduation models based on admission characteristics, as well as campus achievement gap trends.

The four-year graduation rate of entering UC Davis freshman rose considerably from 43% in 2000 to 61% in 2012, but still lags behind several of our peer UC campuses (Irvine, Santa Barbara, Los Angeles and Berkeley). Figures 1-6 display the trend for the campus as a whole, as well as selected sub-groups. The black solid lines show the actual graduation rate over time while the grey dotted lines show what we would have predicted for that cohort based on their entering characteristics alone (high school GPA, SAT scores, college/division in which they started their program, residency, first generation status, sex, race/ethnicity, and Pell grant receipt).

Looking at actuals versus predicted rates helps the campus understand the degree to which increases in the completion rate over time have been a function of changing student characteristics (improved SAT scores, for example) versus an effect of campus efforts to increase graduation rates above and beyond what incoming characteristics alone predicted. It is clear from Figures 1-6 that if the campus wants the 2016 entering cohort to finish with a significantly higher graduation rate than the current prediction, we need to make concerted intervention efforts since the incoming characteristics alone suggest the students will finish at a rate similar to that of our latest graduation cohort. A few sub-populations even have predicted rates that are lower than the analogous group in the 2012 cohort, which can help us know where to focus our attention with the targeted efforts described below.

Actual & Predicted 4-Year Graduation Rates
for Selected Demographic Groups

Figure 1: All Students 4-Yr
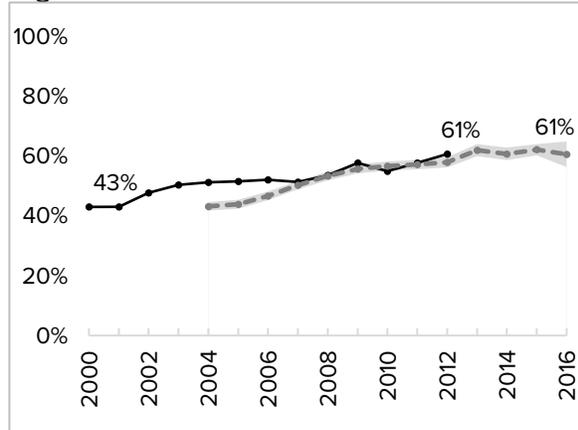
Figure 2: African American 4-Yr
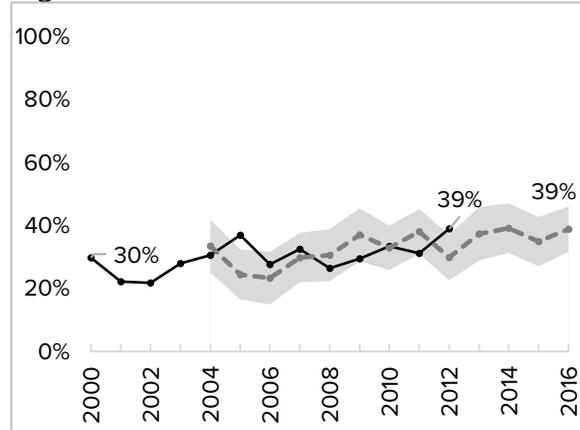
Figure 3: Hispanic 4-Yr
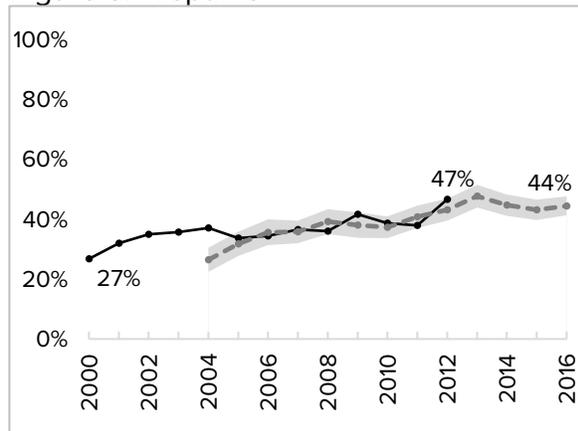
Figure 4: First Generation 4-Yr
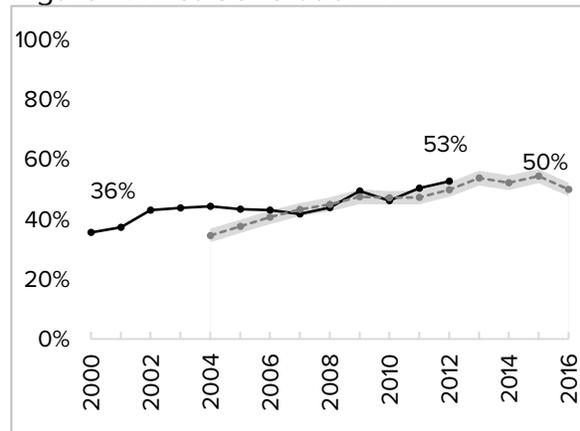
Figure 5: Pell Grant Recipients 4-Yr
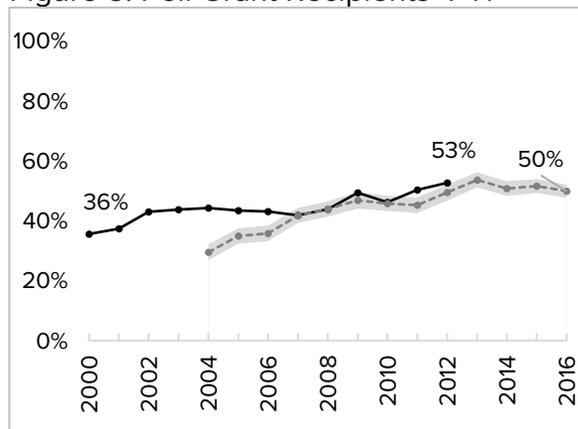
Figure 6: International
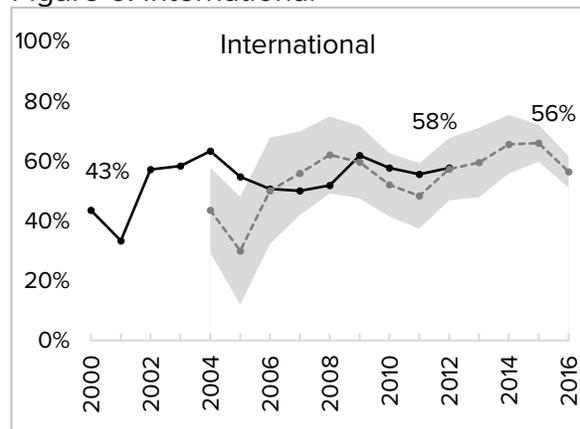
SOURCE: Budget & Institutional Analysis, Figures 1-6, 06/02/2017
NOTES: 1. Predicted rates are logistic regression models built on the latest data available when the cohort entered the university (i.e. the cohort that had entered four years earlier).
2. Black solid lines reflect actual graduation rates.
3. Grey dotted lines reflect predicted graduation rates based on the cohort's incoming student characteristics (SAT, GPA, college/division, residency, first generation status, sex, race/ethnicity, and Pell grant receipt.

Despite the fact that all groups have experienced improvements in their four-year graduation rates over the past 15 years, unfortunately the gaps in achievement between traditionally more and traditionally less advantaged groups are stubbornly persistent, as shown in Figures 7-10. White students are twenty-seven percentage points more likely to graduate in four years than black students (65% vs. 39%). Hispanic students are almost twenty percentage points less likely than white students to graduate in four years (47% vs. 65%).

The gaps along socioeconomic lines are smaller but still concerning: first generation students are 13 percentage points less likely to finish in four years (53% v. 66%) and students receiving a Pell grant are 12 points less likely to finish in four (53% vs 65%). To some degree these differences in outcomes are connected to differences in academic preparation. In the charts below, the trend in the achievement gap is plotted for selected sub-groups in dark blue. The dark gold line in Figures 7-10 plots the gap that remains after controlling for incoming academic characteristics (SAT, GPA, and AP credits). While the gaps are indeed reduced (they are generally cut in half) there still remains a persistent gap in the likelihood of finishing in four years that deserves our attention and best efforts at reducing.

Achievement gap data

Figure 7: Black/White 4-Yr Gap
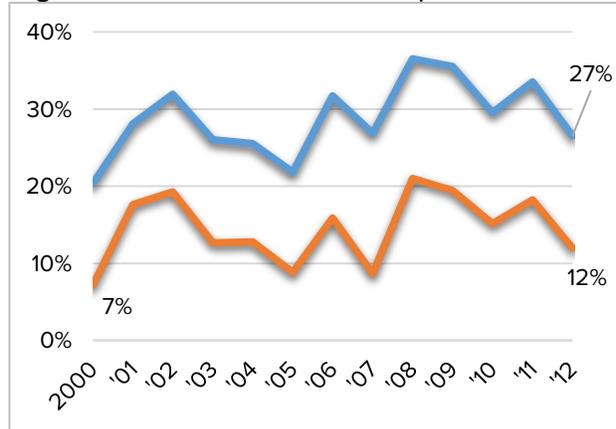
Figure 8: Hispanic/White 4-Yr Gap
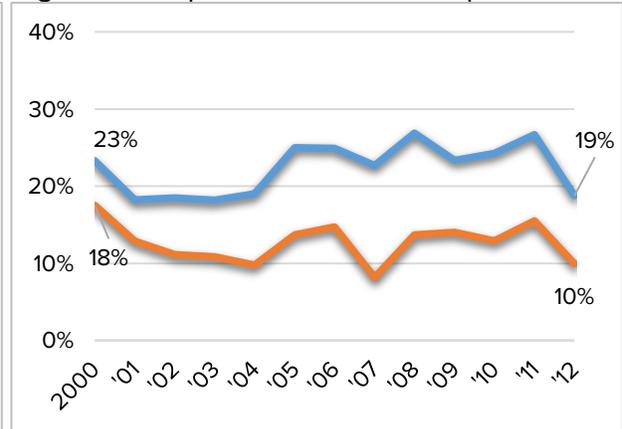
Figure 9: 1st Gen/Non-1st Gen 4-Yr Gap
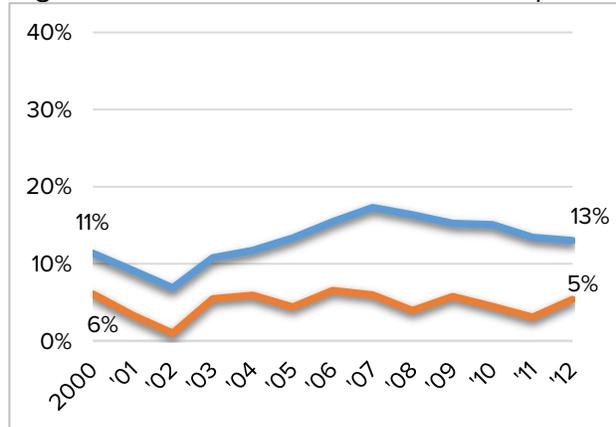
Figure 10: Pell/Non-Pell 4-Yr Gap
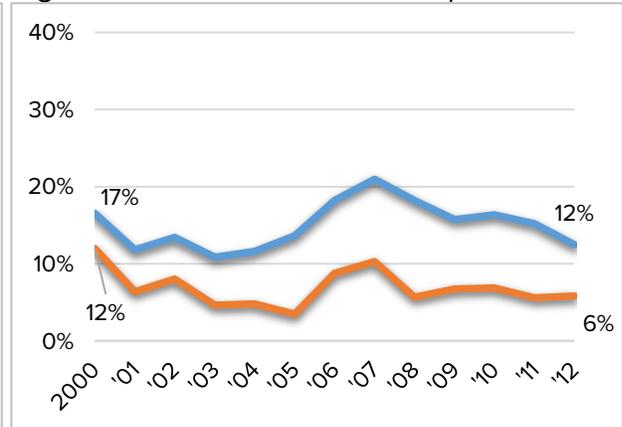
SOURCE: Budget & Institutional Analysis, Figures 7-10, 06/02/2017

NOTES: Dark blue lines represent the achievement gap between the two groups of interest.
Dark gold lines represent the gap that remains after controlling for SAT, GPA, and AP credits.

The predicted vs. actual data and the achievement gap data provided in Figures 1-10 provide an informational foundation, from which the campus can consider the recommendations of the SRAC in the context of retention, academic progression, engaged persistence, and graduation for UC Davis students.

Committee Approach

Since its formation in late-fall 2015, the SRAC has taken a collaborative approach to campus dialogue regarding the myriad issues that either impede or enhance student success. At the outset of the SRAC, the co-chairs introduced the guidelines from the Association of American Colleges & Universities (AAC&U) for High-Impact Practices/Programs (HIPs) as a lens through which to view and align the retention efforts of the campus. Guest speakers discussed the UC Systemwide Budget Framework Implementation Initiatives (BFI), efforts to build an Academic Advising community, the college and division approaches to and interpretations of the Academic Probation/Subject to Dismissal (SD) processes, the Council of Associate Deans (CAD), the First-Year Aggie Connections program, the First-Year Seminars program, the Student Academic Success Center (SASC), Student Financial Services, and the community-building efforts of the Student Affairs Strategic Retention Initiatives.

To address the broad range of topics that impact UC Davis students, in Fall Quarter 2016, the committee honed its focus by using the HIP lens to evaluate current campus programs in the context of a Start-Stop-Continue framework. Specifically, monthly meetings addressed practices and programs that should be continued, started, or stopped in order to positively impact retention, persistence, and student success. To capture these discussions in the form of recommendations regarding current programs, the SRAC formed three sub-committees to conduct in-depth evaluations, and to discuss, develop, and categorize recommendations. The sub-committees agreed to meet, at a minimum, once a month in order to develop a theoretical framework and prioritized list of recommendations. Each sub-committee evaluated campus programs and activities associated with 4-5 of the following topical areas addressing student characteristics, academic experiences, and co-curricular opportunities:

- Academic intervention process
- Case management
- English language learners
- First-year student development
- Holistic student needs
- Impact of Instruction
- International Students
- Integration of curricular and co-curricular activities
- Internship space
- Involvement in undergraduate research
- Second-year student experience
- STEM retention
- Transfer students

In preparing reports, and ultimately a presentation of their work, each sub-committee was asked to provide:

- An introduction and theoretical framework guiding the committee's recommendations and support of campus retention efforts on the specific topical areas;
- A summary of programs that exemplify success that the campus should consider expanding;

- Recommendations for new programs that the campus should consider;
- A prioritized overview of short and long term goals, including rationale for the prioritization; and
- Closing remarks regarding the importance of the sub-committee's recommendations and the anticipated impact on student success.

High-impact Practices

As previously noted, the SRAC collectively adopted the AAC&U lens of High-Impact Practices/Programs as the framework through which we moved forward with efforts and recommendations to enhance the persistence and graduation rates of our undergraduate students. The committee coalesced around the idea that the nationally accepted HIP guidelines would allow us to evaluate and, in some cases, develop high-touch programs that will enhance student success. HIPs are identified as such when students are involved and engaged in activities defined as "active learning practices." In addition, best practices suggest that the regular assessment and evaluation of HIPs allows students and campuses to be responsive to student learning and engagement needs. Examples of HIPs include, but are not limited to: First-Year Seminars, Living Learning Communities, service learning, undergraduate research with faculty, internships, and writing intensive courses. Participation in HIPs offers many benefits and meaningful outcomes for student success, such as expanded opportunities and interactions with faculty and peers, increased experience with diversity, greater frequency of feedback from faculty and staff, and the opportunity for students to work with their peers in small group settings. In addition, HIPs contribute to cumulative learning, increased retention, and increased student engagement. Appendix A provides an outline and guidance from the AAC&U regarding HIP best practices.

The SRAC recommends, as noted in recommendation #3, below, that the campus move forward with the implementation of a HIP model for UC Davis. It is critical that we identify the current HIP programs at UC Davis to ensure that they have the necessary high-impact infrastructure and assessment tools to successfully be identified as HIPs. Furthermore, the committee recommends that the campus explore additional opportunities to implement HIP across the campus where active learning, high engagement, and cumulative learning will produce beneficial outcomes for student retention and success.

Finally, the SRAC recognizes that every UC campus is a member of the AAC&U, and therefore has access to the guidance and best practices for implementing a HIP framework for programs and practices on the campus. The SRAC wants to see UC Davis demonstrate systemwide and national leadership through the adoption and implementation of the HIP model by intentionally supporting and advancing student retention and success programming.

Recommendations

The SRAC's membership of faculty, staff, and students from across the UC Davis campus sought to create opportunities for all committee members, and ultimately the broader campus community, to learn about the profound work that is currently taking place across the campus. The committee also acknowledges that while much work is being done, many opportunities are being missed due to lack of communication or unnecessary implementation of duplicative efforts.

As previously noted, the SRAC's work was ultimately distributed into three focused sub-committees. Following the completion of the work of these collaborative groups, the SRAC reconvened for presentations of each sub-committee's work. The Co-Chairs wish to publicly acknowledge the valuable and thoughtful work that is reflected in the reports of the three sub-committees, enclosed in full with this report (see pages 43, 53, and 62).

From these reports seven themes overlapped across at least two—or in several cases, all three—of the sub-committee reports. The SRAC co-chairs, together with the six co-chairs of the three sub-committees, aligned the seven themes with the recommendations offered by each sub-committee. Seven actionable recommendations emerged, each of which—if implemented—will build on the success of existing initiatives, facilitate the expansion of programs with greater potential to impact student success, and align and prioritize campus efforts with best practices for HIPs. These seven recommendations represent the first phase of actionable, collaborative intervention to improve student retention, persistence, and success, and the SRAC encourages the UC Davis community to view them as part of a living document with enduring relevance for meeting the success, retention and graduation needs of our students.

1. **ANALYSIS AND ASSESSMENT:** Significantly enhance the availability of, and access to, data analyses at the course and programmatic level in order to evaluate and support High-impact Practices and improve student learning.

   To make meaningful, measurable improvements to retention, time to degree, and student success, we need to create an accessible source for consistent, accurate data and analysis that is communicated throughout campus. Improving programs, retention, persistence, and graduation rates and assessing the effectiveness of high-impact practices begins and ends with accurate data. The lack of consistent data accessible across campus makes it difficult to define accurately and completely the factors that negatively impact retention and persistence. In addition to the data

provided in Figures 1-10 by our campus partners in Budget & Institutional Analysis, Appendices B, C, and D offer glimpses of the types of data that could be produced and utilized to inform faculty and program directors regarding the efficacy of instruction and programmatic workshops.

Transfer data: We currently have many sources for transfer data, which have created inconsistencies in how we report on our transfer students, ultimately impacting the kinds of programming and services we believe we should be developing and offering. Our short term goal is to have a consistent process for requesting data that will provide the same information for any campus colleague to access.

Assessment of high-impact programs & practices: Design assessments, collect and analyze data, and continue to improve current programs known to be high-impact educational practices. UC Davis offers several programs that literature documents as high-impact educational practices, but we do not have data or analysis on their delivery. There are currently pockets of local data for both Student Affairs and Undergraduate Education. Pilot studies should be evaluated to determine scalability and next steps.

Academic program assessment: Continue to assess and evaluate data to determine impact on retention, student satisfaction, education of the whole student, performance in the course series (e.g. Chemistry 118 A, B, & C), in upper division courses, and time to degree. Then, establish a data sharing system from these assessments.

2. **MANDATORY ADVISING & CASE MANAGEMENT:** Implement mandatory first-year academic advising for incoming freshman and transfer students; and establish a holistic case management system that partners faculty, advisors, counselors, special program staff, academic support staff, and students themselves to intentionally address student achievement and academic success.

Expanding mandatory advising, success coaching, financial literacy and tutoring will help incoming students transition to UC Davis. A holistic case management system will put the student at the center, facilitate effective and collaborative use of available resources, and provide a way for the campus to monitor student progress and address challenges and barriers.

The primary goals for centralized data collection, analysis, and dissemination are to support students across social, academic, cultural and personal domains; to identify individual student needs and interests, and to code results in a system; to facilitate strategic, timely and personalized handoff between support team members; and to foster communication between students and their holistic teams to enhance engagement. The proposed collaboration between faculty, advisors, and student support services, combined with the enhanced communication between campus resource units will improve student retention, persistence, and learning as well as student self-efficacy and agency.

Successful implementation of mandatory advising and case management will, in the short term, require the establishment of Sub-committees to (a) research and create in-depth operational and technical requirement specifications for a holistic system; and (b) research potential internal and external vendors and make recommendations to a broader budget

authority stakeholder group. The SRAC recommends that the campus identify an implementation task force with an assessment Sub-committee to create an assessment plan for the new system. In the longer term, perhaps 2-5 years, we envision integration of case management software with broader campus-wide data collection and reporting system, and review of broader assessment and operational data that may suggest changes to original specifications.

3. **PROGRAM EXPANSION:** Continue to support, expand, and assess potentially High-Impact Programs (HIPs), including the following:

- Biology Undergraduate Scholars Program (BUSP)
- Career Discovery Group (CDG)
- Center for Leadership Learning (CLL)
- First-Year Aggie Connections (FYAC)
- First-Year Seminars (FYS)
- Language & Writing Support Services
- Leadership in Engineering Advancement, Diversity and Retention (LEADR)
- Student Academic Success Center (SASC)

- Strategic Retention Initiatives & Centers (e.g. the African Diaspora, Chicanx & Latinx, and Native American Centers)
- Student Community Center Programs & Activities
- Student Living-Learning Communities (LLCs)
- Transfer Support Services
- Undergraduate Research Center (URC)
- University Honors Program (UHP)

Learning communities are consistently identified in the literature as high-impact opportunities to support student learning, engagement, and success. UC Davis offers several programs that current literature indicates are high-impact educational practices, but as a campus, we do not have consistent data or analysis on them. There are currently pockets of local data in both Student Affairs and Undergraduate Education. The SRAC recommends that the campus invest to build the capacity of Budget & Institutional Analysis, the Center for Educational Effectiveness, and the Center for Student Affairs Assessment to design assessments, collect and analyze data, and continue to improve current programs known to be high-impact educational practices in order to support evidence-based decisions that guide the expansion of these programs. Pilot studies should be evaluated to determine scale and next steps.

Additional recommendations include:
- Creating an annual "High-impact Educational Practices Conference" to raise awareness of literature-based high-impact practices, share examples of campus programs and assessment, identify new opportunities, and create collaborations.
- Collecting a comprehensive list of activities, programs, services, including scale of participation for local high-impact educational practices, surveying the data analysis needs for existing programs, and creating a campus database of HIPs.
- Collecting and analyzing card swipe and other data to provide formal assessment and to determine whether something is a high-impact educational practice at UC Davis.

4. **ASSESS ORIENTATION & WELCOME OPPORTUNITIES:** Engage campus stakeholders, together with partners from the National Orientation Directors Association (NODA), to ensure that

UC Davis' orientation introduces incoming students to the intellectual, cultural, and social climate of our institution.

In a parallel effort to the work of the SRAC, campus partners from the Council of Associate Deans, Undergraduate Education, and Student Affairs also identified Orientation and Welcome Week as areas where enhancements or changes could result in students being more academically prepared and connected to key people and resources on campus. The primary objective and desired outcome of an external review of UC Davis' new student orientation and welcome practices will be to afford incoming students with a better understanding of academic structures, policies, and regulations of our campus prior to their first fall quarter. In addition, the SRAC and our campus partners desire to see an increase in self-efficacy and agency related to the use of resources and self-service tools.

The assessment by external partners from NODA will help the campus determine key practices, alignment, approaches, and timing to adapt as appropriate, and to create an implementation plan. In the short term, the SRAC recommends the campus focus on the opportunities to enhance current orientation practices, the feasibility of implementing a welcome week for all incoming students (in lieu of multiple orientations spread out over the summer), and to ways significantly enhance the campus pre-arrival informational and instructional processes. In addition, the SRAC supports the exploration of best practices for incorporating demographic specific orientations into the larger welcome activities of the campus, for instance: international students, re-entry and veteran students, transfer students, University Honors Program students, EOP students, and countless others. In the longer term, the SRAC seeks to align the efforts of orientation, welcome, First-Year, and advising activities to ensure that ALL UC Davis students enter our institution on a path that will lead to their retention, persistence, and graduation success.

5. **FIRST-YEAR ENGAGEMENT:** Implement a required first-year academic experience for all incoming freshman and transfer students that leverages the strengths of both faculty and staff.

Research highlights the impact and value of introducing key curricula for success as early as possible for all students, and it indicates these experiences are even more impactful for first generation, low SES, and racially diverse populations. The first-year academic experience should help students to build critical academic success skills, make academic and social connections,

explore and experience campus resources, and model the shared faculty/staff partnership. The SRAC recommends that the campus focus its efforts to create a mandatory transition seminar for those who do not participate in an incoming freshman or transfer bridge program. To better serve our first-year students, services and programs must be developed to address the real transition experiences of students, being mindful of the distinct and diverse needs of incoming freshman and transfer students.

Desired outcomes for required first-year engagement include, but are not limited to, student learning gains on key factors proven to impact student success, clear understanding of importance of curricular and co-curricular learning, improved persistence of students from their first to their second year, and fewer students in negative academic standing. The successful implementation of a required first-year engagement for all incoming students will, in the short term, necessitate the continued expansion of the First-Year Seminar and First-Year Aggie Connections programs. In addition, the SRAC recommends that the campus establish a First-Year Experience Task Force (FYETF) to explore different models and to assess campus capacity. The FYETF will be charged with drafting a proposal, which will include curriculum development, costs and personnel needs. In particular, the SRAC recommends that campus partners consider all options to offer credit-bearing First-Year Seminars that utilize and leverage the strengths of both faculty and staff. The findings and recommendations of the FYETF will be presented to campus administration and the Academic Senate for consultation and implementation.

6. **INTERNATIONAL AND MULTI-LINGUAL STUDENT SUPPORT PROGRAMS:** Review admissions criteria and implement programs that provide support services to enhance the academic experiences of international and multi-lingual students.

The enrollment and success of international and multi-lingual undergraduates is a campus imperative. The SRAC recognizes the importance that these undergraduates play in creating an educational environment reflecting global diversity that is necessary to ensure that California residents obtain the type of education that will serve them well, not only in their first job, but also for the duration of their careers.

In 2017, more than half of the incoming freshmen are expected to be multi-lingual. Beyond the 2020 Initiative's goal to grow the international student population, this fact reflects the growing diversity of the State of California. Our top priority must be to offer a learning and teaching environment that values international and multi-lingual learners, and promotes a greater appreciation for the perspective and skills these students bring to enrich our campus. Most critically, we need to shift the campus culture from one that views this population as remedial to one that recognizes the talents and perspectives they contribute to an educational environment that seeks to provide global education for all.

The SRAC recommends that UC Davis significantly expand Summer Start, the pre-matriculated freshman program for international and multi-lingual students who seek to gain confidence and get ahead of the UC Davis writing and general education requirements. Additionally, implementation of the following actions is necessary to support international and multi-lingual student success:

- Raise TOEFL minimum requirements for admission;
- Require students with lower TOEFL scores to attend the Summer Start program;
- Consistent with Recommendation #1, gather and analyze data on international and multi-lingual student graduation rates, GPA, and retention/persistence rates;
- Evaluate best practice models for transfer student testing in ESL and other relevant courses; and
- Examine the desirability and feasibility of eliminating the TAG program for international students coming from community colleges.

As previously stated, in the short term, the UC Davis campus must gather more data on graduation rates, GPA, and retention/persistence rates for our international and multi-lingual students. The lack of data makes it difficult to define the issues impacting retention and persistence accurately and completely. In the longer term, the SRAC urges Undergraduate Admissions to find a way to balance enrollment targets with a process that will screen out students that do not have the English language skills to succeed at the University with reasonable support.

7. **SECOND-YEAR PROGRAM EXPANSION:** Enhance and expand programs to continue student engagement via second-year experiences.

Several second-year opportunities exist on the UC Davis campus that are not formally identified or strategically linked. Examples include the University Honors Program, the BUSP program, the Strategic Retention Initiative(s), the financial readiness course offered to students in EOP, GSP, STEP and TRIO programs, and the Guardian Scholars Program. The SRAC recommends that the campus take steps to intentionally expand and promote second-year programmatic offerings for our incoming freshman and transfer students. Specifically, the campus should enhance opportunities for faculty and staff to transition students from first-year engagement into second-year engagement in research, internships, and campus involvement.

The successful implementation of second-year programs allows students the opportunity to persist beyond the first year by connecting them to and engaging them in "next step" programs. For instance, in the short term, the SRAC recommends that the UC Davis campus establish non-residential learning communities for students. Non-residential learning communities allow a group of students from the same major—or with similar interests or student characteristics—to take two to three of the same courses together, thereby emphasizing curricular cohesion and relationships among the students and/or the faculty. Similar to the faculty learning communities established by the Center for Educational Effectiveness, these student learning communities have the potential to provide students and faculty alike with many benefits. The SRAC recommends the intentional creation of learning community opportunities to bring together students by major or academic interest, for EOP students, for international

students, for URM students, for first-generation students, for students from low-income backgrounds, and for additional groups defined in consultation with ASUCD, faculty, and staff. The anticipated retention benefits of student learning communities include, but are not limited to:

- Improved student learning and retention;
- Opportunities to offer interdisciplinary courses;
- Academically-based social networks among peers;
- Promotion of community building, identity development, civic engagement, and the mobilization of agency;
- Increased student involvement in learning and college life; and
- Increased opportunities for both faculty-student interaction and faculty-to-faculty interaction and collaboration thereby leading to leading to faculty development.

Next Steps

To ensure the SRAC recommendations have the best opportunity to be implemented, the committee recommends the campus charge an implementation team to be guided by the current co-chairs of the advisory committee—Milton Lang and Helen Schurke Frasier. The goal of the SRAC implementation team will be to strategically assess recommendations and to develop a team consisting of faculty, staff and students that will work with the necessary campus partners to make the recommendations a reality. It will also be the goal of the implementation team to provide quarterly updates to the senior administration regarding their progress, as well as the impact these efforts are having on student success, retention and overall graduation rates.

Sub-Committee
Reports & Appendices

NOTES:

Sub-committees 1, 2, and 3 prepared the reports that follow. Questions regarding the content of these reports may be directed to the co-chairs of the SRAC, Milton Lang and Helen Schurke Frasier, or to the respective co-chairs listed for each sub-committee.

The primary SRAC recommendation advocates for additional support, access to, and dissemination of useful data reports and analyses to campus constituents to advance our retention efforts. Appendices B, C, and D are sample reports, prototypes, and analyses currently being produced by Budget & Institutional Analysis, the Center for Educational Effectiveness, and the Center for Student Affairs Assessment intended to model our current reporting capabilities and model their value. It is not the purpose of this report to provide detailed explanation or discussion regarding the interpretations, applications or uses of these data.

- For questions regarding the content, methodology, or proposed uses of the example analyses shared in Figures 1-10 of the main report, or Appendix B: Examples of Data from Budget & Institutional Analysis, page 47, please contact:
  Erika Jackson
  Assistant Director, Budget & Institutional Analysis
  edjackson@ucdavis.edu

- For questions regarding the content, methodology, or proposed uses of the example analyses shared in Appendix C: Examples of Data from the Center for Educational Effectiveness, page 57, please contact:
  Marco Molinaro
  Assistant Vice Provost for Undergraduate Education
  and Director, Center for Educational Effectiveness
  mmolinaro@ucdavis.edu

- For questions regarding the content, methodology, or proposed uses of the example analyses shared in Appendix D: Examples of Data from the Center for Student Affairs Assessment, page 62, please contact:
  Timo Rico
  Executive Director, Center for Student Affairs Assessment
  terico@ucdavis.edu

Student Retention Committee (SRAC) Sub-committee 1
Executive Summary

Co-Chairs: Arnette Bates, Student Academic Success Center
                              Brett McFarlane, Academic Advising

Membership:

Deborah Agee, Financial Aid
Julie Agosto, Advising & Retention Services
Sheri Atkinson, Student Community Centers
Cirilo Cortez, Chicanx Latinx Retention Initiatives
Kristin Dees, Student Involvement
Brenna Dockter, Letters & Sciences Advising
David Garrison, Office of the Registrar
Alex Lee, ASUCD

Brendan Livingston, Undergraduate Admissions
Mayra Llamas, Student Recruitment & Retention
Elias Lopez, Office of the Registrar
Maria Saldana-Seibert, CBS Advising
David Spight, Engineering Advising
Donna Vivar, CA&ES Advising

Charge:

        Sub-committee SRAC1 was charged with reviewing and making recommendations to the broader student recruitment and retention committee on the following areas:

- First-year student development
- Holistic Student needs
- Case management
- Academic intervention process

Theoretical framework:

        Sub-committee work was guided by foundational research over several decades aligned with the Sub-committee charge, namely:

- The importance of early, proactive, and purposely integrative experiences.
- Early connections to people and resources that matter to student success.
- Holistic advising that incorporates prescriptive, developmental, and holistic functions is essential.
- Strengths-based and culturally relevant holistic approaches to service delivery are most effective.
- Frequency and timing of interactions and interventions matter.

        Student success research has consistently identified that programming, structures, policies, processes, and systems aligned with these important findings create important levers for student persistence. In addition, research point to the cumulative impact when considering activities that support student success. More is better, and programming that is intentionally layered and sequenced across a broad spectrum of services is cumulatively more effective. Finally, these findings have a compounding effect on those student populations who are considered most vulnerable in our institutions, namely those from low socioeconomic

backgrounds, first-generation students, underrepresented minorities, and those students who come from lower performing high schools.

Practices to Continue or Expand

The campus has an array of programs and services to support students and enhance their undergraduate experience. As research indicates, impact programs are most effective and students who engage and become a part of the campus community are more likely to stay and complete their degrees. Such programs at UC Davis include cohort-based programs like First-Year Aggie Connections, First-Year seminars, Career Discovery Group, University Honors Program, Foundations for Success, LEADR, BUSP and different learning communities. Special population- and community- focused retention efforts that address cultural needs and foster a sense of belonging are important to student success and should be maintained. Another element critical to student success, especially for first-year students, is getting connected to resources and people who are pivotal to their success. Mandatory advising, success coaching, financial literacy and tutoring are recommended services to expand to help students transition.

Practices to Create

Below please find recommendations from the SRAC1 Sub-committee (prioritized and in order). Short and long term proposed goals have been included as appropriate.

Create a case management system that partners faculty, advisors, counselors, special program staff, academic support staff and students in intentionally helping students successfully achieve their goals. Such a system involves wraparound student services, holistic coaching and advising, early alert, and select interventions.
Rationale:
- A holistic case management system puts the student at the center and facilitates effective and collaborative use of available resources.
- A holistic case management systems provides a way for campus officials to monitor student progress and address challenges and barriers.

Goals:
- Support students across social, academic, cultural and personal domains.
- Identify individual student needs and interests and code results in system.
- Facilitate strategic, timely and personalized handoff between support team members.
- Foster communication between student and team to enhance engagement.

Desired Outcomes:
- Collaboration between faculty, advisors and student support services.
- Enhanced communication between campus resource units.

- Improved student retention, persistence, and learning.
- Improved student self-efficacy and agency.

Short Term Goals (within 1-2 years):
- Sub-committee to research and create in depth requirement specifications of system (operational and technical).
- Sub-committee to research potential vendors (internal and external) and make recommendations to broader budget authority stakeholder group.
- Implementation task for identified.
- Assessment Sub-committee identified to create assessment plan for new system.

Longer Term Goals (2-5 years):
- Integration of case management software with broader campus-wide data collection and reporting systems.
- Review of broader assessment and operational data that may suggest changes to original specifications.

Create a centralized advising center/structure for students.
Rationale:
- Students report confusion, frustration, and inconsistent practices between a variety of advising offices across campus. Academic advising and academic support are dispersed throughout campus
- Over 50% of all UCD students make changes between colleges/divisions; an even higher percentage change majors (many multiple times).
- Advising resource FTE is not maximized across campus due to structural and other assigned work duties
- Advising in many units is not supervised by anyone with advising expertise or qualifications.

 Goals:
- Students have one place to go when they have academic advising or advising support needs.
- Staff highly cross trained resulting in improved service to students and availability of advisors.
- Advising culture becomes more holistic, combining academic and co-curricular advising

Desired Outcomes:
- Advising messages are consistent and coordinated.
- Efficient delivery of advising services; students can go to one place or one advisor for multiple needs.
- Advising resources are allocated more efficiently across campus, better allowing for flux in majors/colleges/support units.

Short Term Goals (1-2 years):
- Feasibility study to determine what would be required as far as space, resources, training, reporting alignment changes.
- Explore potential initial models and structures that may serve subpopulations (first-year students, all students in one college, et al).

Long Term Goals (2-5 years):
- Dependent on outcomes and decisions tied with short term goals.

Re-tool orientation and welcome week.
Rationale:
- Academic partners have identified orientation and welcome week as areas where enhancements or changes could result in students being more academically prepared and connected to key people and resources on campus.

Goals:
- Outside review process for new student orientation and welcome week, to include pre-arrival processes.
- Determine key practices, alignment, approaches, and timing to adapt (as appropriate).
- Enact a plan to implement change (as appropriate).

Desired Outcomes:
- Students have better understanding of academic structures, policies, regulations, and contacts prior to fall quarter.
- Incoming students show increase in self-efficacy and agency related to resource utilization and use of self-service tools.

Short Term Goals (1-2 years):
- Outside review of orientation, welcome week, and pre-arrival processes.
- Survey students regarding longer term impacts tied with pre-arrival processes.
- Task force to identify most impactful suggested changes (if any) to current practice.

Long Term Goals (2-5 years):
- Dependent on results of short term goals.

Implement a required first-year academic experience utilizing both faculty and staff.
Rationale:
- Research highlights the impact and value of key success curricula being introduced as early as possible for all students.
- Research indicates these experiences are even more impactful for 1st generation, low SES and racially diverse populations.

Goals:
- Build critical academic success skills.

- Make academic and social connections
- Explore and experience campus resources.
- Model the shared faculty/staff partnership.

Desired Outcomes:
- Student learning gains on key factors proven to impact student success.
- Clear understanding of importance of curricular and co-curricular learning.
- Improved persistence from year 1 to 2.
- Fewer students in negative academic standing.

Short term:
- Continue and expand FYE experiences through FYAC and FYS.
- Establish first-year experience task force to explore different models and to assess campus capacity
- Draft proposal, including curriculum development, costs and personnel needs
- Present to appropriate campus administrative and faculty committees and groups

Long Term:
- All dependent on outcomes and decisions tied with short term goals
- Target resources to implement credit-bearing first-year seminars for all new students, utilizing faculty and staff to teach

Expand summer bridge programming and opportunities.
Rationale:
- Current summer bridge opportunities are limited for incoming freshmen and non-existent for new transfer students.
- Research suggests summer bridge programs are effective in helping students transition and successfully complete their first year.

Goals:
- Introduce students to the academic rigor at UC Davis and strengthen preparation
- Provide opportunities for students to make meaningful academic and social connections
- Introduce students to university expectations, support services and campus resources
- Help students develop critical academic skills, build confidence and develop metacognitive strategies

Desired Outcomes:
- Students complete preparatory or introductory coursework prior to fall quarter enrollment.
- Students can navigate UC Davis systems and gain comfort with college faculty, staff, and students
- Students have increased college knowledge and social capital.
- Greater persistence and degree attainment. Less time to degree

Short term goals:
- Inventory and learn about current summer bridge programs, including STEP, LEADR, Summer Start
- Identify best practices , effective models and targeted student populations
- Convene committee to draft proposal and implementation plan, including financial impact

Long term:
- Provide a summer bridge program for all students who wish to participate and can benefit from the experience

Explore ways to integrate more learning communities across campus
Rationale:
- Learning communities have been identified as an high-impact student-impact service
- Learning community students have higher course- pass rates and higher academic achievement overall.
- They are particularly effective for marginalized communities and other targeted student groups.

Goals:
- Promote faculty and student relationships
- Engage students in collaborative learning and social activities in and outside the classroom
- Help students establish academic and social support networks, including connecting with an affinity group of peers

Desired outcomes:
- Greater campus engagement and satisfaction with UC Davis experience
- Enhanced personal and interpersonal development
- Improved retention

Short term goals:
- Establish a work group to conduct feasibility study to determine practicality of expanding learning communities
- Inventory and learn about current learning communities at UC Davis, including residence hall offerings
- Identify best practices, effective models and student populations that would benefit the most

Long term goals:
- Offer a variety of opportunities for students to participate in a learning community are available to all students

Student Retention Committee (SRAC) Sub-committee 2
Executive Summary

Co-Chairs: Catrina Wagner, Student Housing
                      Wesley Young, Services for International Students and Scholars

Membership:

Kayton Carter, Center for African Diaspora Student Success

Letia Graening, International Academic Advising

Alma Martinez, Chicana and Chicano Studies

Hope Medina, Transfer Reentry and Student Veterans Success Centers

Dawn Takaoglu, International Academic English

Charge:

Sub-committee SRAC2 was charged with reviewing and making recommendations to the broader student recruitment and retention committee on the following areas:

- Transfer students
- Second Year Student Experience
- International Students
- English Language Learners

I. TRANSFER STUDENTS
Hope Medina and Alma Martinez

Introduction and theoretical framework guiding your committee's recommendations and support of this effort

Current literature on the transfer process and transfer student experience informs our recommendations, in particular, the widespread misconception that "Institution personnel often overestimate the college readiness of transfer students as they enter their new institutions, much like the students exhibit their own overconfidence…" (Grites, p. 62). This overestimate of readiness has led to hit or miss development of services and/or programming that supports the

UC Davis transfer population. Seeking to respond more effectively to actual transfer student needs, we've identified areas for growth that comprises an arc or pathway that begins while a student is still at community college, to admissions and their time on campus, and finally, to graduation and beyond. Commensurate with program development is the need for accurate, reliable and consistent data that is necessary to ensure meaningful programs and services.

A summary of programs that are examples of success that we should consider expanding

Programs/Activities/Events that support community engagement
- Transfer Tuesdays
- Transfer and Reentry Weekly Brief
- SASC, Advising and Retention Services (ARS) peer training and advising

Programs/Activities/Events that support transition either to or out of UC Davis
- TOP (Transfer Opportunity Program)/TAG (Transfer Admissions Guarantee) Programs
- FYAC Transition courses
- Reentry and Veteran Orientation
- Priority Campus Housing
- Transfer Fall Welcome

Recommendations for programs that we are not currently doing that we should consider

Programs/Activities/Events that support transition to or out of UC Davis
- Transfer Bridge
- Mandatory transition seminar for those who do not participate in the Transfer Bridge program
- Specific programming on the second year transfer experience

Programs/Activities/Events that support community engagement
- Parent and family programming/restoration of family-friendly programming
- Online workshops and programming (meet students where they are)
- Veteran specific housing

To better understand transfer community:
- Consistent and accessible data
- Inventory of all campus services and programming geared toward transfer students
- Campus partner collaborations

An overview of short and long term goals. Please prioritize and state your reasons for the prioritization

Short term goals:
- Data accuracy and access: Currently we have many sources for transfer data and this leads to inconsistencies in how we report out on our transfer students. In addition, this impacts the kinds of programming and services we *think* we should be developing and offering them. Our short term goal is to have a consistent process for requesting data that will illicit the same information for any campus colleague to access.
- Meet students where they are at: Due to the two year timeline of most transfer students, they hesitate to take time away from their academic work to get fully engaged on campus. They fear that by not attending UC Davis their first two years this has left them at a deficit. An area

for potential growth is utilizing technology to reach students where they are at. This may mean online modules, Skype advising and webinars. Utilizing technology would allow some programming and services to be accessed at almost any time and from a place that is convenient to the student. This is particularly important for student parents, working students, commuters and students who aren't available to attend a workshop or event due to their class schedule or other commitments.

- More collaboration and less duplication of programming: Currently, transfer student programming and services are offered in many spaces on campus. If we have a true inventory about what each unit offers, we can reevaluate our unit's efforts and either merge them with others on campus or collaborate with campus partners to offer a more mindful and robust menu of programs and services.

Long term goals:
- Improve the transfer advising process: To address the gaps in information and inconsistencies in the transfer advising process we have set a goal for a seamless transfer experience fostered by a true collaboration between community college transfer advisers, students and UC Davis
- Make UC Davis the UC of choice for transfer students: Currently, there is little that makes UC Davis stand out for students interested in transferring to the University. Financial reasons, proximity to home, and attending UC Davis because they couldn't get into their first choice UC are some of the reasons cited by students as their reason to attend. We aim to make the transfer to UC Davis a mindful and enthusiastic first choice for transfer students.
- Increased focus on second year experience: The University pays significant attention and provides equally significant resources to make UC Davis appealing to potential transfer students. The attention and resources drop off however once the students arrive on campus. Resources are spread throughout the campus and there is duplication of programming. The material allocation of resources and effort drops off again once transfers reach their second year at UC Davis. For this reason we propose programming that will address vital areas of importance to students who are nearing graduation. We envision programming that is equally concerned with a transfer's student life after UC Davis as at the time of application.

Closing remarks of why your recommendations are important and the impact they will have on student success:

Our recommendations are important because they take into consideration who the transfer population is, broadens the scope of the transfer experience to include the second year (and beyond) and streamlines our programs and services to serve more students in a more organized, understandable and meaningful way. In general, our transfer students are successful but there is generous area for improvement. To better serve the transfer population it is important that services and programs are developed to address the real experience of transfer students and not merely tweaking traditional first-year experiences and relabeling them as transfer services. This will mean collaborating with campus partners as well as having input from our transfer community as well.

II. SECOND YEAR EXPERIENCE
Michelle Villegas-Frazier, Kayton Carter

Introduction and theoretical framework guiding your committee's recommendations and support of this effort

Student Involvement

Student Involvement in co-curricular (i.e. activities such as student organizations, leadership positions, and activity in campus residence halls) has a positive correlation with retention and academics. For the second year student - after the student moves off campus - the possible disconnect from campus is easiest if there is no <u>systematic</u> process for them to maintain a connection with campus life.

Issues students face:
- Lack of academic and faculty engagement
  Depending on the 1st year academic performance, students need a systematic connection with campus
- Indecisiveness of major or academic plans
  The "awakening" is when a student may realize they may want to major in something much different than why they came to the institution
- Lack of campus engagement or connection to campus

The search for a "sense of self/belonging" begins – continuation of cohort model programs are essential for student monitoring/success; someone/something needs to "check-in" with students.
- Need for student self-realization of their place in the future both academically and socially
- Limited programs for sophomore or second year transfer students; existing programs tend to focus on freshmen, and sophomore are left to fend for themselves

Alexander Astin's (1985) Theory of Student Involvement explains how desirable outcomes for institutions of higher education are viewed in relation to how students change and develop in result to being involved in co-curricular activities such as student organizations, leadership positions. And, activity in campus residence halls also has a positive correlation with retention and academics. For the second year student - after the student moves off campus - the possible disconnect is easiest if there is no <u>systematic</u> process for them to maintain a connection with campus life.

1) Involvement requires an investment of psychosocial and physical energy.
2) Involvement is continuous, and that the amount of energy invested varies from student to student.
3) Aspects of involvement may be qualitative and quantitative.
4) What a student gains from being involved (or their development) is directly proportional to the extent to which they were involved (in both aspects of quality and quantity).

A summary of programs that are examples of success that we should consider expanding

University Honors Program – The Second-Year program is designed to further enhance the skills and community building that students developed during the first year. It has the same formal requirements as the First-Year program where students are required to take one UHP course per quarter. Second-Year students have the option of substituting one UHP course with an Honors Contract. Students must receive a C- or better in their honors courses, and a cumulative 3.5 or better GPA by the end of the year. An appeal process is in effect for students with a 3.25-3.49 GPA. Second-Year students also receive personalized academic advising and programming that enhances their UCD experience, such as faculty mentoring, meeting with Mondavi Center speakers, and the like.

BUSP: Sophomore year – A yearlong seminar course will further hone your critical thinking, professional development and interpersonal skills. The course includes presentations by guest speakers from science-based professions and campus resource units. Throughout your sophomore year, you will conduct faculty-sponsored laboratory research. Students enrolled in lower-division biology courses participate in small study group tutoring sessions guided by a BUSP staff person who will help organize study programs and offer course-specific expertise.

Retention Initiative(s) – Offering a course that is designed to address unique issues sophomores/new transfer students face and will encourage full engagement in the collective campus community. As well as to support sophomore's transition to juniors, and juniors to seniors by providing resources to better understand academic progress and establishing self-identity. Facilitators will provide necessary information to make life-long decisions regarding extracurricular opportunities such as studying abroad or internships, undergraduate research, majors and careers, and connect with student support services.

Financial Readiness – A two-unit course offered to students in EOP, GSP, STEP and TRIO. Three sections of the course are taught during the winter quarter. Students enrolled in the course are taught basic strategies for money management. The course targets sophomores and juniors.

Guardian Scholars Program – Under the leadership of a peer advisor GSP second year students participate in monthly cohort meetings. Meetings offer peer advising, opportunities for community building and resource awareness

Assembling a Post Graduate Plan – A two-unit course offered each winter exclusively to EOP and GSP students. The seminar is designed to explore and prepare students for life after

graduation. The course is for sophomores and first-year transfer students. If space permits registration is offered to juniors.

Mid-year Conference; Recharge to Claim your Education – Early winter quarter EOP sponsors a full day conference for sophomore students whose GPA is between a 2.0 – 2.4. or SD. If space permits the conference is open to freshmen whose grades fall in the indicated GPA range.

Recommendations for programs that we are not currently doing that we should consider

EOP Cohort
- The EOP Cohort is a four-year program designed to support the retention of first-generation, low-income students through activities that promote community building, identity development, civic engagement and mobilizing agency.
- The 2017-2018 academic year will mark the first year of the sophomore student cohort.

Non-residential Learning Communities
- Non-residential learning communities allow a group of students from the same major or with similar interests to take two to three of the same courses together; and emphasize curricular cohesion and relationships among the students and/or the faculty.

According to Jodi Levine, a nationally recognized educational researcher and scholar, participation in non-residential learning communities:
- Provides students and faculty with many benefits.
- Improve student learning and retention
- Provide opportunities to integrate courses in an interdisciplinary manner
- Help students to form academically-based social networks among peers
- Increase student involvement in learning and college life
- Provide opportunities for faculty-student interaction
- Create opportunities for faculty-to-faculty interaction and collaboration that lead to faculty development

Overview of short and long term goals; please prioritize and state your reasons for the prioritization

The core concepts of the Theory of Student Involvement are composed of three elements:
1) A student's "inputs" such as their demographics, their background, and any previous experiences.
2) The student's environment, which accounts for all of the experiences a student would have during college.
3) Outcomes, which cover a student's characteristics, knowledge, attitudes, beliefs, and values that exist after a student has graduated college.

The short-term goals must entail assessment, and communication/collaboration surrounding assessment results. Retention starts, and ends with data (#s).

The Long-term goals must include result in some form of retention (by quarter, year) or 2nd year students.

Closing remarks of why your recommendations are important and the impact they will have on student success

Infrastructure has to reflect/mirror the task as hand; human capital will determine the ability to implement accurately.

III. INTERNATIONAL STUDENTS
Wesley Young, Letia Graening, and Dawn Takaoglu

Introduction and theoretical framework guiding your committee's recommendations and support of this effort

This section on international students was guided by committee members experience with, and perceptions of, the most pressing challenges facing international students. The challenges can be grouped into two general areas, which include academic difficulty and social isolation.

While the majority of international students achieve academic success as measured by graduation and GPA, the number of students on academic probation, who face academic dismissal, or are involved in cases at the Office of Student Support and Judicial Affairs, are proportionately higher than their population in the student body. We believe that the following factors significantly impact this problem, with the low level of English comprehension and confidence being the single most challenging problem facing those international students who are not academically successful.

- Lack of English comprehension and confidence
- Difficulty in adjusting to a new academic cultural
- STEM fields that that have high unit requirements
- Transfer student shock—students often have difficulty adjusting to less personal support and greater academic difficulty at UC Davis compared to what they found at the community college. International students coming from community colleges are, in general, less prepared academically than their counterparts who began as first-year students at UC Davis.

While the causes of social isolation are also varied, and not simple to address, we know that low levels of English comprehension and confidence create strong impediments to making friends outside of one's language group.

Other important challenges faced by international undergraduates include a lack of financial support, and uncertainty about future career plans.

A summary of programs that are examples of success that we should consider expanding

Given the challenges noted above, the Sub-committee believes that the existing programs listed below are useful, but require rethinking, or expanding, and in some cases may require additional resources.

- New student orientations
- Programs offered by Global Affairs, Student Affairs, Undergraduate Education, and College Dean's Offices, and other campus units
- ESL courses
- Pre-Arrival Guide for International Students (PAGIS)

Recommendations for programs that we are not currently doing that we should consider

The Sub-committee recommends the following:

- Require students with lower TOEFL scores to attend the Summer Start Program
- Raise TOEFL minimum requirements for admission
- Outreach to Community Colleges regarding ESL courses
- Get more data on graduation rates, GPA, and retention/persistence rates
- Learn from the UCLA model of transfer student testing in ESL and other courses
- Examine the possibility of removing the TAG program for international students coming from community colleges

An overview of short and long term goals. Please prioritize and state your reasons for the prioritization

In the short term, we need to gather more data on graduation rates, GPA, and retention/persistence rates. The lack of data makes it difficult to define the problem of retention and persistence accurately and completely.

In the longer term, Undergraduate Admissions must find a way to balance enrollment targets with a process that will screen out students that do not have the English language skills to succeed with reasonable support.

Closing remarks of why your recommendations are important and the impact they will have on student success

The enrollment and success of international undergraduates is a campus imperative. We understand the importance that international undergraduates play in securing a sustainable financial foundation for UC Davis, as well as their contribution to creating an educational environment that is necessary to ensure that California residents obtain the type of education that will serve them well, not only in their first job but also for the duration of their careers.

The recommendations of this section are intended to ensure that international undergraduates begin their studies at UC Davis with the opportunity to graduate, within a

reasonable period of time, and with a reasonable level of campus support. English language proficiency is fundamental to not only academic success at UC Davis, but also to a sense of community and belonging—that is, a good feeling about their experiences as a UC Davis student. Ultimately successful international students are important in building and maintaining a strong national and global reputation for the campus.

IV. ENGLISH LANGUAGE LEARNERS
Letia Graening and Dawn Takaoglu

Introduction

There has been no evidence provided to indicate that retention rates among UC Davis students with multi-lingual backgrounds are significantly different from their mono-lingual peers. Nonetheless, we recognize that there is always room for improvement and have identified ways that address issues that have been raised at UC Davis and nationwide.

Programs for Expansion

Summer Start
Summer Start is the pre-matriculated freshman program for international and multi-lingual students who seek to gain confidence and get ahead of the UC Davis writing and general education requirements. The program is six weeks in length, running the entire duration of Summer Session 2. Beyond, coursework, students are engaged in both university and regional activities for the purpose of building local knowledge and awareness. As a requirements of the program, students visit the university service centers to learn more about the support structures available to them and they develop student presentations to promote those services to other incoming students.

The program has served approximately ten percent of the incoming international class each year since 2012 largely due to the positive word-of-mouth from past participants. Student evaluations document a 96-97% peer recommendation rate year after year. More importantly, 96 percent of participants persist to their second year, 92 percent persist until their third year with a returning average GPA of 3.25.

One of the most common reasons for not participating in the Summer Start program is that students learn about the opportunity too late and already have other commitments. Expanding this program would primarily require greater investments in marketing, advertisement and promotion early in the UC Davis application process.

PALs in Intercultural Exchange
The PAL program was established at UC Davis in the 70's and continues to serve students interested in developing their communication and intercultural skills. It provides a one-to-one student connection between an international and domestic students for weekly informal meetings to discuss topics of interest. This is a great opportunity for ESL students that are hesitant to speak in larger settings or have concerns about how their accent will be perceived. For domestic students, it provides a window into other cultures and world views. With the new

initiative of Global Education for All, PAL is expected to expand and serve a greater number of UC Davis students in a way that is still very personal.

Faculty and Graduate Student Workshops from the Center for Educational Excellence

In certain years CEE has offered workshops preparing faculty and teaching assistants to work with multi-lingual and multi-cultural students. These offering have largely been dependent on staffing availability and interest. To make a significant difference, there needs to be a larger, more-consistent base of programming that prepares instructors for working with students from other language backgrounds. Given the significant increase in multi-lingual undergraduates at UC Davis, providing strong foundations to work with this population needs to be a priority.

Recommendations for future development

The first recommendation is that UC Davis offer Supplemental Instruction (SI) on campus specifically targeted to supporting multi-lingual and international students. SI was initially developed in the 70's at the University of Missouri-Kansas City and there is decades of data supporting its efficacy. More recently, it has been found to be effective in supporting retention and social integration in special populations, specifically international and ESL students both in the US and the UK. The key to its success is in the selection of the course it targets. For SI to assist with multi-lingual student retention, it would need to target courses this population has found historically challenging and to establish peer-led resources.

The second recommendation is the purchase of plagiarism detection software such as Turnitin.com for the campus-wide use. When employed well, this is an excellent teaching tool in helping multi-lingual learners master the linguistic complexity of summarizing and paraphrasing. It would also indicate a greater commitment on the university's part to developing informational literacy and equity among all learners.

Finally, a higher priority must be place on collecting data at UC Davis regarding retention rates of multi-lingual students and on finding comparative data from other institutions so that fair and reasonable conclusions regarding the retention rates of this population can be made. Among other variables, TOEFL subset scores, and the new SAT scores need to be reviewed as potential indicators of students' success as measured by GPA and retention.

Closing remarks of why your recommendations are important and the impact they will have on student success

In 2017, more than half of the incoming freshmen are expected to be multi-lingual. This represents much more than the 2020 initiative to grow the international student population; it reflects the growing diversity of the State of California. Our top priority must be to offer a learning and teaching situation which values multi-lingual learners and promotes a greater appreciation for the perspective and skills these students bring to enrich our campus. Most critically, we need to shift the campus culture from one that views this population as remedial to one that recognizes the talents they contribute to an education which seeks to provide global education for all.

Student Retention Committee (SRAC) Sub-committee 3
Executive Summary

Co-Chairs: Carol Hunter, Student Academic Success Center
                  Annaliese Franz, Professor of Chemistry

Membership:

Beth Floyd, College of Letters & Sciences Advising

Neil Huefner, Center for Student Affairs Assessment

Marco Molinaro, Center for Educational Effectiveness

Tanya Whitlow, College of Engineering LEADR Program

Charge:

Sub-committee SRAC3 was charged with reviewing and making recommendations to the broader student recruitment and retention committee on the following areas:

- Impact of Instruction
- STEM Retention
- Integration of Curricular and Co-Curricular
- Involvement in Undergraduate Research
- Internship Space

Introduction and theoretical framework guiding your committee's recommendations and support of this effort:

Through a review of academic and professional literature as well as UC Davis faculty and staff experiential knowledge on evidence based educational practices, we have identified a broad student success framework that encompasses the following elements (see references at the end of the document):

- Institutional commitment
- Academic and social integration
- Student Involvement
- Student learning engagement
- Accessibility to resources
- Cohort based problem solving outside of the classroom
- Equity based education
- Ongoing necessity for further research on institutional practices effectiveness

A summary of programs that are examples of success that we should consider expanding:

- Co-Class models are used in both curricular and co-curricular (parallel's exist); Co-classes for Chem 2 and BIS 2 (in the colleges, funded by LCFF+) and Workload 991 (SASC, Student Affairs). Co-classes increase concurrent intervention and there is support that this is an evidence-based educational practice with positive retention outcomes. We need to determine what model is most effective for which students at what stages. For example, UC Davis has

several models of co-classes employed, which combine differing combinations of curricular and co-curricular, and also have different levels of interactions with the instructors of the courses that they serve. For example, the recent LCFF+ co-classes are led by the same instructors and TAs who are teaching the main course, and have 2 days a week devoted to curricular work and one day a week devoted to co-curricular activities or speakers.

- While most instruction follows traditional format and is not considered high-impact, especially for large lectures, there are growing efforts and examples on campus that utilize evidence-based teaching practices to improve student learning. For example, there are selected examples in CHE 2 and BIS 2, and also the collaborative efforts to develop a new curriculum for the "CHE 3: Chemistry of Life Sciences". However, most instruction on campus does not currently utilize evidence-based teaching practices. There should be additional support and emphasis on including more evidence-based teaching practices and increase impact of instruction and especially in STEM classes to increase retention in STEM, and to narrow the "gap" for students coming in from diverse backgrounds.

- First-Year Seminars (Undergraduate Education) and First-Year Aggie Connections (Student Affairs), offering small classes and community building.

General recommendations:

Recommendation: UC Davis has several programs that are documented as high-impact educational practices in literature, but we do not have data or analysis on them at UCD. Design assessment, collect and analyze data, and continue to improve current programs known to be high-impact educational practices. Currently there are pockets of local data that exists for evidence-based results for both Student Affairs and Undergraduate Education. We should create greater data analysis support at the programmatic level to be able to evaluate and support high-impact practices. Pilot studies should be evaluated to determine scale and next steps.

Flow Model 1:
1. Literature Review reflect the HIP
2. Local data determines how it fits/Are we getting the same results
3. Reflect back to make changes as needed

Flow Model 2:
1. Collect local data to identify high-impact practices
2. Literature Review to confirm what we are finding
3. Reflect back to make changes as needed

Recommendation: Provide additional support and emphasis (i.e, faculty rewards) for including more evidence-based teaching practices and increase impact of instruction and especially in STEM classes to increase retention in STEM, and to narrow the "gap" for students coming in from diverse backgrounds.

Recommendation: Currently UC Davis has ad hoc system for Student Affairs and Undergraduate Education communication system; not easy to see what programs exist, who is organizing them,

what the goals are and impact information on those programs. UC Davis could benefit from an institutionalized database system for the campus to share practices, ideas, and research; help connect groups for shared events and seeking funding; opportunities for faculty to connect with existing programs for outreach and broader impacts (e.g. NSF).

- First-Year Seminars (Undergraduate Education) and First-Year Aggie Connections (Student Affairs). Different dimensions with same objective of connecting students to the Aggie community; parallel efforts and sometimes duplicated; could potentially be more effective if they combine forces. Access for Student Affairs Practitioners to be involved in 1st Year Seminars; awareness for Undergraduate Education to be involved in Aggie Connections; required orientations for all incoming freshmen; online training for all incoming staff and faculty about campus programs.
- Student Affairs and Undergraduate Education faculty and staff would benefit from a more complete picture about the students they are serving and the programs that are available. Institutionalize systems that allow faculty and staff to access information about who our students are and what their needs are both academically, personally, and socially.

Recommendations for specific programs that we are not currently doing that we should consider:

- UT Austin has a "Freshman Research Initiative (FRI)" that provides an excellent model for student retention in STEM by involving students in research in their first year in an FYS model. This is related to a course-based research experience (CURE). Here at UC Davis, we have had several first-year seminars that are designated as CUREs to begin to evaluate how this could be feasible to offer at UC Davis - these involve research faculty as well as graduate students. We can replicate a similar FRI or a more wide-scale FYS-CURE program.

An overview of short and long term goals. Please prioritize and state your reasons for the prioritization:

Short Term Goals: List is prioritized based on highest impact related to our four charges.
- Have an annual "High-impact Educational Practices Conference" in order to raise awareness of literature-based high-impact practices, share examples on campus, identify new opportunities, create collaborations, and share current examples of assessment.

- Collect a comprehensive list of activities, programs, services, including scale of participation for local high-impact educational practices. Survey the data analysis needs for existing programs. Create a database.

- Collect and analyze card swipe and other data to provide formal assessment and determine whether something is a high-impact educational practice at UC Davis.

- Provide instructional improvement grants, including collaborative joint grants for curricular and co-curricular activities to promote collaborators that best serve the students.

- Create canvas widgets or similar LMS for integration for faculty to have easy access to services that would benefit their students (example: Library button).

- Create effective communication strategies. Create an SRAC task force to determine communication systems that support collaboration and information sharing.

- Create clear message about labels (Co-Class definition) about parallel services.

- Determine if University 101 should be required for all entering students. A possible HIP conference topic.

Long Term Goals: List is prioritized based on highest impact related to our four charges.
- Continue to assess and evaluate data to determine impact on retention, student satisfaction, education of the whole student, performance in the course series (Chem 118ABC), in upper division courses, and time to degree. From these assessments, establish a data sharing system.

- Implement a Freshman Research Initiative or expand FYS-CUREs program. Utilize 1st Year Seminars and Aggie Connections to develop course-based undergraduate research experience (CURE) model at UC Davis.

- Create a searchable index of programs for faculty and staff. Provide, possibly require, training for all new faculty and staff about campus programs (Example: Video to watch about programs and tools for searching database).

- Incentivize faculty to incorporate evidence-based educational practices that will increase impact of instruction in classrooms, especially large lecture classes and STEM courses. Close gap in student performance and help all students learn (and retain) more.

- Research and change course evaluations to provide more useful feedback to faculty about student learning in a course (current course evaluation system often "punish" faculty for trying new teaching methods or active learning techniques).

- Create panels, retreats, a database, match-making system for faculty and services.

Closing remarks of why your recommendations are important and the impact they will have on student success:

Using both the literature and institutional research that have been identified, the sub-committee's recommendations all enhance the student experience while increasing learning gains and improving retention. Students will be more successful in terms of quantitative measurements

of GPA, retention and graduation rate, while also being more successful holistically in terms of individual development and their impact on their surrounding community. We have identified potential for increasing faculty awareness of integrating both curricular and co-curricular resources for students. This will allow the opportunity to increase communications between Undergraduate Education and Student Affairs. By incorporating a consistent data collection system to measure outcomes, the campus will be able to see the activities that support GPA, retention, time to degree, and student success as measured by student achievements.

References

Barefoot, B. O., Griffin, B. Q., & Koch, A. K. (2012). Enhancing student success and retention throughout undergraduate education: A national survey. *John Gardner Institute for Excellence in Undergraduate Education, 25*, 2013.

Bean, J., & Eaton, S. B. (2001). The psychology underlying successful retention practices. *Journal of College Student Retention: Research, Theory & Practice*, *3*(1), 73-89.

Complete College America. (2011). Transform remediation: The co-requisite course model. Retrieved from http://www.completecollege.org/docs/CCA Co-Req Model - Transform Remediation for Chicago final%281%29.pdf

Finley, A. P., & McNair, T. (2013). *Assessing underserved students' engagement in high-impact practices*. Retrieved from http://leapconnections.aacu.org/system/files/assessinghipsmcnairfinley_0.pdf

Grites, T. J. (2013). New Directions for Higher Education, *no. 162*.

Hanford, E. (2016). Stuck at square one: College students increasingly caught in remedial education trap. *APM Reports*. Retrieved from http://www.apmreports.org/story/2016/08/18/remedial-education-trap

Kuh, G. D. (2012). High-impact educational practices: What they are, who has access to them, and why they matter (Washington, DC: Association of American Colleges and Universities, 2008); M. Visher, M. Weiss, E. Weissman, T. Rudd & H. Wathington. *The Effects of Learning Communities for Students in Developmental Education*.

Kuh, G. D., Kinzie, J., Schuh, J. H., & Whitt, E. J. (2011). *Student success in college: Creating conditions that matter*: John Wiley & Sons.

Rico, T., Huefner, N., Frías, M., & Ning, L. (n.d.) *Framework for unit research & evaluation: A white paper*. Retrieved from http://csaa.ucdavis.edu/docs/UCD_White_Paper_Condensed.pdf

Rodenbusch, S. E., Hernandez, P. R., Simmons, S. L., & Dolan, E. L. (2016). Early engagement in course-based research increases graduation rates and completion of science, engineering, and mathematics degrees. *CBE-Life Sciences Education, 15*(2), ar20.

Smith, A. A. (2016). Evidence of remediation success. Retrieved from https://www.insidehighered.com/news/2016/04/05/tennessee-sees-significant-improvements-after-first-semester-statewide-co-requisite

Tinto, V. (2006). Research and practice of student retention: What next?*Journal of College Student Retention: Research, Theory & Practice*, *8*(1), 1-19.

UC Davis Blue Ribbon Committee for Enhancing the Undergraduate Student Experience. (2013, June 30). *Final report.* Retrieved March 20, 2017, from http://studentaffairs.ucdavis.edu/initiatives/BRC-REPORT-070213-final.pdf

High-Impact Educational Practices

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

First-Year Seminars and Experiences

Many schools now build into the curriculum first-year seminars or other programs that bring small groups of students together with faculty or staff on a regular basis. The highest-quality first-year experiences place a strong emphasis on critical inquiry, frequent writing, information literacy, collaborative learning, and other skills that develop students' intellectual and practical competencies. First-year seminars can also involve students with cutting-edge questions in scholarship and with faculty members' own research.

Common Intellectual Experiences

The older idea of a "core" curriculum has evolved into a variety of modern forms, such as a set of required common courses or a vertically organized general education program that includes advanced integrative studies and/or required participation in a learning community (see below). These programs often combine broad themes—e.g., technology and society, global interdependence—with a variety of curricular and cocurricular options for students.

Learning Communities

The key goals for learning communities are to encourage integration of learning across courses and to involve students with "big questions" that matter beyond the classroom. Students take two or more linked courses as a group and work closely with one another and with their professors. Many learning communities explore a common topic and/or common readings through the lenses of different disciplines. Some deliberately link "liberal arts" and "professional courses"; others feature service learning.

Writing-Intensive Courses

These courses emphasize writing at all levels of instruction and across the curriculum, including final-year projects. Students are encouraged to produce and revise various forms of writing for different audiences in different disciplines. The effectiveness of this repeated practice "across the curriculum" has led to parallel efforts in such areas as quantitative reasoning, oral communication, information literacy, and, on some campuses, ethical inquiry.

Collaborative Assignments and Projects

Collaborative learning combines two key goals: learning to work and solve problems in the company of others, and sharpening one's own understanding by listening seriously to the insights of others, especially those with different backgrounds and life experiences. Approaches range from study groups within a course, to team-based assignments and writing, to cooperative projects and research.

LEAP

Undergraduate Research

Many colleges and universities are now providing research experiences for students in all disciplines. Undergraduate research, however, has been most prominently used in science disciplines. With strong support from the National Science Foundation and the research community, scientists are reshaping their courses to connect key concepts and questions with students' early and active involvement in systematic investigation and research. The goal is to involve students with actively contested questions, empirical observation, cutting-edge technologies, and the sense of excitement that comes from working to answer important questions.

Diversity/Global Learning

Many colleges and universities now emphasize courses and programs that help students explore cultures, life experiences, and worldviews different from their own. These studies—which may address U.S. diversity, world cultures, or both—often explore "difficult differences" such as racial, ethnic, and gender inequality, or continuing struggles around the globe for human rights, freedom, and power. Frequently, intercultural studies are augmented by experiential learning in the community and/or by study abroad.

Service Learning, Community-Based Learning

In these programs, field-based "experiential learning" with community partners is an instructional strategy—and often a required part of the course. The idea is to give students direct experience with issues they are studying in the curriculum and with ongoing efforts to analyze and solve problems in the community. A key element in these programs is the opportunity students have to both *apply* what they are learning in real-world settings and *reflect* in a classroom setting on their service experiences. These programs model the idea that giving something back to the community is an important college outcome, and that working with community partners is good preparation for citizenship, work, and life.

Internships

Internships are another increasingly common form of experiential learning. The idea is to provide students with direct experience in a work setting—usually related to their career interests—and to give them the benefit of supervision and coaching from professionals in the field. If the internship is taken for course credit, students complete a project or paper that is approved by a faculty member.

Capstone Courses and Projects

Whether they're called "senior capstones" or some other name, these culminating experiences require students nearing the end of their college years to create a project of some sort that integrates and applies what they've learned. The project might be a research paper, a performance, a portfolio of "best work," or an exhibit of artwork. Capstones are offered both in departmental programs and, increasingly, in general education as well.

Table 1

Relationships between Selected High-Impact Activities, Deep Learning, and Self-Reported Gains

	Deep Learning	Gains: General	Gains: Personal	Gains: Practical
First-Year				
Learning Communities	+++	++	++	++
Service Learning	+++	++	+++	+++
Senior				
Study Abroad	++	+	+	++
Student–Faculty Research	+++	++	++	++
Internships	++	++	++	++
Service Learning	+++	++	+++	+++
Senior Culminating Experience	+++	++	++	++

+ p<0.001, ++ p<0.001 & Unstd B > 0.10, +++ p<0.001 & Unstd B > 0.30

Table 2

Relationships between Selected High-Impact Activities and Clusters of Effective Educational Practices

	Level of Academic Challenge	Active and Collaborative Learning	Student–Faculty Interaction	Supportive Campus Environment
First-Year				
Learning Communities	+++	+++	+++	++
Service Learning	+++	+++	+++	+++
Senior				
Study Abroad	++	++	++	++
Student–Faculty Research	+++	+++	+++	++
Internships	++	+++	+++	++
Service Learning	+++	+++	+++	+++
Senior Culminating Experience	++	+++	+++	++

+ p<0.001, ++ p<0.001 & Unstd B > 0.10, +++ p<0.001 & Unstd B > 0.30

Source: *Ensuring Quality & Taking High-Impact Practices to Scale* by George D. Kuh and Ken O'Donnell, with Case Studies by Sally Reed. (Washington, DC: AAC&U, 2013). For information and more resources and research from LEAP, see www.aacu.org/leap.

SOURCE: https://www.aacu.org/sites/default/files/files/LEAP/HIP_tables.pdf

Appendix B: Examples of Data from Budget & Institutional Analysis

UC Davis Freshman Retention (First & Second Year) and Graduation (4-, 5- and 6-year) Rates	Entering Year	Returned for 2nd year	Returned for 3rd year	Graduated within 4 years	Graduated within 5 years	Graduated within 6 years
Grand Total	1996	91%	86%	38%	73%	79%
	1997	90%	84%	38%	71%	78%
	1998	90%	84%	39%	72%	79%
	1999	91%	84%	42%	75%	80%
	2000	91%	86%	43%	76%	81%
	2001	91%	85%	43%	74%	80%
	2002	91%	86%	48%	77%	82%
	2003	91%	86%	50%	75%	80%
	2004	91%	86%	51%	78%	82%
	2005	90%	84%	51%	77%	82%
	2006	90%	84%	52%	77%	81%
	2007	90%	85%	51%	76%	81%
	2008	92%	87%	53%	79%	83%
	2009	92%	88%	58%	82%	85%
	2010	93%	88%	55%	81%	85%
	2011	92%	88%	58%	82%	
	2012	93%	88%	61%		
	2013	93%	89%			
	2014	92%	88%			
	2015	93%				
All Men	1996	89%	84%	27%	65%	74%
	1997	88%	82%	28%	66%	74%
	1998	88%	94%	30%	66%	75%
	1999	89%	91%	31%	69%	75%
	2000	89%	95%	34%	70%	78%
	2001	90%	93%	34%	69%	76%
	2002	90%	94%	38%	72%	79%
	2003	90%	95%	41%	71%	77%
	2004	91%	94%	42%	74%	80%
	2005	90%	93%	43%	75%	80%
	2006	89%	94%	43%	72%	78%
	2007	89%	94%	44%	72%	78%
	2008	92%	92%	46%	76%	80%
	2009	92%	94%	51%	79%	83%
	2010	91%	94%	47%	77%	81%
	2011	91%	95%	51%	78%	
	2012	92%	94%	54%		
	2013	92%	95%			
	2014	91%	96%			
	2015	92%				
All Women	1996	93%	88%	45%	79%	84%
	1997	91%	85%	45%	75%	80%
	1998	91%	85%	45%	77%	81%
	1999	92%	86%	50%	80%	85%
	2000	92%	87%	50%	81%	84%
	2001	91%	86%	50%	78%	82%
	2002	92%	88%	55%	81%	85%
	2003	92%	86%	58%	79%	83%
	2004	91%	86%	58%	80%	84%
	2005	91%	85%	57%	80%	83%
	2006	90%	85%	58%	80%	84%
	2007	90%	85%	56%	79%	83%
	2008	92%	88%	59%	82%	85%
	2009	92%	89%	63%	85%	87%
	2010	94%	90%	61%	84%	87%
	2011	93%	89%	62%	85%	
	2012	93%	89%	65%		
	2013	94%	90%			
	2014	93%	89%			
	2015	93%				
All In-State	1996	91%	87%	37%	72%	79%
	1997	90%	84%	38%	71%	78%
	1998	90%	84%	39%	72%	79%
	1999	91%	84%	42%	75%	81%
	2000	91%	86%	43%	77%	82%
	2001	91%	85%	43%	74%	80%
	2002	92%	87%	48%	78%	82%
	2003	91%	86%	50%	75%	81%
	2004	91%	86%	51%	78%	82%
	2005	90%	85%	51%	78%	82%
	2006	90%	84%	52%	77%	82%
	2007	90%	85%	51%	77%	82%
	2008	92%	87%	54%	80%	84%
	2009	92%	88%	58%	83%	86%
	2010	93%	89%	55%	81%	85%
	2011	93%	89%	58%	83%	
	2012	93%	89%	61%		
	2013	93%	90%			
	2014	93%	89%			
	2015	93%				
All Out-of-State	1996	82%	72%	49%	80%	85%
	1997	79%	67%	38%	62%	66%
	1998	88%	84%	45%	73%	77%
	1999	87%	78%	49%	72%	76%
	2000	87%	81%	44%	74%	76%
	2001	90%	82%	48%	68%	74%
	2002	87%	77%	50%	73%	75%
	2003	90%	82%	53%	76%	79%
	2004	86%	77%	52%	72%	77%
	2005	85%	79%	51%	74%	79%
	2006	83%	77%	49%	72%	75%
	2007	84%	77%	56%	69%	73%
	2008	89%	78%	51%	71%	74%
	2009	82%	77%	53%	73%	76%
	2010	82%	77%	48%	71%	75%
	2011	84%	76%	54%	73%	
	2012	87%	79%	55%		
	2013	91%	85%			
	2014	90%	85%			
	2015	91%				

1

UC Davis Freshman Retention (First & Second Year) and Graduation (4-, 5- and 6-year) Rates	Entering Year	Returned for 2nd year	Returned for 3rd year	Graduated within 4 years	Graduated within 5 years	Graduated within 6 years
All International*	1996	95%	92%	54%	79%	85%
	1997	88%	88%	55%	82%	85%
	1998	89%	87%	53%	82%	87%
	1999	83%	73%	50%	70%	70%
	2000	89%	85%	43%	74%	75%
	2001	86%	91%	36%	77%	77%
	2002	87%	77%	58%	71%	74%
	2003	98%	89%	58%	82%	84%
	2004	92%	83%	63%	77%	85%
	2005	87%	83%	52%	72%	80%
	2006	82%	79%	51%	73%	80%
	2007	86%	76%	51%	68%	70%
	2008	84%	72%	52%	67%	70%
	2009	88%	79%	62%	79%	81%
	2010	89%	85%	57%	76%	82%
	2011	83%	74%	56%	73%	
	2012	87%	79%	58%		
	2013	93%	86%			
	2014	91%	86%			
	2015	92%				
All Hispanic	1996	83%	77%	29%	58%	68%
	1997	84%	77%	23%	55%	66%
	1998	83%	76%	25%	57%	66%
	1999	89%	79%	25%	67%	76%
	2000	86%	81%	27%	66%	73%
	2001	86%	80%	32%	62%	72%
	2002	86%	81%	35%	67%	74%
	2003	85%	79%	35%	61%	67%
	2004	87%	79%	37%	67%	73%
	2005	85%	76%	34%	66%	71%
	2006	83%	76%	34%	64%	72%
	2007	83%	78%	37%	66%	72%
	2008	88%	83%	36%	72%	78%
	2009	86%	82%	42%	71%	77%
	2010	90%	82%	38%	72%	76%
	2011	87%	83%	38%	71%	
	2012	89%	82%	47%		
	2013	88%	84%			
	2014	86%	82%			
	2015	89%				
All Black or African American	1996	82%	75%	15%	49%	57%
	1997	84%	71%	16%	56%	68%
	1998	92%	81%	24%	62%	75%
	1999	86%	83%	28%	65%	79%
	2000	81%	78%	30%	63%	70%
	2001	84%	79%	22%	60%	69%
	2002	88%	85%	23%	68%	74%
	2003	89%	81%	28%	60%	70%
	2004	84%	79%	31%	65%	75%
	2005	85%	80%	37%	67%	71%
	2006	84%	73%	28%	60%	65%
	2007	87%	77%	32%	64%	69%
	2008	85%	76%	26%	63%	68%
	2009	78%	76%	29%	66%	72%
All Black or African American, non-Hispanic	2010	93%	92%	33%	69%	77%
	2011	91%	87%	29%	68%	
	2012	87%	83%	32%		
	2013	95%	93%			
	2014	93%	87%			
	2015	88%				
All Asian or Pacific Islander	1996	94%	91%	36%	74%	81%
	1997	91%	87%	38%	73%	81%
	1998	91%	86%	40%	75%	81%
	1999	90%	85%	42%	75%	80%
	2000	91%	87%	40%	76%	82%
	2001	92%	86%	41%	74%	81%
	2002	92%	88%	47%	78%	83%
	2003	92%	88%	52%	78%	84%
	2004	92%	87%	51%	79%	83%
	2005	92%	85%	51%	78%	83%
	2006	92%	87%	53%	78%	83%
	2007	91%	86%	51%	77%	83%
	2008	93%	88%	54%	81%	85%
	2009	93%	90%	60%	86%	88%
All Asian, non-Hispanic	2010	94%	90%	57%	84%	88%
	2011	94%	91%	63%	87%	
	2012	95%	92%	66%		
	2013	95%	92%			
	2014	95%	92%			
	2015	96%				
Native Hawaiian or other Pacific Islander, non-Hispanic	2010	86%	86%	43%	86%	86%
	2011	86%	76%	24%	52%	
	2012	90%	90%	59%		
	2013	84%	80%			
	2014	87%	78%			
	2015	91%				
All American Indian or Alaskan Native	1996	67%	50%	17%	33%	40%
	1997	82%	68%	24%	53%	62%
	1998	94%	75%	31%	61%	69%
	1999	76%	68%	36%	52%	60%
	2000	80%	73%	30%	57%	63%
	2001	80%	66%	34%	61%	63%
	2002	87%	81%	45%	68%	84%
	2003	90%	86%	57%	81%	81%
	2004	87%	77%	48%	68%	68%
	2005	95%	95%	37%	84%	84%
	2006	88%	71%	38%	71%	75%
	2007	80%	80%	54%	73%	73%
	2008	87%	83%	43%	65%	70%
	2009	94%	89%	60%	89%	89%
All American Indian or Alaskan Native, non-Hispanic	2010	80%	60%	40%	60%	60%
	2011	80%	60%	40%	60%	
	2012	100%	100%	43%		
	2013	90%	90%			
	2014	85%	85%			
	2015	100%				

2

UC Davis Freshman Retention (First & Second Year) and Graduation (4-, 5- and 6-year) Rates	Entering Year	Returned for 2nd year	Returned for 3rd year	Graduated within 4 years	Graduated within 5 years	Graduated within 6 years
All White	1996	91%	85%	42%	76%	82%
	1997	90%	83%	42%	74%	79%
	1998	91%	85%	44%	76%	81%
	1999	92%	84%	47%	78%	82%
	2000	92%	87%	50%	80%	84%
	2001	92%	85%	50%	78%	82%
	2002	93%	87%	53%	80%	83%
	2003	91%	86%	54%	78%	82%
	2004	93%	87%	56%	81%	85%
	2005	91%	86%	59%	81%	84%
	2006	91%	85%	59%	80%	83%
	2007	92%	87%	59%	81%	85%
	2008	93%	88%	63%	83%	86%
	2009	93%	89%	65%	85%	87%
All White, non-Hispanic	2010	93%	89%	63%	84%	87%
	2011	94%	89%	65%	85%	
	2012	93%	89%	65%		
	2013	93%	90%			
	2014	94%	89%			
	2015	93%				
Two or more races, non-Hispanic	2010	91%	84%	51%	76%	81%
	2011	95%	90%	62%	83%	
	2012	94%	87%	58%		
	2013	94%	89%			
	2014	91%	86%			
	2015	91%				
All Unknown Ethnic Origin	1996	93%	89%	40%	78%	81%
	1997	92%	85%	36%	72%	80%
	1998	87%	81%	33%	66%	74%
	1999	90%	85%	42%	78%	82%
	2000	93%	89%	46%	77%	83%
	2001	90%	85%	38%	71%	80%
	2002	90%	84%	36%	73%	80%
	2003	90%	83%	52%	74%	78%
	2004	91%	85%	57%	79%	83%
	2005	90%	87%	53%	79%	84%
	2006	90%	85%	58%	81%	85%
	2007	93%	87%	56%	81%	84%
	2008	94%	86%	56%	79%	84%
	2009	95%	91%	57%	86%	89%
	2010	97%	92%	59%	85%	88%
	2011	89%	85%	65%	82%	
	2012	96%	91%	64%		
	2013	99%	96%			
	2014	98%	91%			
	2015	92%				

UC Davis Freshman Retention (First & Second Year) and Graduation (4-, 5- and 6-year) Rates	Entering Year	Returned for 2nd year	Returned for 3rd year	Graduated within 4 years	Graduated within 5 years	Graduated within 6 years
International* Men	1996	88%	88%	41%	71%	76%
	1997	100%	100%	50%	94%	94%
	1998	94%	94%	59%	88%	94%
	1999	100%	75%	42%	58%	58%
	2000	81%	81%	37%	67%	67%
	2001	89%	89%	22%	67%	67%
	2002	73%	82%	55%	73%	82%
	2003	100%	86%	46%	79%	79%
	2004	89%	70%	52%	67%	78%
	2005	85%	78%	41%	70%	78%
	2006	81%	71%	50%	67%	74%
	2007	82%	69%	41%	59%	62%
	2008	82%	65%	44%	62%	68%
	2009	80%	66%	54%	69%	71%
	2010	84%	82%	49%	69%	78%
	2011	78%	65%	46%	66%	
	2012	84%	70%	46%		
	2013	90%	81%			
	2014	88%	83%			
	2015	89%				
Hispanic Men	1996	80%	72%	22%	49%	61%
	1997	81%	75%	19%	49%	62%
	1998	79%	73%	14%	45%	56%
	1999	88%	76%	16%	57%	67%
	2000	86%	77%	22%	60%	70%
	2001	87%	78%	21%	51%	66%
	2002	83%	78%	26%	59%	67%
	2003	80%	76%	26%	53%	60%
	2004	89%	78%	27%	64%	70%
	2005	86%	78%	28%	65%	71%
	2006	82%	75%	30%	60%	68%
	2007	83%	77%	27%	61%	68%
	2008	88%	82%	29%	70%	76%
	2009	85%	78%	31%	66%	73%
	2010	88%	76%	31%	65%	70%
	2011	83%	80%	29%	63%	
	2012	86%	78%	40%		
	2013	85%	81%			
	2014	86%	83%			
	2015	89%				
Black or African American Men	1996	79%	74%	15%	35%	44%
	1997	81%	65%	11%	57%	68%
	1998	94%	83%	17%	60%	74%
	1999	73%	73%	10%	60%	67%
	2000	83%	71%	14%	45%	55%
	2001	83%	83%	17%	60%	67%
	2002	90%	84%	16%	68%	77%
	2003	85%	78%	22%	51%	64%
	2004	78%	70%	28%	60%	70%
	2005	92%	87%	28%	72%	74%
	2006	83%	71%	19%	51%	56%
	2007	91%	83%	26%	70%	74%
	2008	81%	64%	10%	53%	56%
	2009	83%	79%	24%	64%	71%
Black or African American, non-Hispanic Men	2010	91%	88%	19%	66%	75%
	2011	86%	83%	21%	69%	
	2012	84%	78%	18%		
	2013	89%	89%			
	2014	93%	83%			
	2015	91%				
Asian or Pacific Islander Men	1996	92%	89%	24%	64%	74%
	1997	90%	84%	28%	66%	75%
	1998	89%	84%	32%	68%	75%
	1999	88%	82%	31%	67%	74%
	2000	89%	85%	32%	70%	78%
	2001	90%	84%	32%	69%	77%
	2002	91%	85%	39%	73%	80%
	2003	91%	87%	43%	73%	80%
	2004	93%	89%	43%	76%	82%
	2005	91%	83%	43%	75%	81%
	2006	89%	85%	44%	73%	79%
	2007	90%	85%	46%	72%	80%
	2008	94%	87%	47%	78%	82%
	2009	94%	90%	55%	83%	86%
Asian non-Hispanic Men	2010	93%	90%	51%	81%	85%
	2011	94%	90%	57%	83%	
	2012	95%	91%	60%		
	2013	94%	90%			
	2014	95%	91%			
	2015	95%				
Native Hawaiian or other Pacific Islander, non-Hispanic Men	2010	100%	100%	40%	100%	100%
	2011	80%	80%	30%	40%	
	2012	100%	100%	58%		
	2013	80%	80%			
	2014	80%	80%			
	2015	92%				
American Indian or Alaskan Native Men	1996	60%	50%	5%	25%	35%
	1997	73%	53%	7%	27%	40%
	1998	92%	77%	23%	62%	69%
	1999	86%	57%	14%	29%	29%
	2000	100%	83%	25%	67%	75%
	2001	71%	64%	29%	57%	57%
	2002	91%	100%	45%	73%	91%
	2003	89%	78%	44%	89%	89%
	2004	87%	80%	47%	67%	67%
	2005	100%	100%	25%	75%	75%
	2006	89%	56%	22%	67%	67%
	2007	67%	75%	42%	75%	75%
	2008	80%	80%	20%	50%	60%
	2009	83%	75%	42%	75%	75%
American Indian or Alaskan Native non-Hispanic Men	2010	100%	50%	50%	50%	50%
	2011	100%	100%	100%	100%	
	2012	100%	100%	50%		
	2013	89%	89%			
	2014	60%	60%			
	2015	100%				

4

UC Davis Freshman Retention (First & Second Year) and Graduation (4-, 5- and 6-year) Rates	Entering Year	Returned for 2nd year	Returned for 3rd year	Graduated within 4 years	Graduated within 5 years	Graduated within 6 years
White Men	1996	90%	85%	32%	71%	79%
	1997	89%	83%	33%	70%	77%
	1998	90%	84%	33%	72%	80%
	1999	90%	82%	35%	73%	78%
	2000	90%	86%	39%	75%	81%
	2001	90%	84%	42%	74%	79%
	2002	92%	86%	42%	76%	80%
	2003	90%	86%	45%	73%	79%
	2004	92%	87%	43%	77%	82%
	2005	89%	84%	49%	77%	81%
	2006	91%	84%	49%	76%	80%
	2007	91%	87%	50%	76%	81%
	2008	94%	88%	55%	80%	83%
	2009	93%	88%	56%	80%	83%
White, non-Hispanic Men	2010	92%	88%	54%	81%	84%
	2011	93%	88%	58%	81%	
	2012	94%	89%	57%		
	2013	93%	91%			
	2014	93%	88%			
	2015	94%				
Two or more races, non-Hispanic Men	2010	83%	78%	37%	67%	74%
	2011	93%	90%	58%	79%	
	2012	94%	87%	54%		
	2013	91%	84%			
	2014	85%	84%			
	2015	91%				
All Unknown Ethnic Origin Men	1996	89%	85%	31%	66%	69%
	1997	91%	86%	24%	66%	78%
	1998	84%	81%	26%	60%	72%
	1999	87%	81%	34%	71%	75%
	2000	92%	86%	33%	71%	79%
	2001	89%	84%	28%	66%	79%
	2002	90%	84%	27%	67%	77%
	2003	90%	85%	42%	68%	76%
	2004	90%	83%	50%	74%	81%
	2005	90%	90%	48%	75%	82%
	2006	90%	86%	49%	80%	86%
	2007	94%	89%	47%	78%	82%
	2008	93%	83%	51%	73%	80%
	2009	95%	93%	52%	85%	89%
	2010	98%	93%	52%	85%	88%
	2011	92%	92%	62%	85%	
	2012	96%	93%	59%		
	2013	100%	95%			
	2014	100%	97%			
	2015	94%				

5

UC Davis Freshman Retention (First & Second Year) and Graduation (4-, 5- and 6-year) Rates	Entering Year	Returned for 2nd year	Returned for 3rd year	Graduated within 4 years	Graduated within 5 years	Graduated within 6 years
International* Women	1996	100%	95%	64%	86%	91%
	1997	76%	76%	59%	71%	76%
	1998	86%	81%	48%	76%	81%
	1999	72%	72%	56%	78%	78%
	2000	96%	88%	50%	81%	85%
	2001	85%	92%	46%	85%	85%
	2002	95%	75%	60%	70%	70%
	2003	97%	93%	69%	86%	90%
	2004	96%	96%	76%	88%	92%
	2005	89%	89%	63%	74%	81%
	2006	84%	86%	51%	79%	86%
	2007	89%	84%	62%	78%	78%
	2008	85%	77%	57%	70%	72%
	2009	97%	94%	70%	91%	91%
	2010	94%	88%	68%	85%	88%
	2011	88%	83%	65%	81%	
	2012	90%	88%	67%		
	2013	96%	92%			
	2014	94%	89%			
	2015	95%				
Hispanic Women	1996	86%	81%	33%	64%	72%
	1997	85%	78%	27%	60%	69%
	1998	86%	78%	32%	65%	73%
	1999	90%	82%	30%	73%	81%
	2000	85%	84%	30%	70%	75%
	2001	85%	81%	39%	69%	75%
	2002	88%	84%	42%	73%	79%
	2003	87%	81%	42%	67%	72%
	2004	85%	80%	43%	68%	75%
	2005	84%	75%	38%	66%	71%
	2006	84%	76%	37%	67%	74%
	2007	83%	78%	42%	69%	74%
	2008	88%	83%	40%	72%	79%
	2009	87%	84%	48%	74%	79%
	2010	90%	86%	44%	76%	81%
	2011	89%	85%	43%	77%	
	2012	91%	84%	51%		
	2013	89%	86%			
	2014	86%	81%			
	2015	90%				
Black or African American Women	1996	83%	76%	15%	55%	63%
	1997	86%	74%	19%	55%	69%
	1998	90%	80%	28%	63%	75%
	1999	92%	88%	37%	68%	85%
	2000	79%	82%	40%	74%	79%
	2001	85%	75%	26%	61%	70%
	2002	87%	85%	26%	69%	72%
	2003	91%	84%	33%	67%	76%
	2004	88%	84%	32%	68%	78%
	2005	81%	76%	42%	65%	69%
	2006	85%	74%	33%	65%	70%
	2007	84%	74%	36%	61%	66%
	2008	88%	83%	36%	69%	76%
	2009	76%	75%	32%	67%	72%
Black or African American, non-Hispanic Women	2010	94%	94%	42%	71%	79%
	2011	94%	90%	35%	67%	
	2012	89%	88%	42%		
	2013	97%	94%			
	2014	93%	89%			
	2015	86%				
Asian or Pacific Islander Women	1996	96%	92%	46%	82%	87%
	1997	93%	90%	46%	80%	85%
	1998	92%	88%	46%	80%	85%
	1999	92%	88%	50%	80%	84%
	2000	93%	89%	46%	81%	85%
	2001	92%	88%	49%	78%	84%
	2002	93%	90%	54%	83%	86%
	2003	93%	88%	59%	82%	86%
	2004	91%	87%	57%	81%	84%
	2005	92%	88%	58%	81%	85%
	2006	93%	88%	61%	83%	87%
	2007	92%	86%	54%	81%	85%
	2008	93%	89%	60%	83%	87%
	2009	93%	90%	63%	87%	90%
Asian non-Hispanic Women	2010	94%	91%	63%	87%	90%
	2011	93%	92%	67%	89%	
	2012	95%	93%	70%		
	2013	95%	93%			
	2014	95%	93%			
	2015	96%				
Native Hawaiian or other Pacific Islander, non-Hispanic Women	2010	78%	78%	44%	78%	78%
	2011	91%	82%	18%	64%	
	2012	70%	80%	60%		
	2013	87%	80%			
	2014	89%	78%			
	2015	91%				
American Indian or Alaskan Native Women	1996	73%	50%	27%	41%	45%
	1997	89%	79%	37%	74%	79%
	1998	96%	74%	35%	61%	70%
	1999	72%	72%	44%	61%	72%
	2000	67%	67%	33%	50%	56%
	2001	85%	67%	37%	63%	67%
	2002	85%	70%	45%	65%	80%
	2003	92%	92%	67%	75%	75%
	2004	88%	75%	50%	69%	69%
	2005	93%	93%	40%	87%	87%
	2006	87%	80%	47%	73%	80%
	2007	86%	83%	59%	72%	72%
	2008	92%	85%	62%	77%	77%
	2009	100%	96%	70%	96%	96%
American Indian or Alaskan Native non-Hispanic Women	2010	67%	67%	33%	67%	67%
	2011	75%	50%	25%	50%	
	2012	100%	100%	40%		
	2013	100%	100%			
	2014	100%	100%			
	2015	100%				

6

UC Davis Freshman Retention (First & Second Year) and Graduation (4-, 5- and 6-year) Rates	Entering Year	Returned for 2nd year	Returned for 3rd year	Graduated within 4 years	Graduated within 5 years	Graduated within 6 years
White Women	1996	92%	86%	50%	81%	85%
	1997	91%	83%	50%	76%	80%
	1998	92%	86%	52%	79%	83%
	1999	94%	86%	57%	82%	86%
	2000	93%	87%	58%	84%	87%
	2001	93%	85%	57%	81%	85%
	2002	94%	87%	61%	83%	86%
	2003	92%	86%	62%	81%	84%
	2004	93%	88%	65%	85%	87%
	2005	92%	87%	65%	84%	86%
	2006	91%	85%	66%	83%	86%
	2007	93%	87%	66%	85%	87%
	2008	93%	89%	68%	86%	88%
	2009	94%	90%	71%	88%	89%
White, non-Hispanic Women	2010	94%	90%	71%	87%	89%
	2011	95%	90%	70%	88%	
	2012	93%	89%	70%		
	2013	93%	90%			
	2014	95%	90%			
	2015	93%				
Two or more races, non-Hispanic Women	2010	98%	89%	64%	84%	87%
	2011	96%	91%	64%	86%	
	2012	94%	88%	61%		
	2013	95%	91%			
	2014	94%	87%			
	2015	91%				
All Unknown Ethnic Origin Women	1996	95%	93%	47%	86%	89%
	1997	93%	85%	44%	77%	81%
	1998	89%	81%	39%	71%	76%
	1999	92%	88%	48%	83%	88%
	2000	93%	91%	55%	82%	86%
	2001	92%	85%	46%	75%	80%
	2002	90%	84%	44%	79%	82%
	2003	89%	82%	61%	79%	80%
	2004	91%	87%	63%	83%	85%
	2005	90%	85%	56%	82%	85%
	2006	90%	85%	64%	81%	85%
	2007	92%	86%	62%	82%	86%
	2008	95%	88%	61%	85%	88%
	2009	94%	90%	60%	87%	89%
	2010	96%	92%	65%	85%	89%
	2011	86%	79%	69%	79%	
	2012	96%	90%	67%		
	2013	98%	96%			
	2014	96%	87%			
	2015	92%				

Returned category is the percentage of first-time freshmen in a given fall term who returned to the institution in the subsequent fall term. For example, the 2nd-Yr returned percentage for the fall 1996 first-time freshmen is the percentage of fall 1996 first-time freshmen who returned for the fall term, 1997.

Graduated Percentage is the cumulative percentage of first-time freshmen in a given fall term who had graduated by the end of the summer in the given year. For example, the 6th-Yr graduation percentage for fall 1996 first-time freshmen is the percentage of fall 1996 first-time freshmen who graduated from the institution by the end of the summer of 2002. Degree information is presently available through Summer of 2016; **therefore, the most recent year for which 6-year graduation rates are available is 2010.**

*"International" is equivalent to the NCES IPEDS definition "Non-Resident Alien".

UC Davis Fall California Community College Transfers First Year Retention and 2-, 3- and 4-year Graduation Rates	Entering Year	Returned for 2nd year	Returned for 3rd year	Graduated within 2 years	Graduated within 3 years	Graduated within 4 years
Grand Total	2001	89%	41%	40%	75%	83%
	2002	90%	35%	46%	78%	84%
	2003	90%	34%	47%	78%	83%
	2004	89%	32%	48%	78%	85%
	2005	88%	28%	53%	79%	84%
	2006	90%	30%	49%	80%	85%
	2007	88%	32%	48%	77%	84%
	2008	90%	33%	49%	80%	86%
	2009	89%	35%	48%	79%	85%
	2010	90%	32%	50%	80%	85%
	2011	91%	34%	51%	81%	87%
	2012	92%	32%	53%	82%	87%
	2013	92%	34%	53%	82%	
	2014	92%	34%	53%		
	2015	91%				
All Men	2001	90%	45%	35%	73%	81%
	2002	90%	37%	42%	75%	82%
	2003	91%	35%	45%	75%	81%
	2004	89%	35%	46%	79%	86%
	2005	88%	32%	49%	76%	83%
	2006	89%	31%	48%	77%	83%
	2007	89%	36%	44%	77%	85%
	2008	91%	36%	46%	80%	87%
	2009	89%	38%	43%	77%	82%
	2010	90%	35%	46%	78%	84%
	2011	90%	35%	49%	80%	86%
	2012	92%	33%	51%	81%	86%
	2013	90%	34%	51%	80%	
	2014	91%	34%	51%		
	2015	92%				
All Women	2001	88%	37%	45%	77%	84%
	2002	90%	34%	49%	81%	86%
	2003	90%	33%	49%	79%	85%
	2004	90%	28%	51%	77%	83%
	2005	87%	25%	56%	81%	85%
	2006	91%	29%	51%	82%	86%
	2007	88%	29%	51%	76%	83%
	2008	90%	31%	51%	80%	85%
	2009	90%	33%	52%	82%	88%
	2010	89%	29%	54%	82%	86%
	2011	92%	33%	54%	83%	88%
	2012	93%	32%	55%	84%	89%
	2013	93%	33%	56%	84%	
	2014	92%	34%	54%		
	2015	91%				
All International*	2001	89%	35%	50%	78%	84%
	2002	92%	26%	58%	85%	89%
	2003	93%	15%	74%	86%	89%
	2004	95%	22%	68%	86%	92%
	2005	95%	21%	71%	90%	90%
	2006	93%	12%	75%	92%	92%
	2007	88%	25%	60%	80%	88%
	2008	88%	19%	63%	79%	86%
	2009	85%	19%	64%	84%	88%
	2010	85%	20%	62%	83%	86%
	2011	84%	26%	57%	85%	87%
	2012	88%	20%	65%	84%	86%
	2013	88%	26%	62%	86%	
	2014	89%	27%	61%		
	2015	89%				

1

UC Davis Fall California Community College Transfers First Year Retention and 2-, 3- and 4-year Graduation Rates	Entering Year	Returned for 2nd year	Returned for 3rd year	Graduated within 2 years	Graduated within 3 years	Graduated within 4 years
All Hispanic	2001	84%	46%	29%	66%	76%
	2002	90%	34%	47%	80%	84%
	2003	86%	38%	36%	70%	77%
	2004	90%	32%	44%	74%	83%
	2005	88%	29%	49%	75%	83%
	2006	89%	33%	42%	72%	79%
	2007	88%	34%	44%	76%	81%
	2008	90%	38%	41%	75%	82%
	2009	89%	38%	45%	81%	87%
	2010	89%	35%	47%	80%	84%
	2011	91%	38%	46%	79%	85%
	2012	90%	36%	46%	78%	83%
	2013	93%	36%	50%	79%	
	2014	91%	40%	45%		
	2015	91%				
All Black	2001	79%	37%	16%	56%	65%
	2002	85%	56%	24%	62%	71%
	2003	89%	30%	49%	65%	73%
	2004	90%	45%	31%	65%	82%
	2005	81%	36%	42%	61%	72%
	2006	77%	43%	28%	64%	77%
	2007	84%	49%	36%	60%	73%
	2008	90%	45%	38%	70%	78%
	2009	84%	51%	24%	67%	75%
All Black, non-Hispanic	2010	80%	52%	20%	64%	72%
	2011	88%	40%	40%	78%	90%
	2012	89%	44%	38%	69%	80%
	2013	90%	55%	31%	64%	
	2014	86%	40%	35%		
	2015	82%				
All Asian or Pacific Islander	2001	91%	43%	41%	79%	86%
	2002	91%	37%	43%	79%	87%
	2003	91%	36%	44%	78%	84%
	2004	88%	33%	47%	78%	84%
	2005	88%	26%	55%	79%	85%
	2006	91%	31%	49%	81%	86%
	2007	89%	33%	45%	78%	85%
	2008	90%	34%	46%	80%	86%
	2009	90%	35%	47%	78%	85%
All Asian, non-Hispanic	2010	90%	35%	49%	82%	87%
	2011	92%	35%	50%	81%	87%
	2012	93%	34%	52%	83%	89%
	2013	91%	35%	51%	82%	
	2014	92%	35%	52%		
	2015	92%				
Native Hawaiian or other Pacific Islander, non-Hispanic	2010	100%	53%	40%	60%	80%
	2011	94%	50%	44%	81%	88%
	2012	80%	27%	47%	73%	73%
	2013	100%	35%	59%	94%	
	2014	93%	47%	40%		
	2015	90%				
All American Indian or Alaskan Native	2001	84%	37%	26%	53%	68%
	2002	88%	44%	38%	81%	94%
	2003	77%	23%	46%	62%	85%
	2004	84%	47%	21%	74%	84%
	2005	78%	44%	11%	56%	67%
	2006	87%	47%	40%	67%	87%
	2007	92%	44%	44%	68%	76%
	2008	78%	44%	28%	67%	72%
	2009	95%	50%	40%	75%	85%
All American Indian or Alaskan Native, non-Hispanic	2010	89%	44%	44%	89%	89%
	2011	100%	25%	50%	75%	75%
	2012	88%	25%	63%	75%	88%
	2013	71%	0%	71%	71%	
	2014	100%	80%	20%		
	2015	100%				

2

UC Davis Fall California Community College Transfers First Year Retention and 2-, 3- and 4-year Graduation Rates	Entering Year	Returned for 2nd year	Returned for 3rd year	Graduated within 2 years	Graduated within 3 years	Graduated within 4 years
All White	2001	100%	44%	50%	88%	95%
	2002	100%	39%	51%	86%	93%
	2003	100%	37%	53%	87%	93%
	2004	100%	34%	57%	89%	96%
	2005	100%	31%	61%	92%	97%
	2006	100%	33%	56%	90%	95%
	2007	100%	35%	57%	87%	94%
	2008	100%	36%	57%	91%	96%
	2009	100%	39%	54%	89%	95%
All White, non-Hispanic	2010	90%	30%	51%	78%	84%
	2011	92%	32%	54%	83%	87%
	2012	95%	31%	55%	84%	88%
	2013	93%	33%	55%	84%	
	2014	92%	31%	57%		
	2015	92%				
Two or more races, non-Hispanic	2010	89%	25%	55%	82%	86%
	2011	88%	34%	47%	77%	85%
	2012	89%	36%	49%	81%	87%
	2013	95%	33%	56%	84%	
	2014	93%	32%	54%		
	2015	92%				
All Unknown Ethnic Origin	2001	90%	41%	38%	72%	81%
	2002	89%	34%	48%	77%	81%
	2003	92%	44%	44%	81%	85%
	2004	89%	31%	47%	77%	82%
	2005	81%	36%	40%	71%	77%
	2006	90%	29%	49%	75%	86%
	2007	89%	34%	48%	77%	90%
	2008	89%	24%	54%	78%	83%
	2009	88%	36%	46%	78%	82%
	2010	91%	36%	49%	82%	87%
	2011	96%	36%	54%	82%	87%
	2012	96%	34%	49%	82%	90%
	2013	78%	30%	48%	72%	
	2014	89%	34%	51%		
	2015	95%				

Returned category is the percentage of transfers in a given fall term who returned to the institution in the subsequent fall term. For example, the 2nd-Yr returned percentage for the fall 2010 transfers is the percentage of fall 2010 transfers who returned for the fall term, 2011. Graduated Percentage is the cumulative percentage of transfers in a given fall term who had graduated by the end of the summer in the given year. For example, the 4th-Yr graduation percentage for fall 2010 transfers is the percentage of fall 2010 transfers who graduated from the institution by the end of the summer of 2014. Degree information is presently available through Summer of 2016; therefore, the most recent year for which 4-year graduation rates are available is 2012.

*"International" is equivalent to the NCES IPEDS definition "Non-Resident Alien".

Source: 2016-17 CSRDE COMMUNITY COLLEGE TRANSFER STUDENT RETENTION SURVEY (Feb 21, 2017)
UC Davis Budget & Institutional Analysis   3

Appendix C: Examples of Data from the Center for Educational Effectiveness

COURSES WITH HIGHEST DFW RATES – Yearly Average
Percentage of Students Receiving DFW by Relative Term Enrolled
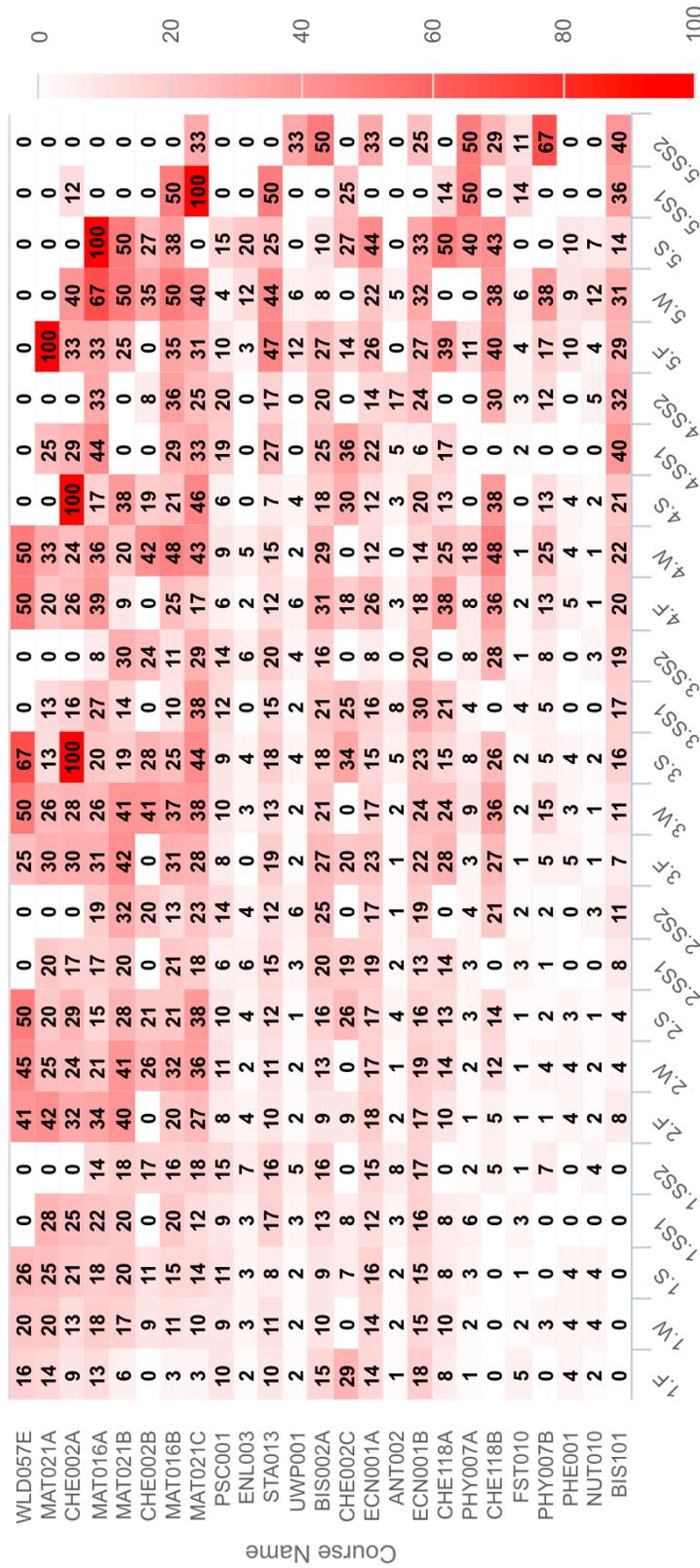
Course Heatmap

Yearly average % DFW

COURSES WITH HIGHEST DFW NUMBERS – Yearly Average
Number of Students Receiving DFW by Relative Term Enrolled

Course Heatmap

Yearly average # DFW

Legend scale: 0, 50, 100, 150, 200

Course Name	1.F	1.W	1.S	1.SS1	1.SS2	2.F	2.W	2.S	2.SS1	2.SS2	3.F	3.W	3.S	3.SS1	3.SS2	4.F	4.W	4.S	4.SS1	4.SS2	5.F	5.W	5.S	5.SS1	5.SS2
WLD057E	118	55	27	0	0	10	5	2	0	0	1	1	2	0	0	1	1	0	0	0	0	0	0	0	0
MAT021A	132	44	20	4	0	14	4	3	2	2	2	2	2	1	1	2	1	1	1	1	2	1	1	0	0
CHE002A	132	178	60	16	0	83	33	5	6	0	10	8	1	2	0	2	2	1	1	1	2	1	1	0	0
MAT016A	86	79	37	5	3	42	15	5	2	3	7	4	2	2	1	3	2	2	1	1	2	2	2	1	1
MAT021B	15	138	52	5	4	29	17	6	2	2	3	3	3	2	1	3	1	2	0	1	1	1	1	0	1
CHE002B	0	106	123	0	13	0	68	30	0	8	0	17	9	3	2	0	4	2	1	3	3	2	2	0	0
MAT016B	2	59	57	6	4	33	36	17	5	2	10	8	5	2	1	3	3	2	2	1	1	1	2	0	1
MAT021C	3	21	88	3	6	54	26	18	2	3	5	3	4	2	2	3	3	1	2	1	2	1	0	1	0
PSC001	70	63	52	2	4	22	20	14	2	3	8	7	4	2	0	1	3	1	1	1	2	1	1	0	0
ENL003	9	10	10	1	1	5	3	4	1	2	1	2	2	0	1	4	2	0	0	0	1	1	2	0	0
STA013	28	51	36	6	6	38	33	20	6	5	15	9	7	3	3	3	3	1	5	1	5	3	2	1	0
UWP001	4	6	6	2	1	4	3	2	1	1	2	1	2	1	1	1	1	1	2	1	2	1	0	0	1
BIS002A	12	49	62	5	8	62	46	25	9	7	15	8	4	2	2	4	3	3	2	1	1	2	1	1	0
CHE002C	1	0	63	11	0	60	0	56	12	3	13	0	10	3	0	3	0	3	2	1	3	2	1	0	1
ECN001A	28	44	44	2	3	42	32	19	5	1	18	10	6	3	2	8	3	3	1	0	3	3	1	1	0
ANT002	2	4	8	1	2	3	3	5	1	1	13	1	3	3	0	1	0	1	1	1	0	2	1	0	1
ECN001B	17	34	45	3	3	34	26	21	3	6	13	10	9	4	3	4	3	4	2	1	2	2	2	0	1
CHE118A	1	1	1	2	0	61	66	12	11	0	24	10	9	3	4	5	3	2	0	0	2	1	1	1	0
PHY007A	1	1	0	2	3	2	10	7	2	4	7	8	5	4	3	2	2	0	2	0	4	0	0	2	1
CHE118B	0	0	0	0	1	1	59	58	0	18	26	30	13	0	3	5	8	6	6	2	4	2	2	1	1
FST010	2	2	3	2	1	3	2	4	4	1	1	2	2	2	2	7	2	1	1	0	2	2	2	1	0
PHY007B	0	1	0	0	4	1	9	8	2	4	9	32	6	3	3	21	6	3	0	2	4	2	2	1	2
PHE001	12	15	15	0	0	13	11	10	0	0	20	9	14	0	0	21	19	28	0	0	19	12	12	1	0
NUT010	1	6	6	0	2	2	3	2	0	4	2	2	2	2	2	2	2	3	2	2	1	3	1	0	0
BIS101	0	0	0	0	0	1	3	10	4	7	32	33	28	6	6	17	12	10	5	4	6	4	2	2	2

INTRO COURSE GAPS – Biology (BIS2A) First Gen & URM
Raw & Predicted Logistic Regression based on overall SAT
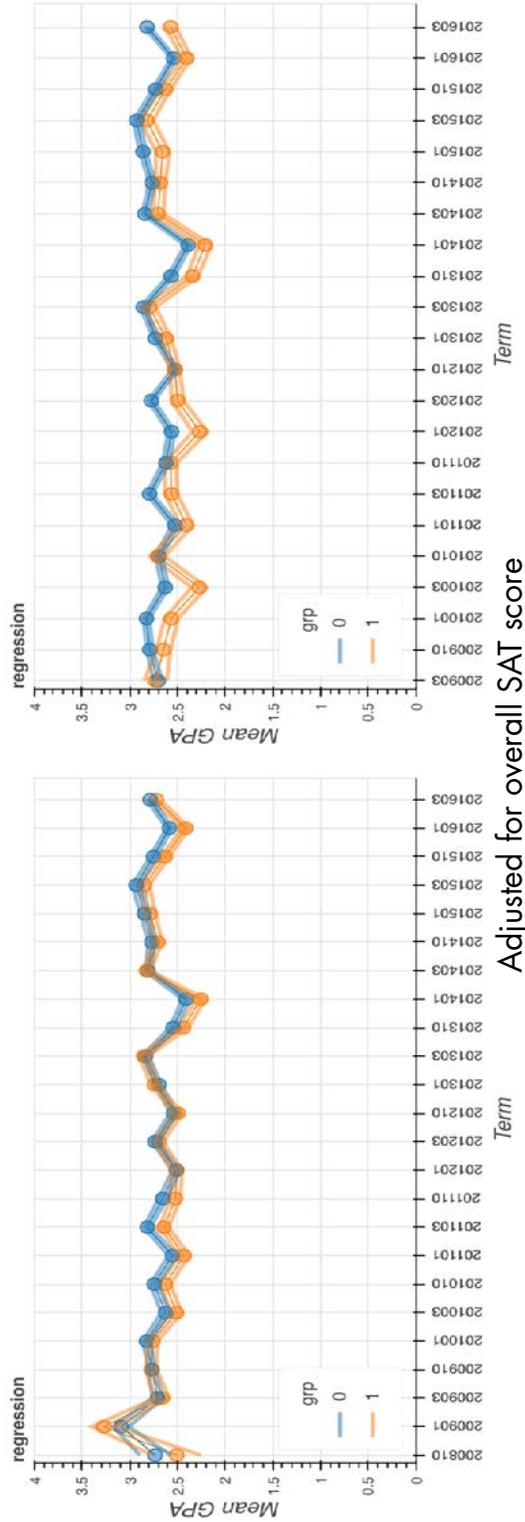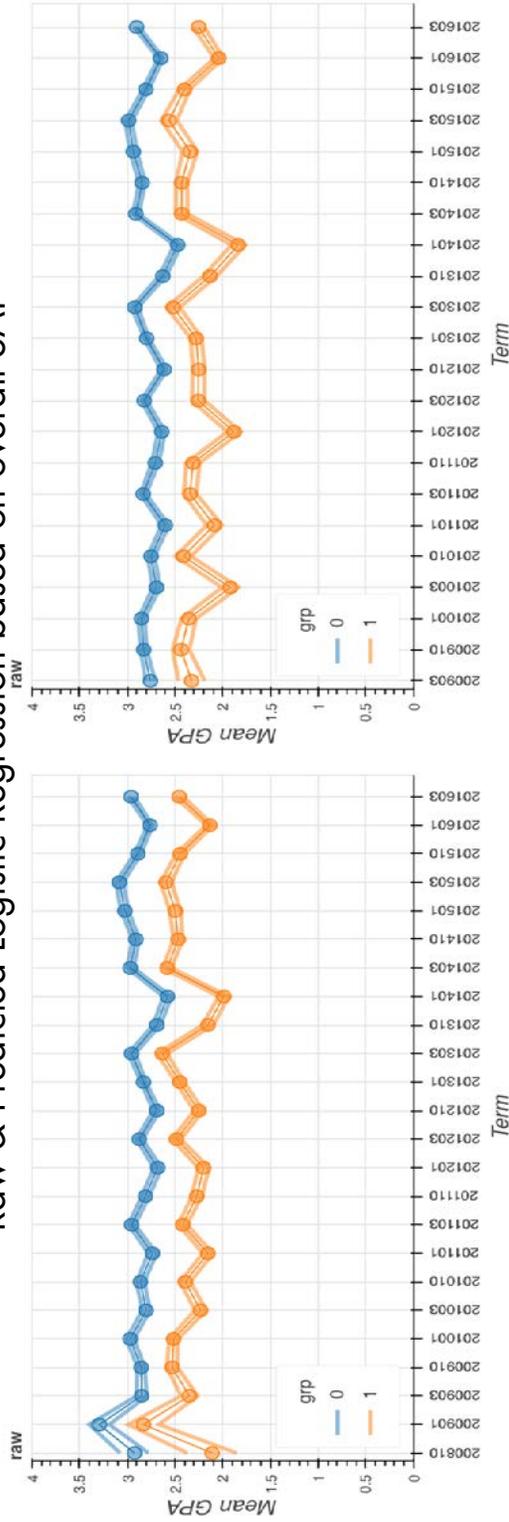
Adjusted for overall SAT score

INTRO COURSE GAPS – Psychology (PSC1) First Gen & URM
Raw & Predicted Logistic Regression based on overall SAT
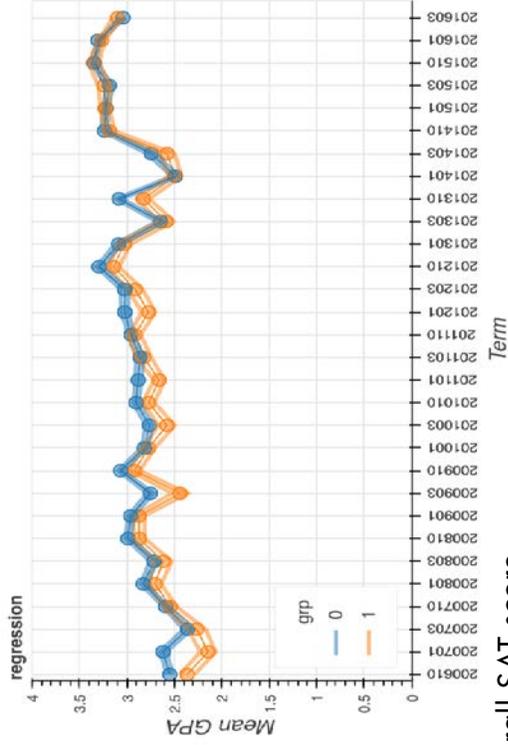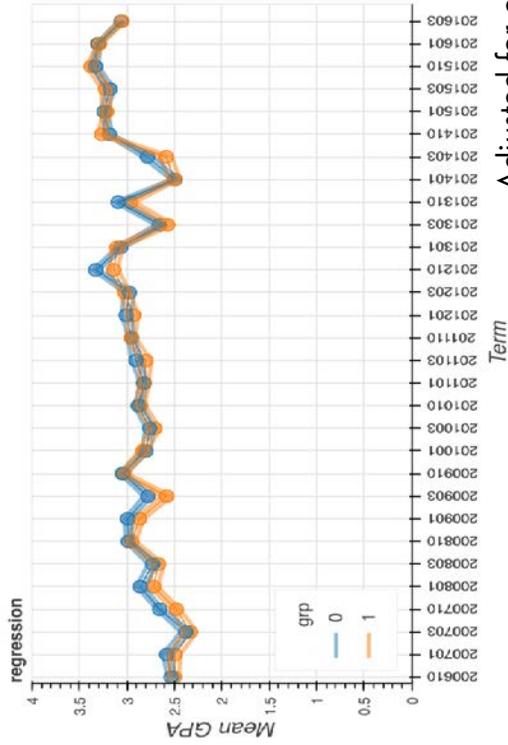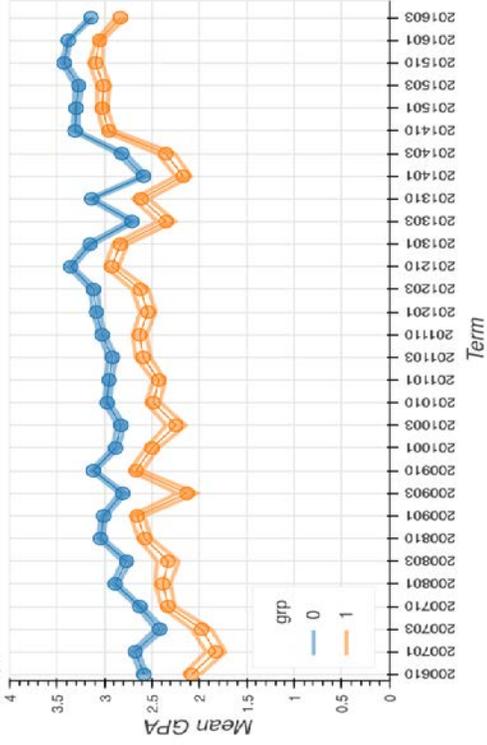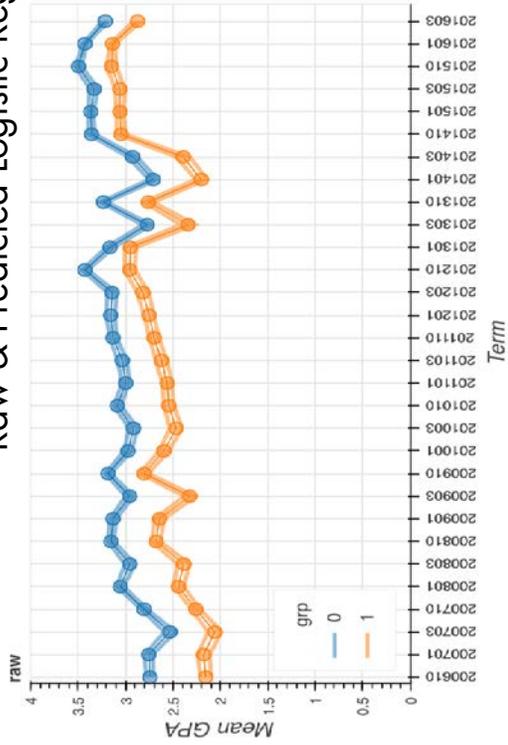
Adjusted for overall SAT score

INTRO COURSE GAPS – Chemistry (CHE2A) First Gen & URM
Raw & Predicted Logistic Regression based on overall SAT
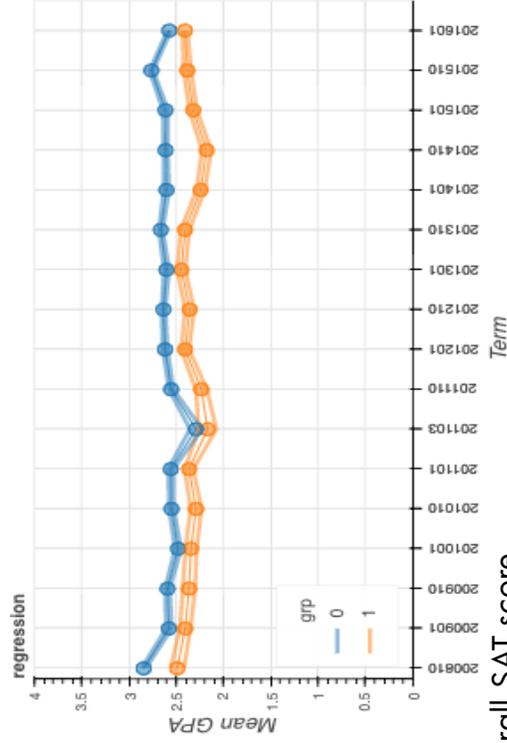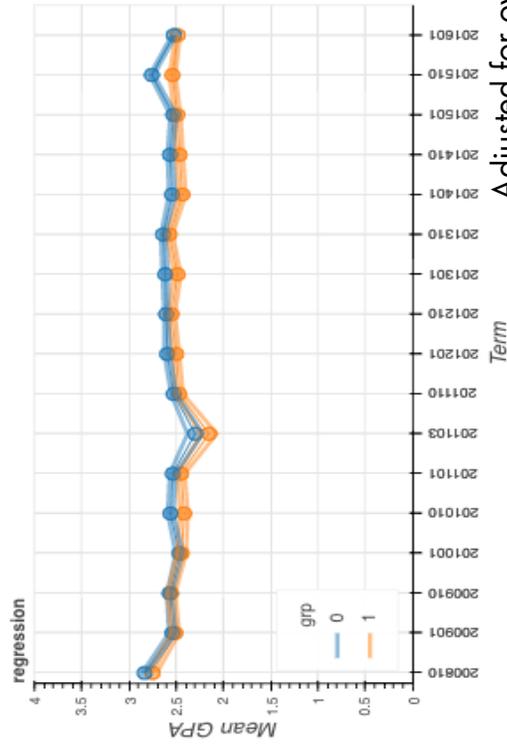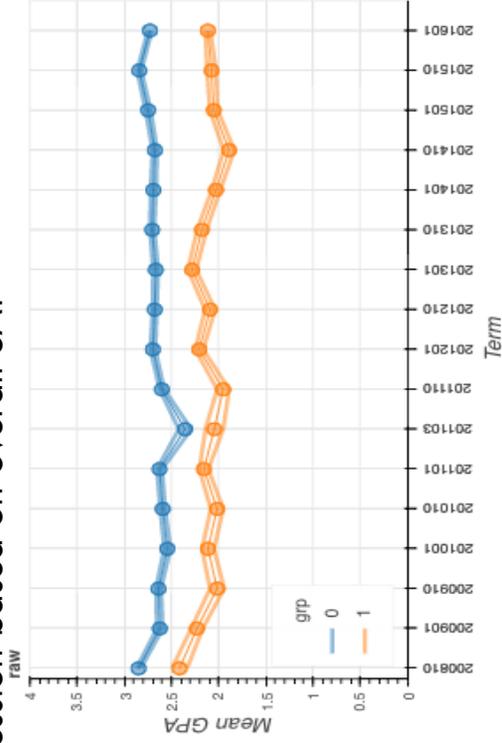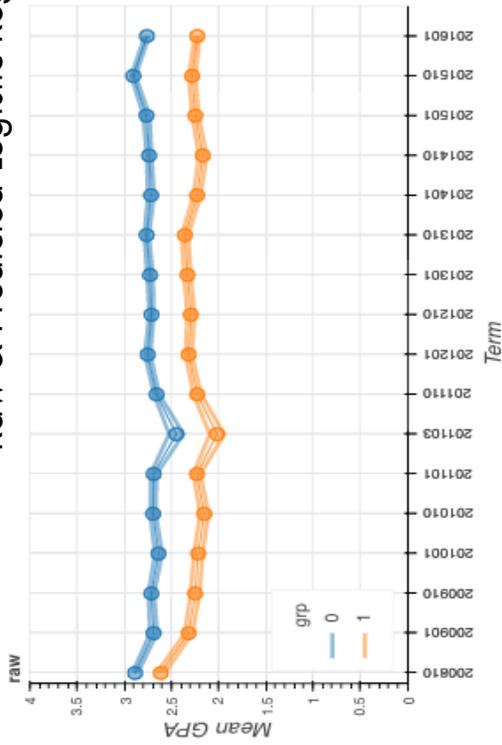
Adjusted for overall SAT score

KNOW YOUR STUDENTS PROTOTYPE – CHE 2a

Basic Course Information

476
Class Size

124:349
Male:Female

29, 6.1%
Transfer Student

172, 36.4%
First Generation

120, 25.4%
Low Income

91, 19.9%
Under Represented Minority

193, 40.8%
Native Speaker

155, 32.8%
Bilingual

125, 26.4%
ESL

<10
International

27
Repeater (DFW)

1
Concurrent (at least 1 course)

Cohort Distribution (latest term)

Of the **476** students in the class, there are **17** students without latest completed term information. Out of these students, **14** are admitted in **201610** .
Reason for the rest of the missing data is uncertain.
Groups are determined by UCD definition of class level:
Freshman 0.0–44.99
Sophomore 45.0–89.99
Junior 90.0–134.99
Senior 135 units and above

● Grouped ○ Stacked   ● Transfer_Admit ● Freshman_Admit

Units Taken at UCD

Major Distribution (latest term)

Only the top 20 majors are shown.

○ Grouped ● Stacked   ● Freshman ● Sophomore ● Junior ● Senior
● New Students

Biological Sciences, BBIS
Neurobio,Physiology & Behavior, BNPB
Biochem & Molecular Biology, BBMB
Animal Science, AANS
Psychology, LPSC
Environ Sci & Management, AESM
Pharmaceutical Chemistry, LPMC
Undeclared-Life Sciences, BULS
Nutrition Science, ANSC
Wildlife,Fish&Conservation Bio, AWFC
Biomedical Engineering, EBIM
Clinical Nutrition, ACNU
Undeclared/Exploratory Program, AEXP
Human Development, AHDE
Agric & Environ Education, AAEE
Biological Systems Engineering, EBSE
Biotechnology, ABIT
Global Disease Biology, AGDB
Animal Biology, AABI
Genetics and Genomics, BGGN

CEE
UC Davis Center for Educational Effectiveness

KNOW YOUR STUDENTS PROTOTYPE – CHE 2a

Cohort Distributions

Freshman Admit Students

Units taken at UCD

- 0-44.9: 430
- 45-89.9: 9
- 90-134.9: 3
- 135-189.9: 1
- 190+: 0

Transfer Admit Students

Units taken at UCD

- 0-44.9: 20
- 45-89.9: 1
- 90-134.9: 0
- 135-189.9: 0
- 190+: 0

Major Distribution of Students

○ Grouped ● Stacked

● Freshman ● Sophomore ● Junior
● Senior

Students in Major

- Biological Sciences
- Biochem & Molecular Biology
- Animal Science
- Biomedical Engineering
- Undeclared-Life Sciences
- Neurobiol, Physiol & Behavior
- Animal Biology
- Chemical Engineering
- Psychology
- Nutrition Science
- Environ Sci & Management
- Undeclared-Social Sciences
- Chemistry
- Materials Science & Engr
- Clinical Nutrition
- Undeclared/Exploratory Program
- Genetics and Genomics
- Food Science
- Pharmaceutical Chemistry
- Cell Biology

Top Concurrent Courses

Sort by Size

Students Enrolled in Course

- ANS 001 Domestic Anim & Man
- ANT 002 Cultural Anthropology
- BIM 001 Intro to Biomedical Eng
- BIS 005 Exploring Bio Sci
- BIS 098 Directed Gp Study
- CLA 030F Word Roots
- ECH 080 Chem Engr Profession
- ENL 003 Intro To Literature
- FRS 002 First-Year Seminar
- MAT 012 Precalculus
- MAT 016A Short Calculus
- MAT 017A Calculus for BioSci
- MAT 021A Calculus
- MAT 021B Calculus
- PHE 001 Physical Activities
- UWP 001 Expository Writing
- UWP 022 Intrmed Multiling Wrtng
- LD 055M Algebra Review-SCC170M
- VLD 057E College Writing-SCC157E
- WLD 911 Wkload - Math Co 16A

CEE
UC Davis Center for Educational Effectiveness

RETENTION & Timely Graduation – Non Low-Income, Non First Generation, Non URM

RETENTION & Timely Graduation Low-Income, First Generation, and URM

Center for Student Affairs Assessment, Division of Student Affairs -- DRAFT

Changes in the Student Persistence Measure Dimension during the Fall 2016 Quarter

Enrollment, Attrition, and Graduation rates for the 201010 Cohort. (Of those students that remained actively enrolled in Fall 1)

	Fall1	Winter 1	Spring1	Fall2	Winter 2	Spring2	Fall3	Winter 3	Spring3	Fall4	Winter 4	Spring4	Fall5	Winter 5	Spring5	Fall6	Winter 6	Spring6	Fall7	Winter 7	Spring7
Enrollment--Reference Group (2010 Cohort); N=4528	100.0	97.9	95.5	92.4	89.5	88.2	87.4	86.9	85.0	83.3	78.4	37.5	22.2	17.4	6.2	3.0	2.3	1.7	1.3	1.3	1.1
Enrollment--Test Group (2010 Cohort); N=90	100.0	95.6	94.4	90.0	86.7	86.7	82.2	76.7	76.7	75.6	66.7	34.4	20.0	15.6	5.6	2.2	1.1	0.0	1.1	1.1	0.0
Attrition--Reference Group (2010 Cohort); N=4528	0.0	2.1	4.5	7.6	10.5	11.8	12.5	13.0	14.0	13.7	14.6	15.4	15.8	16.1	16.0	15.3	15.2	15.0	14.5	14.5	14.7
Attrition--Test Group (2010 Cohort); N=90	0.0	4.4	5.6	10.0	13.3	13.3	17.8	22.2	20.0	20.0	24.4	24.4	24.4	24.4	23.3	22.2	22.2	23.3	22.2	22.2	23.3
Graduation--Reference Group (2010 Cohort); N=4528	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0	3.0	7.0	47.1	62.0	66.5	77.7	81.8	82.4	83.3	84.2	84.2	84.2
Graduation--Test Group (2010 Cohort); N=90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.3	4.4	8.9	41.1	55.6	60.0	71.1	75.6	76.7	76.7	76.7	76.7	76.7

Significance markers on data points (X^2, Test Group as compared to Reference Group):   ****$p <= 0.0001$; ***$p <= 0.001$; **$p <= 0.01$; *$p <= 0.05$

Reference Group: Undergraduates, Freshmen Entry (LEVL='UG'; ALEVL='H'-Freshmen)

Test Group: Undergraduates, Freshmen Entry, Eth. INCLUDES American Indian/Alaskan Native (LEVL='UG'; ALEVL='H'-Freshmen; ETH INCLUDES 'INA'-American Indian or Alaskan Native (IPEDS) &/OR 'UNA'-American Indian/Alaskan Native)

E, A, & G (pg 1 of 7)

Enrollment, Attrition, and Graduation rates for the 201110 Cohort. (Of those students that remained actively enrolled in Fall 1)

	Fall1	Winter 1	Spring1	Fall2	Winter 2	Spring2	Fall3	Winter 3	Spring3	Fall4	Winter 4	Spring4	Fall5	Winter 5	Spring5	Fall6	Winter 6	Spring6	Fall7	Winter 7	Spring7
Enrollment--Reference Group (2011 Cohort); N=4721	100.0	98.2	96.0	91.6	89.8	88.5	87.5	86.8	84.3	82.8	78.9	36.2	20.5	15.4	5.8	2.8	2.9	2.5	0.0	0.0	0.0
Enrollment--Test Group (2011 Cohort); N=67	100.0	98.5	97.0	91.0	88.1	88.1	85.1	80.6	76.1	65.7	65.7	32.8	19.4	14.9	6.0	3.0	3.0	3.0	0.0	0.0	0.0
Attrition--Reference Group (2011 Cohort); N=4721	0.0	1.8	4.0	8.4	10.2	11.4	12.4	13.0	14.6	13.9	14.5	14.5	14.7	15.1	14.9	14.5	14.4	14.9	17.3	17.3	17.3
Attrition--Test Group (2011 Cohort); N=67	0.0	1.5	3.0	9.0	11.9	11.9	14.9	19.4	23.9	25.4	25.4	28.4	28.4	28.4	26.9	25.4	25.4	25.4	28.4	28.4	28.4
Graduation--Reference Group (2011 Cohort); N=4721	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.2	3.2	6.5	49.3	64.8	69.5	79.2	82.7	82.7	82.7	82.7	82.7	82.7
Graduation--Test Group (2011 Cohort); N=67	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0	9.0	38.8	52.2	56.7	67.2	71.6	71.6	71.6	71.6	71.6	71.6

Significance markers on data points (X^2, Test Group as compared to Reference Group):   ****$p <= 0.0001$; ***$p <= 0.001$; **$p <= 0.01$; *$p <= 0.05$

Reference Group: Undergraduates, Freshmen Entry (LEVL='UG'; ALEVL='H'-Freshmen)

Test Group: Undergraduates, Freshmen Entry, Eth. INCLUDES American Indian/Alaskan Native (LEVL='UG'; ALEVL='H'-Freshmen; ETH INCLUDES 'INA'-American Indian or Alaskan Native (IPEDS) &/OR 'UNA'-American Indian/Alaskan Native)

E, A, & G (pg 2 of 7)

Enrollment, Attrition, and Graduation rates for the 201210 Cohort. (Of those students that remained actively enrolled in Fall 1)

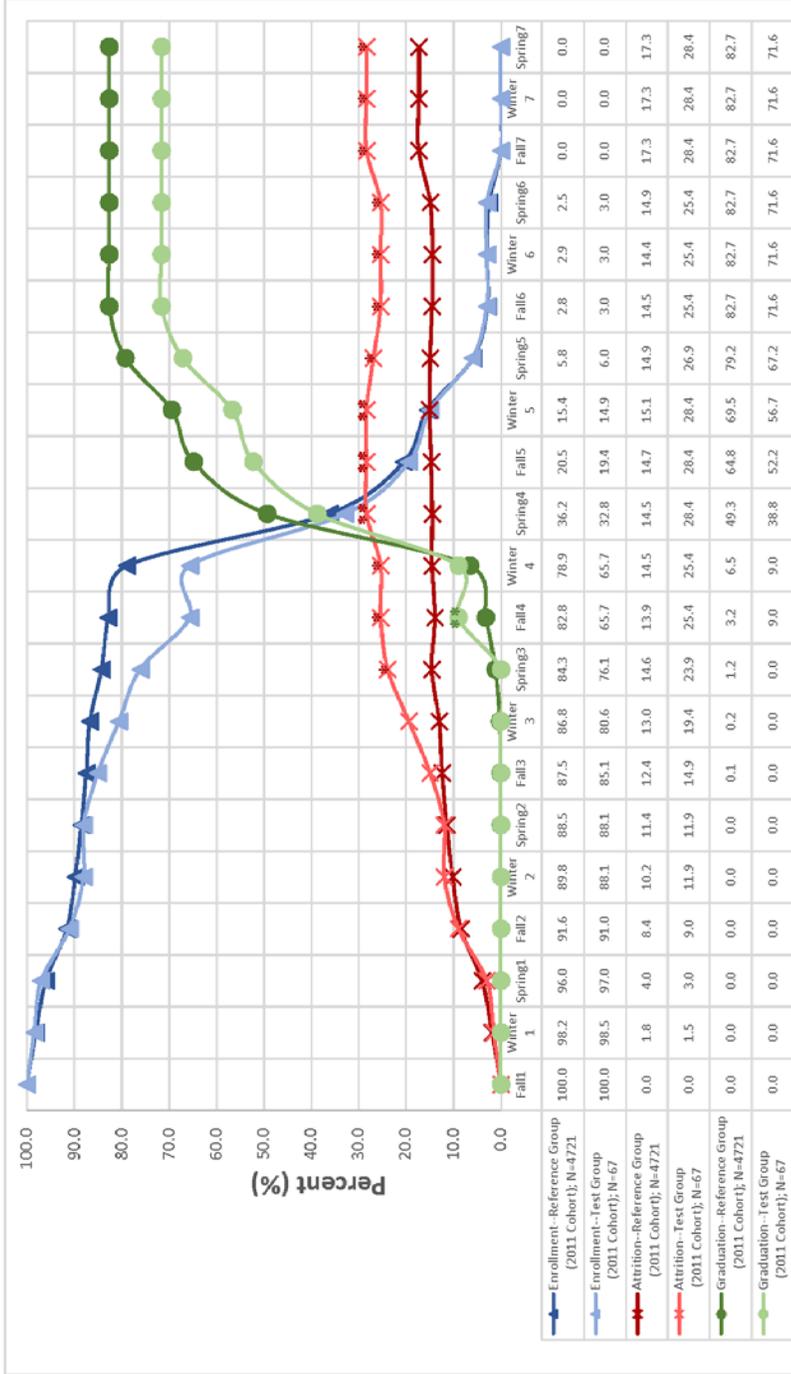|	Fall1	Winter1	Spring1	Fall2	Winter2	Spring2	Fall3	Winter3	Spring3	Fall4	Winter4	Spring4	Fall5	Winter5	Spring5
Enrollment--Reference Group (2012 Cohort); N=5226	100.0	98.1	96.1	92.6	90.5	89.0	87.9	87.0	85.1	83.7	79.6	33.7	18.3	17.6	14.0
Enrollment--Test Group (2012 Cohort); N=79	100.0	94.9	92.4	91.1	87.3	83.5	81.0	78.5	75.9	81.0	72.2	35.4	19.0	20.3	16.5
Attrition--Reference Group (2012 Cohort); N=5226	0.0	1.9	3.9	7.4	9.5	10.9	12.0	12.9	13.6	13.0	13.5	13.8	14.1	14.8	18.4
Attrition--Test Group (2012 Cohort); N=79	0.0	5.1	7.6	8.9	12.7	16.5	19.0	21.5	24.1	19.0	19.0	16.5	24.1	22.8	26.6
Graduation--Reference Group (2012 Cohort); N=5226	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.2	3.4	6.9	52.5	67.6	67.6	67.6
Graduation--Test Group (2012 Cohort); N=79	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.9	48.1	57.0	57.0	57.0

Significance markers on data points (X^2, Test Group as compared to Reference Group):　　****p <= 0.0001; ***p <= 0.001; **p <= 0.01; *p <= 0.05

Reference Group: Undergraduates, Freshmen Entry (LEVL='UG'; ALEVL='H'-Freshmen)

Test Group: Undergraduates, Freshmen Entry, Eth. INCLUDES American Indian/Alaskan Native (LEVL='UG'; ALEVL='H'-Freshmen; ETH INCLUDES 'INA'-American Indian or Alaskan Native (IPEDS) &/OR 'UNA'-American Indian/Alaskan Native)

E, A, & G (pg 3 of 7)

Enrollment, Attrition, and Graduation rates for the 201010 Cohort. (Of those students that remained actively enrolled in Fall 1)

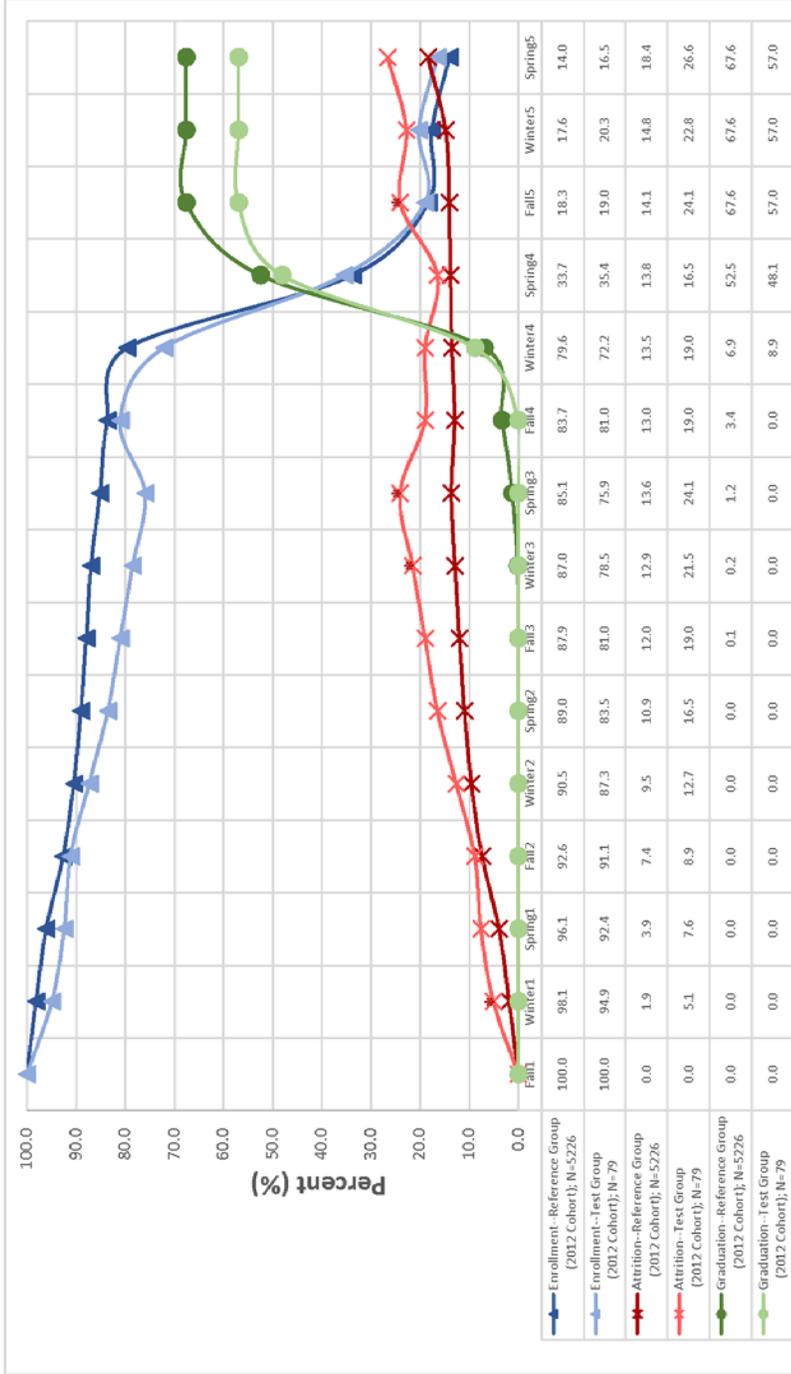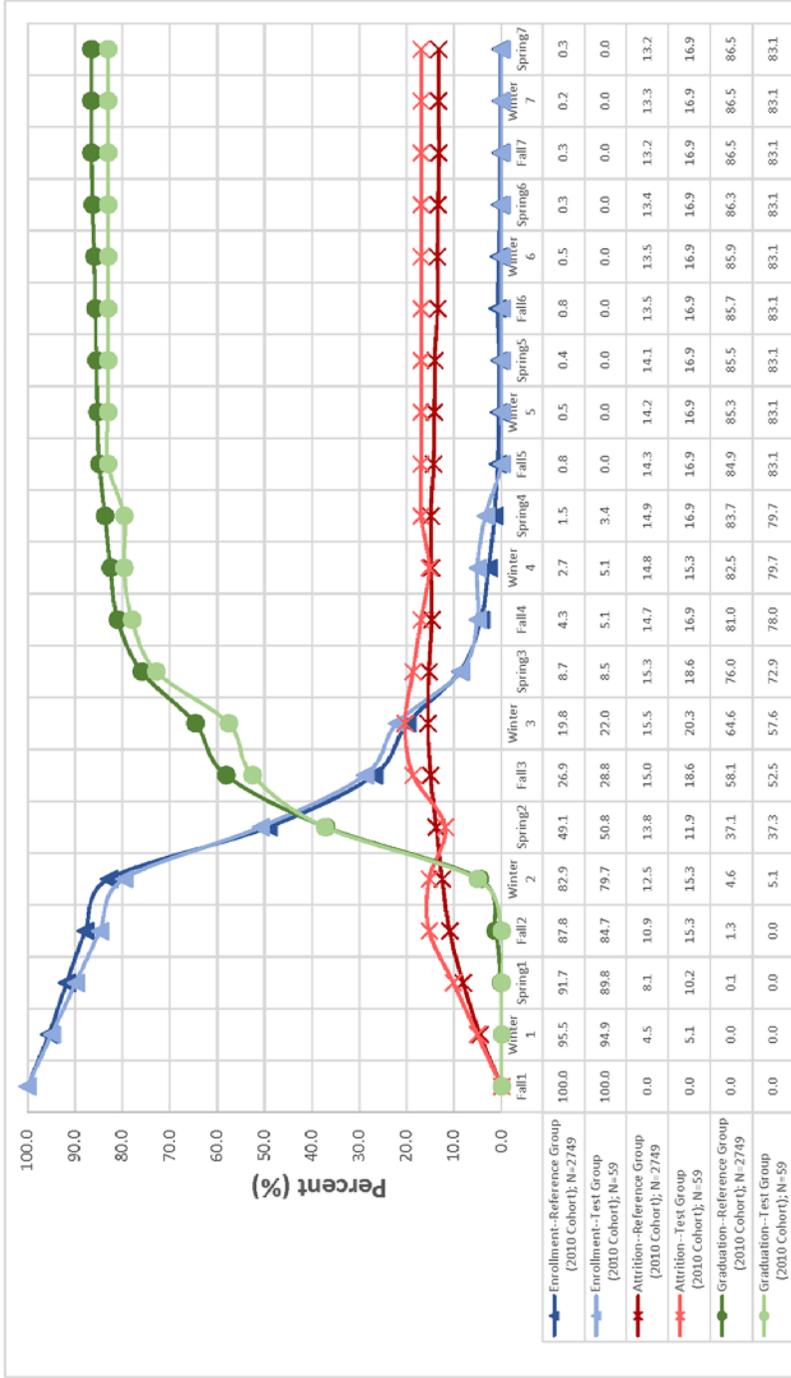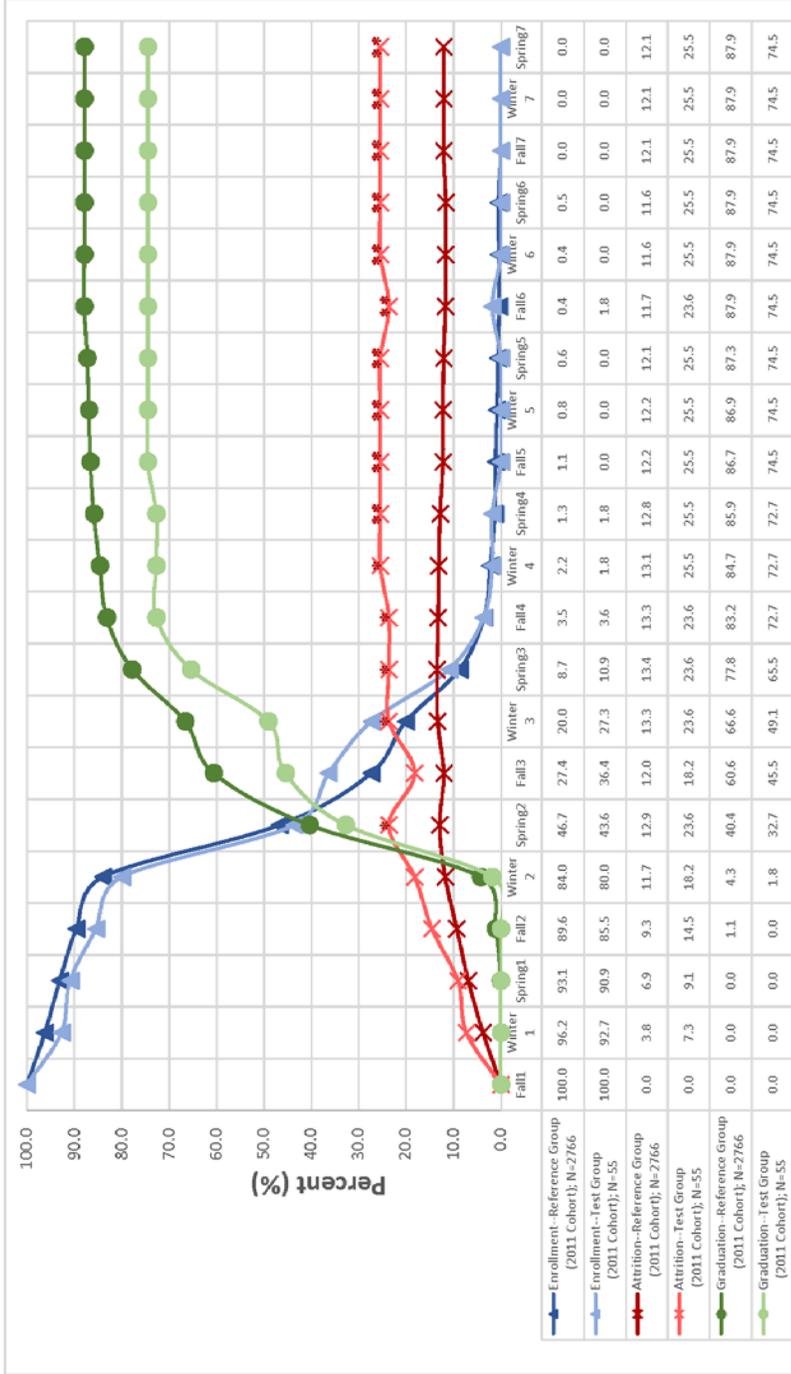|	Fall1	Winter 1	Spring1	Fall2	Winter 2	Spring2	Fall3	Winter 3	Spring3	Fall4	Winter 4	Spring4	Fall5	Winter 5	Spring5	Fall6	Winter 6	Spring6	Fall7	Winter 7	Spring7
Enrollment--Reference Group (2010 Cohort); N=2749	100.0	95.5	91.7	87.8	82.9	49.1	26.9	19.8	8.7	4.3	2.7	1.5	0.8	0.5	0.4	0.8	0.5	0.3	0.3	0.2	0.3
Enrollment--Test Group (2010 Cohort); N=59	100.0	94.9	89.8	84.7	79.7	50.8	28.8	22.0	8.5	5.1	5.1	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Attrition--Reference Group (2010 Cohort); N=2749	0.0	4.5	8.1	10.9	12.5	13.8	15.0	15.5	15.3	14.7	14.8	14.9	14.3	14.2	14.1	13.5	13.5	13.4	13.2	13.3	13.2
Attrition--Test Group (2010 Cohort); N=59	0.0	5.1	10.2	15.3	15.3	11.9	18.6	20.3	18.6	16.9	15.3	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9
Graduation--Reference Group (2010 Cohort); N=2749	0.0	0.0	0.1	1.3	4.6	37.1	58.1	64.6	76.0	81.0	82.5	83.7	84.9	85.3	85.5	85.7	85.9	86.3	86.5	86.5	86.5
Graduation--Test Group (2010 Cohort); N=59	0.0	0.0	0.0	0.0	5.1	37.3	52.5	57.6	72.9	78.0	79.7	79.7	83.1	83.1	83.1	83.1	83.1	83.1	83.1	83.1	83.1

Significance markers on data points (X^2, Test Group as compared to Reference Group):   ****p <= 0.0001; ***p <= 0.001; **p <= 0.01; *p <= 0.05

Reference Group: Undergraduates, Transfer Entry (LEVL='UG'; ALEVL='A'-Transfer)

Test Group: Undergraduates, Transfer Entry, Eth. INCLUDES American Indian/Alaskan Native (LEVL='UG'; ALEVL='A'-Transfer; ETH INCLUDES 'INA'-American Indian or Alaskan Native (IPEDS) &/OR 'UNA'-American Indian/Alaskan Native)

E, A, & G (pg 1 of 7)

Enrollment, Attrition, and Graduation rates for the 201110 Cohort. (Of those students that remained actively enrolled in Fall 1)

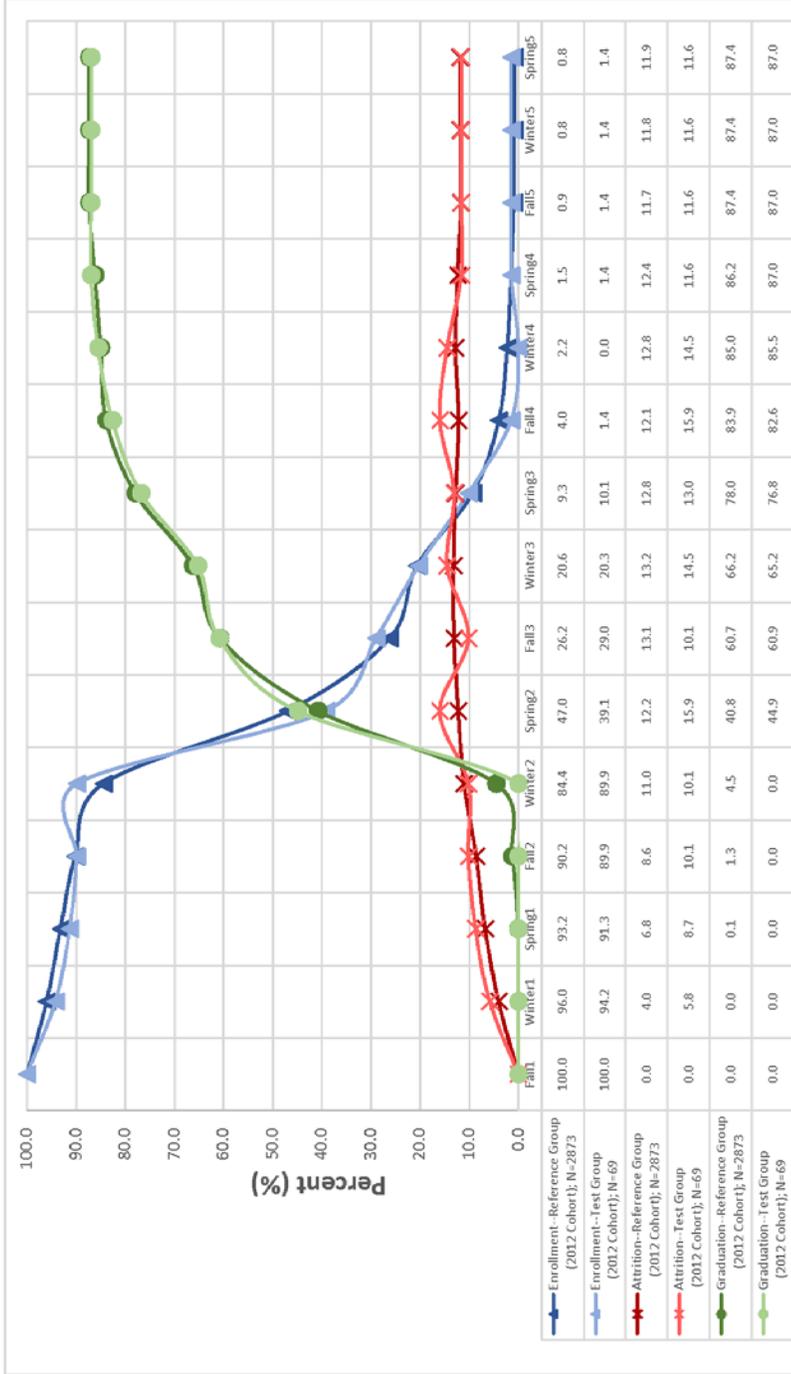|	Fall1	Winter 1	Spring1	Fall2	Winter 2	Spring2	Fall3	Winter 3	Spring3	Fall4	Winter 4	Spring4	Fall5	Winter 5	Spring5	Fall6	Winter 6	Spring6	Fall7	Winter 7	Spring7
Enrollment--Reference Group (2011 Cohort); N=2766	100.0	96.2	93.1	89.6	84.0	46.7	27.4	20.0	8.7	3.5	2.2	1.3	1.1	0.8	0.6	0.4	0.4	0.5	0.0	0.0	0.0
Enrollment--Test Group (2011 Cohort); N=55	100.0	92.7	90.9	85.5	80.0	43.6	36.4	27.3	10.9	3.6	1.8	1.8	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0
Attrition--Reference Group (2011 Cohort); N=2766	0.0	3.8	6.9	9.3	11.7	12.9	12.0	13.3	13.4	13.3	13.1	12.8	12.2	12.2	12.1	11.7	11.6	11.6	12.1	12.1	12.1
Attrition--Test Group (2011 Cohort); N=55	0.0	7.3	9.1	14.5	18.2	23.6	18.2	23.6	23.6	23.6	25.5	25.5	25.5	25.5	25.5	23.6	25.5	25.5	25.5	25.5	25.5
Graduation--Reference Group (2011 Cohort); N=2766	0.0	0.0	0.0	1.1	4.3	40.4	60.6	66.6	77.8	83.2	84.7	85.9	86.7	86.9	87.3	87.9	87.9	87.9	87.9	87.9	87.9
Graduation--Test Group (2011 Cohort); N=55	0.0	0.0	0.0	0.0	1.8	32.7	45.5	49.1	65.5	72.7	72.7	72.7	74.5	74.5	74.5	74.5	74.5	74.5	74.5	74.5	74.5

Significance markers on data points (X^2, Test Group as compared to Reference Group): ****p <= 0.0001; ***p <= 0.001; **p <= 0.01; *p <= 0.05

Reference Group: Undergraduates, Transfer Entry (LEVL='UG'; ALEVL='A'-Transfer)

Test Group: Undergraduates, Transfer Entry, Eth. INCLUDES American Indian/Alaskan Native (LEVL='UG'; ALEVL='A'-Transfer; ETH INCLUDES 'INA'-American Indian or Alaskan Native (IPEDS) &/OR 'UNA'-American Indian/Alaskan Native)

E, A, & G (pg 2 of 7)

Enrollment, Attrition, and Graduation rates for the 201210 Cohort. (Of those students that remained actively enrolled in Fall 1)

	Fall	Winter1	Spring1	Fall2	Winter2	Spring2	Fall3	Winter3	Spring3	Fall4	Winter4	Spring4	Fall5	Winter5	Spring5
Enrollment--Reference Group (2012 Cohort); N=2873	100.0	96.0	93.2	90.2	84.4	47.0	26.2	20.6	9.3	4.0	2.2	1.5	0.9	0.8	0.8
Enrollment--Test Group (2012 Cohort); N=69	100.0	94.2	91.3	89.9	89.9	39.1	29.0	20.3	10.1	1.4	0.0	1.4	1.4	1.4	1.4
Attrition--Reference Group (2012 Cohort); N=2873	0.0	4.0	6.8	8.6	11.0	12.2	13.1	13.2	12.8	12.1	12.8	12.4	11.7	11.8	11.9
Attrition--Test Group (2012 Cohort); N=69	0.0	5.8	8.7	10.1	10.1	15.9	10.1	14.5	13.0	15.9	14.5	11.6	11.6	11.6	11.6
Graduation--Reference Group (2012 Cohort); N=2873	0.0	0.0	0.1	1.3	4.5	40.8	60.7	66.2	78.0	83.9	85.0	86.2	87.4	87.4	87.4
Graduation--Test Group (2012 Cohort); N=69	0.0	0.0	0.0	0.0	0.0	44.9	60.9	65.2	76.8	82.6	85.5	87.0	87.0	87.0	87.0

Significance markers on data points (X^2, Test Group as compared to Reference Group):   ****p <= 0.0001; ***p <= 0.001; **p <= 0.01; *p <= 0.05

Reference Group: Undergraduates, Transfer Entry (LEVL='UG'; ALEVL='A'-Transfer)

Test Group: Undergraduates, Transfer Entry, Eth. INCLUDES American Indian/Alaskan Native (LEVL='UG'; ALEVL='A'-Transfer; ETH INCLUDES 'INA'-American Indian or Alaskan Native (IPEDS) &/OR 'UNA'-American Indian/Alaskan Native)

E, A, & G (pg 3 of 7)

Acknowledgements

Appendix J: Student Affairs Assessment Reports

1. **Center for Student Affairs Assessment - Draft Report**
2. **Student Academic Success Center Academic Assistance and Tutoring Report**

Introduction

To effectively improve student retention and graduation, the Division of Student Affairs has taken several proactive steps to understand what services drive student persistence, particularly among those subpopulations whose outcomes fall below institutional averages. In response to the need for a methodological assessment plan, the Center for Student Affairs was established in 2014 with the intent of fostering a culture of research-based practices that will improve the student experience and enhance student learning in the division. Through research-based practices, evaluation, assessment, and service development techniques, CSAA monitors the impact of divisional services that positively influence a student's efficacy towards student success. To this end, the Center for Student Affairs Assessment has undertaken a dynamic, long-term research and assessment plan that identifies environmental factors in the division contributing to positive retention, unit progress, and on-time graduation outcomes, and the ways in which those factors are (or may be) modulated by services, resources, and programs offered to students by the University. This information is then directly accessible to the divisional units who provide the services.

Background

Prior to 2014, institutional misalignment of assessment, evaluation, and research practices has historically hampered the Division of Student Affairs' ability to demonstrate which unit services produce meaningful positive impacts on students' behavior and experiences, and how these in turn affect retention and graduation. This misalignment resulted, in large part, from incomplete assessment designs that were not responsive to the complexities of individual use of services, or which did not account for cases where services would compete or detract from each other. Actions to improve student success were further hampered by the lack of measures using consistent metrics and nomenclature across both time and institutional unit (e.g. the use of different selection criteria).

Two approaches may be used to acclimatize and integrate students into the University and its culture: 1) enrolling undergraduates may be expected to adapt to the institutional environment, adjusting their needs based on what is expected and provided, or 2) the environment needs to be adjusted to better reflect the students' needs. In the approaches described above, the key unit of measure with regards to environmental engagement is undergraduate utilization (operationalized as participation frequency) of divisional unit services that contribute toward the student's *talent development acquisition*. While student-level inputs, environmental inputs, and outputs are all critical components of a thorough evaluation and research plan, historically, efforts to assess the impact of divisional services have only investigated one or two of these components at a time, rather than integrating all three.

To help understand the importance of both student-level inputs (i.e. student characteristics and attributes) and environmental inputs (i.e. those programs and services offered by the university) in mediating student outputs or outcomes, the division has implemented the Astin's *Input-Environment-Output Model* (IEO). The IEO model examines not only the effects initial input variables have on the designated outputs of the design, but explores the role of environmental variables (or environmental inputs) in shaping those outputs. This new model requires detailed documentation of student participation in a program or service in order to assess its effectiveness on student success through a *needs assessment plan*.

Four Different Perspectives on Need

In triangulating student needs and formulating a needs-assessment plan in the evaluation phase, the four approaches used by the division to inform service support units are:

1) A *normative need approach*, which relies on the existence of standards or 'norms' established by custom, authority, or general consensus, against which the quantity or quality of a situation, condition, or set of criterion is measured.

2) A *perceived need approach*, in which needs are identified according to what people think their needs are or feel their needs to be.

3) An *expressed need approach*, which explores whether a need exists (and if so, whether it is being met or is going unmet) based on the actual attempts (successful or otherwise) of individuals to obtain a given service.

4) A *relative need approach*, which investigates gaps in service levels that exist between similar communities at an institution.

Implementation

Since the establishment of CSAA, the division has made major strides in the collection, analysis, and interpretation of data to improve service delivery and institutional impact through quarterly and annual assessment retreats. The establishment of a consistent, universal nomenclature, with clearly defined constructs to help guide divisional units in the characterization of the environments they attempt to foster, was critical in developing a systematic assessment, evaluation, and research plan. Below is a summary of the feedback loop developed in 2014 to integrate and inform campus leadership and unit directors about the impacts their services are having on differential student outcomes.
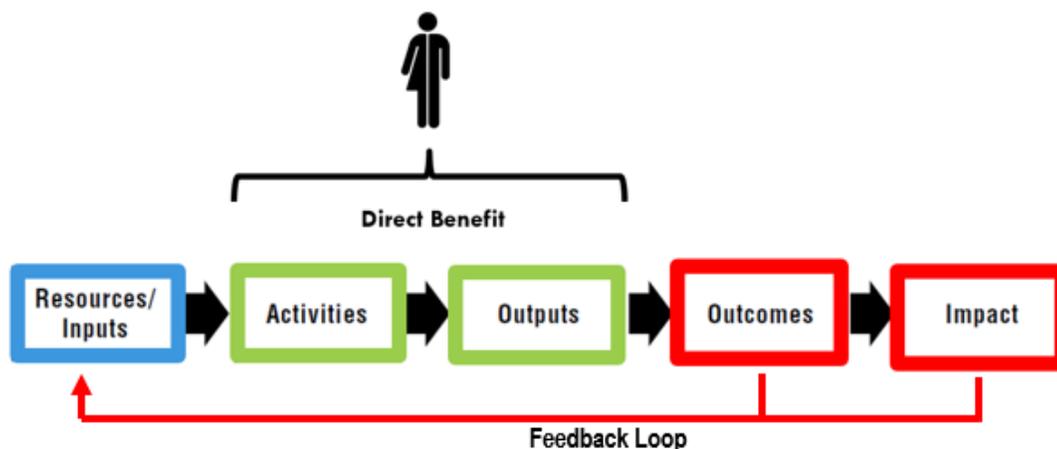
The following are tools and tactics in use by the Division to support real-time program assessment and resource allocations.

- Through the implementation of the **Swipe Card Project**, a tool used in 80 support services in the Division and the colleges, this in-house developed tool helps to monitors student-level participation in services intended to support student success. Visit http://csaa.ucdavis.edu/strategies/swipecard/index.html.

- **Propensity score matching (PSM)** techniques are allowing the university to assess the causal impact of student-support services on student outcomes. PSM is used to mimic randomization by creating a sample of students that participate in a specific type of service that is comparable to a sample of non-participating students, which justifies causality claims when randomized experiments are not possible.

---

[1] Logic Model: Certain resources/inputs are needed to operate your program. If you have access to resources, then you can use them to accomplish your planned activities. If accomplished the planned activities, then hopefully you delivered the amount of product and/or service intended (dosage). If you accomplish your planned activities to the extent intended, then your participants will benefit in a certain way (student learning outcomes). If these benefits to participants are achieved over time, then certain changes in the system might be expected to occur (i.e., improvements in retention, unit progress, GPA, graduation rate).

- A more robust statistical method, ***multilevel modeling***, is used for an accurate estimate of the impact of student-support services on student outcomes. A carefully-chosen reference group is embedded in the modeling design to further understand which subpopulation of the participatory group is benefitting the most from a specific type of service, which groups are benefitting the least, and which groups may experience no effective change.

- An advanced **value-added assessment** approach is used to measure and evaluate the unique and isolated contribution of each unit to the academic outcomes of its participatory students, accounting for the joint contribution as a result of students' participation in different services offered by different units during the same period of time.

- Further ***multivariate regression analysis***, referenced as dosage or count of interaction with a specific service, helps campus service providers understand a group's outcomes by estimating the likelihood of success by individual units of treatment (e.g. some services may only be impactful after a number of prior interactions with the student). This analysis also allows the Division to disaggregate outcomes by group, allowing unit directors to see if their services might be positively affecting one group while negatively affecting another.

- At the annual assessment retreat, divisional service units develop, modify and review ***deliverable framework documents*** where unit directors identify target population criteria, the type of intended impact(s), affiliated student learning outcomes from activities rendered, and measures of operations (i.e., scalability, efficiency, effectiveness). The process includes establishing an annual performance metric from a baseline and projected improvements (Appendix 1).

- The ***Student Persistence Measure (SPM)[2]***, a tool comprised of 8 dimensions assessing concepts known to be related to student success, helps explore relevant aspects of the student experience and characteristics related to student's academic achievement outcomes. Via this measure, CSAA is assessing shifts on several student success dimensions as a function of usage of student support services provided. Learning about these higher level dimensions and their related sub-dimensions will help units to better identify strategies that are in alignment with the four needs-assessment approaches (i.e. normative, perceived, expressed, and relative). The SPM further sets a common understanding on construct development. (Appendix 2)

- The ***Value Rubric***, developed by the Association of American Colleges & Universities (AACU) articulates criteria for student learning outcomes on 15 values and is integrated into the core of the divisional services rendered. The intent is to position learning at all divisional levels within a basic framework of expectations such that evidence of learning can be shared through a common understanding of student success. Activities are assigned to a dimension of the SPM through the Swipe Card Project where participation and learning outcomes are linked. (Appendix 3).

---

[2] EFA factorial analysis with Promax rotation was completed on two time points, including a parallel analysis of both points, for reliability and factor loading

Findings & Results

The tools and tactics set forth in 2014 through the establishment of the Center for Student Affairs Assessment has added greater knowledge to the Division of Student Affairs of which services impact student success and facilitated the re-engineering of services that did not. Inferential statistical results are relayed to unit directors in the Division during an annual evaluation retreat as a strategy to inform praxis. While the following content is not comprehensive of all the findings thus far, it is included to provide greater insight on the effects of participation at the individual student level.

<p align="center">Student Persistence Measure (SPM) Findings</p>

For the SPM, data was collected from freshmen and transfer incoming student at two time points during the Fall 2016 quarter. For Time Point 1 occurred prior to the start of the quarter with approximately 5900 unique student respondents. For Time Point 2, data collection occurred for approximately 2600 students during the two weeks leading to finals' week. Approximately, 1800 students completed the assessment tool at both Time Point 1 and Time Point 2. Results from a series of demographic statistical analyses and paired t-test performed on each item of the SPM showed that:

- Students' scores on items corresponding to seven out of the eight dimensions of the SPM at both time points were around the theoretical mean or higher. (Items were answered with a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Average scores for most of these items were above 4). **These results indicate that students reported high likelihood of persisting in college**. The seven dimensions referred to here are degree commitment, institutional commitment, social integration, academic integration, academic orientation, adjustment/wellbeing, and satisfaction with social support services.

- Students' scores on items corresponding to all eight dimensions were significantly lower at Time Point 2 compared to Time Point 1. **These results suggest that even though they remained high, student's reports of their likelihood of persisting in college decreased as a function of completing their first academic quarter at UC Davis**.

- Students' scores on items corresponding to the Financial Strain dimension – which refers to the students' perception of their ability to cover the costs of life as a student, including enough, high-quality food, rent, school materials, and tuition—were significantly lower compared to their responses to items on all other dimensions. Moreover, following the trend observed among all other dimensions, students' responses to Financial Strain-related items were significantly lower at Time Point 1 than at Time point 2. **These results indicate that (1) incoming students join the University with concerns about their ability to cover the costs of being a student, and (2) those concerns increment decrease, on average, after completing their first quarter.** (Means for all but one Financial Strain-related items were below the theoretical mean of 2.5).

<p align="center">Multilevel Modeling Findings</p>

A hierarchical propensity score analysis was conducted to evaluate whether specific divisional services had a causal impact on the spring 2016 cumulative GPA, unit progress, and retention outcomes on the freshmen cohort of 2016 participants, when compared to their counterparts (Table 1, 2, and 3).

Table 1. CUMULATIVE GRAPE POINT AVERAGE (GPA)
(ΔGPA per 1.0 unit GPA)
Cumulative GPA at End of Spring 2016 Quarter

	White	Chicano	Asian	Pacific Islander	Other
Fit Well Group Exercise – Campus Rec	0.13***	0.14***	0.12**		
Financial Aid Office (FAO)	0.24**	0.17*	0.17*		
Internship & Career Center (ICC)		0.09**	0.09**		
Drop In Tutoring#		0.07*	0.06		
Writing Specialist#	0.19**	0.22****	0.24****		

*Statistical significance: **** (p<0.001), *** (p<0.01), ** (p<0.05), * (p<0.1): Only results that demonstrated statistical significance are reported.*
Pacific Islander and Other does not meet cell size greater than 100 unique participants by service for analysis.
 # Student Academic Success Center (SASC); $ Campus Recreation & Unions (CRU)

Table 2. UNIT PROGRESS
(ratio of likelihood)
Complete 45 Units by End of Spring 2016 Quarter

	White	Chicano	Asian	Pacific Islander	Other
Cross Cultural Center (CCC)	0.36**				0.51**
Fit Well Group Exercise$		10.01****	1.85*		
Center for Student Involvement (CSI)	1.68**		2.19***		
Internship & Career Center (ICC)	1.33**				
Courses & Workshops#		2.23***			
Drop In Tutoring#	0.67*				
STEP#		2.49***			
Writing Specialist#	0.17***	2.31****	2.56****		

*Statistical significance: **** (p<0.001), *** (p<0.01), ** (p<0.05), * (p<0.1): Only results that demonstrated statistical significance are reported.*
Pacific Islander and Other does not meet cell size greater than 100 unique participants by service for analysis.
 # Student Academic Success Center (SASC); $ Campus Recreation & Unions (CRU)

Table 3. RETENTION
(ratio of likelihood)
Enrolled in Spring 2016 Quarter

	White	Chicano	Asian	Pacific Islander	Other
Aquatics$	10.46***	6.21****			
Fitness & Wellness Center$	9.37****	8.95****	9.27****		
Fit Well Group Exercise$	11.01****	10.01****	10.12****		
Intramural Sports$	2.82**	2.84**	2.83**		
Sport Club$			4.59*		
Center for Student Involvement (CSI)	9.33****	9.37****	9.42****		
Financial Aid Office (FAO)	8.57***	8.94***	8.95***		
Internship & Career Center (ICC)		2.29**	2.25*		
Courses & Workshops#	0.27*				
Educational Opportunity Program(EOP) #	0.04**	0.02***			
Tutoring	3.98*				

*Statistical significance: **** (p<0.001), *** (p<0.01), ** (p<0.05), * (p<0.1): Only results that demonstrated statistical significance are reported.*
Pacific Islander and Other does not meet cell size greater than 100 unique participants by service for analysis.
 # Student Academic Success Center (SASC); $ Campus Recreation & Unions (CRU)

Multivariate Regression Analysis Findings

A multi-variant linear regression analysis was also conducted to determine the association between level of participation (dosage) and the outcomes of spring 2016 cumulative GPA, unit progress and retention based on participation collected via the Swipe Card Project.

Table 4. Analyses of Relationship between Treatment Intensity (Dosage) and Outcome			
	Cumulative GPA (ΔGPA per 1 time participation by Spring Quarter 2016)	Unit Progress (ratio likelihood to complete 45 units by Spring Quarter 2016)	Retention (ratio likelihood to enroll in Spring 2016 Quarter)
Aquatics[$]	0.003**		
Informal Recreation[$]	0.003*		1.014**
Sport Club[$]	-0.002**		
Center for Student Involvement (CSI)	0.042****		
Internship & Career Center (ICC)[3]	0.128****/-0.011**		3.803*
Student Academic Success Center (SASC)			
Courses & Workshops[#]		1.007****	
Educational Opportunity Program (EOP) [#]	-0.007**		
Tutoring[#]		0.976*	
Writing Specialist[4#]	-0.005/0.001**	0.999/1.003**	1.004/1.024
**** (p<0.001), *** (p<0.01), ** (p<0.05), * (p<0.1). Only results that demonstrated statistical significance are reported above.*			

---

[3] For ICC there is a nonlinear association between the intensity in participating in ICC programs and cumulative GPA; when the participation reaches up to about 7 times, the effect on cumulative GPA starts to decline.

[4] For the Writing Specialist program in SASC, there is a nonlinear association between the intensity in participating in the program and cumulative GPA. No significant association was found until participating in the program more than 8 times, which leads to an increase of 0.001 in cumulative GPA. A nonlinear association was also found between the participation intensity in the program and unit progress, suggesting the program does not impact unit progress until student participation reaches a minimum of about 6 times.

Appendix 1: AB540 & UNDOCUMENTED STUDENT CENTER
SAMPLE DOCUMENT

	Framework
Elevator Pitch	The AB540 and Undocumented Student Center empowers students with immigration status challenges to successfully navigate the University. A variety of tools and services offered by the Center assist the students and educates the community on how to support federally undocumented immigrant students in an educational setting.
Population(s)	Enrolled undergraduate and graduate students at the University.
Criteria(s)	Enrolled undergraduate and graduate students at the University who are identified in the banner student information system (SIS) as AB540 resident code "A" and Non-immigrant "NI". For short, this criteria is known as "AB540-U".
Selection(s)	Enrolled AB540-U students who need legal assistance, require basic need assistance, experience food insecurity, homelessness and financial strain as a result of unemployment. A case management approach is taken on an individual basis during intake to assess student support services from the Center.
	Operations
Impact (Terminal Outcome)	✓ **Cumulative GPA**: To remain in good academic standing on a quarterly basis. ✓ **Graduation**: Graduate in a timely manner (4 yr freshmen/2yr transfer). ✓ **Retention**: Continuous consecutive quarterly enrollment for fall, winter, and spring until graduation. ✓ **Unit Progress**: Progressive class level transition by completing 45 units or more per academic year[5].
Outcome (Student Learning Outcome)	Civic Engagement: • Demonstrate ability and commitment to collaboratively work across and within community contexts and structure to achieve a civic aim (increase awareness of undocumented community in California). Integrative Learning: • Envisions a future self and builds, based on reflection of past experience, that have occurred across multiple and diverse contexts related to undocumented immigrants and graduates of California. Global Learning: • Use deep knowledge of the historic and contemporary role and differential effects of human organization and actions on global systems to develop and advocate for informed, appropriate actions to solve complex problems in the human and natural world, including strategies for self-advocacy for the undocumented community.
Efficiency	• Number of FTE staff members per number of students engaged. • Number of students in paid or unpaid defined positions per staff member. • Amount of funds spent on student salaries per number of students engaged.
Effectiveness	• Persistence rate of AB540-U students who use the center compared to non-users. • Average GPA of AB540-U students who used the center compared to non-users. • Average Units Completed of AB540-U students who use the center compared non-users. • Percent of AB540-U students participating in Center service activities • Positive shift from students in Student Persistence Measure (SPM)
Scalability	• Number of visits of AB540-U students to the center and attendance at programs • Total number of students served of AB540-U and non AB540-U • Demographic of students served • Number of hours open • Number and type of programs/services by Student Learning Outcome (SLO)

---

[5] Academic year refers to the consecutive terms of fall, winter and spring quarter from July 1st through June 30th. The measure looks at consecutive terms traditionally where financial aid is offered to general student population toward a degree attainment.

[2] Case Study (Fall 2016) – Study investigates effects of using the Center's services on two outcomes: GPA at fall and unit progress by end of fall 2016 after controlling for student's prior college academic performance and other major influential background characteristics. Results are independent of which major the student were in. The reference group is students who are female, URM, and have STEM majors but who did not use major campus services (i.e., Campus Recreations, Intramural Sports, SASC). Significance level at 0.10.

Metrics & Benchmarks					
Annual Performance Metric	Year I	Year II	Year III	Year IV	Target, Year V
+2% rate change per annual fall term in AB540-U who utilize Center services. Baseline % (Fall 2016): 159 of 630 (25.2%) of AB540-U identified Source: Swipe Card System & Banner SIS	27.2%	29.2%	31.2%	33.2%	35.2%
+3% rate change per annual fall term in the proportion of AB540-U to non AB540-U participants who utilize Center services. Baseline % (Fall 2016): 159 of 514 (30.9%) of Center participants Source: Swipe Card System & Banner SIS	33.9%	35.9%	37.9%	40.9%	43.2%
+10% rate change per annual fall term in participants who complete the SPM. Baseline % (Fall 2016): 43 of 514 (8.4%) of participants Source: Swipe Card System & Banner SIS	18.4%	28.4%	38.4%	48.4%	58.4%
Average unit completed by AB540-U participants will be greater than AB540 non-participants by 0.20 units or more per year. Baseline (Fall 2016): Parts Ave Unit = 13.04 (n = 159); Non-Part Ave Unit = 12.75 (n =471) Source: Swipe Card System & Banner SISWEB ------ Causal Study[2] (Fall 2016): Accessing the services in the Center increased the likelihood of making unit progress by 14 folds for male student than female student as compared to the counterparts in the control group.	0.20	0.40	0.60	0.80	1.00
Average fall term GPA of AB540-U participants will be greater than AB540 non-participants by 0.10 points or more per year. Baseline (Fall 2016): Parts Ave Term GPA = 2.89 (n = 159); Non-Part Ave Term GPA = 2.72 (n =471) Source: Swipe Card System & Banner SISWEB ------ Causal Study[2] (Fall 2016): On average, the services provided by Center increase GPA by 0.22 of participants relative to the control group ($p < 0.10$). Accessing the services in the Center lead to an increase of 0.84 points in GPA for female participants than male participants as compared to the counterparts in the control group.	0.20	0.30	0.40	0.50	0.60
Average SPM mean difference pair-responses of participants to non-participants will shift positively for Degree & Career Commitment dimension. (See SPM attachment)[3] Baseline (Fall 2016): SPM Paired responses attached for Degree & Career Commitment for Participants and Non-Participants. Source: SPM, Swipe Card System & Banner SISWEB	$t > 0$	$t > 0$	$t > 0$	$t > 0$	$t > 0$
Average SPM mean difference pair-responses of participants to non-participants will shift positively for Social Integration dimension. (See SPM attachment) Baseline (Fall 2016): SPM Paired responses attached for Degree & Career Commitment for Participants and Non-Participants. Source: SPM, Swipe Card System & Banner SISWEB.	$t > 0$	$t > 0$	$t > 0$	$t > 0$	$t > 0$

Appendix 2: Student Persistence Measure (SPM) Dimensions and Sub-Dimensions

Dimension	Dimension Definition	Sub-Dimension	Sub-Dimension Definition
Institutional Commitment	The degree of commitment of the individual to obtain their degree **from UC Davis**.	Re-enrollment	Student's intention to re-enroll at the institution
		Right institutional choice	Student confidence in having selected the right institution
		Drop-out intervention	Student thoughts about continuing or stopping at the institution
Career & Degree Commitment	The level of importance undergraduates attach to earning a degree.	Degree Determination	Students intention to finish their degree
		Degree Likelihood	Estimated likelihood that a degree will be achieved
		Personal Degree Commitment	Student self-appraised commitment to earn the degree
Social Integration	The level of involvement and satisfaction with academic and social experiences in campus.	Sense of Belonging	A student's sense of belonging.
		Shared Values	A student's sense of shared values.
		Perceived Similarity	A student's sense of similarity to others in the institutional environment.
		Respectful/Inclusive Environment	Satisfaction with living environment, how the institution deals with special needs and whether disrespect is experienced.
Academic Integration	A student's perception of how well an institution's curriculum and instruction contribute personal goals.	Classroom Discussion	Classroom discussion
		Instructional Quality	Quality of instruction to student
		Intellectual Growth	Feelings of intellectual growth
Social Support Services	The level of satisfaction with the divisional services on how well they meet their out-of-classroom, school-related needs.	Institutional Regulatory Transparency	Student's rating of the quality of communication about rules and regulations, fairness and institutional decision-making.
		Degree Social Network Support	Student's interpersonal network affirming decisions to pursue a degree, encouragement from friends, family, and parents.
		Degree Social Network Evaluation	Student's belief that family members expect degree attainment, caring of faculty and access to people with home to address personal problems
Wellbeing	A student's self-appraised sense of overall physical and psychological wellbeing. It includes perceptions such as frequency of illness, anxiety, depression, stress and resiliency.	Self-Efficacy	Student self-efficacy. Students' perception that they are able to meet the requirements of college education.
		Coping Strategies	Student's coping strategies. Student's personal control.
Academic Orientation	Student's perception of the collegiate environment and how it has been viewed as consisting of learning-orientation[6] or grade-orientation[7].	Structure Dependence	Structure Dependence
		Creative Expression	Creative Expression
		Reading Pleasure	Reading for Pleasure
		Instructional Trust	Trust of Instructors
Financial Sufficiency	Knowledge, awareness and institutional resources to advance financial literacy.	Funding Sources	Network of sources to fund and financed educational needs
		Financial Stress	Financial stress affiliated with decision-making to make ends meet.

Appendix 3: VALUE Rubric
Extracted from Association of American Colleges & Universities (AACU, 2009)

In the rubric, each value contains learning outcome threads with a level of performance expected from participation of an output. The benchmark (Level 1) is the basic threshold for evaluative comparison where practitioners strive to transition outputs through an evaluation process to Milestone (Level 2 & 3) and ultimately Capstone (Level 4). A compilation of outputs with different threads in a set value provided through multiple support services would constitute a level of quality for that value. A simple outline of the Value Rubric & Learning Outcome is below but details can be downloaded at https://www.aacu.org/value/rubrics.

Value	Learning Outcome Thread
Civic Engagement	Diversity of Communities and Cultures
	Analysis of Knowledge
	Civic Identity and Commitment
	Civic Communications
	Civic Action and Reflection
	Civic Contexts/Structure
Creative Thinking	Acquiring Competencies
	Taking Risks
	Solving Problems
	Embracing Contradictions
	Innovative Thinking
	Connecting, Synthesizing, Transforming
Critical Thinking	Explanation of Issues
	Evidence
	Influence of Context and Assumptions
	Student's position (perspective, thesis/hypothesis)
	Conclusions and related outcomes (implications/consequences)
Ethical Reasoning	Ethical Self-Awareness
	Understanding Different Ethical Perspectives/Concepts
	Ethical Issue Recognition
	Application of Ethical Perspectives/Concepts
	Evaluation of Different Ethical Perspectives/Concepts
Global Learning	Global Self-Awareness
	Perspective Taking
	Cultural Diversity
	Personal and Social Responsibility
	Understanding Global Systems
	Applying Knowledge to Contemporary Global Contexts
Information Literacy	Determine the Extent of Information Needed
	Access the Needed Information
	Evaluate Information and its Sources Critically
	Use Information Effectively to Accomplish a Specific Purpose
	Access and Use Information Ethically and Legally
Inquiry and Analysis	Topic Selection
	Existing Knowledge, Research and/or Views
	Design Process
	Analysis
	Conclusions
	Limitations and Implications

Rhodes, T. (2009). *Assessing outcomes and improving achievement: Tips and tools for using the rubrics.* Washington, DC: Association of American Colleges and Universities.

Integrative Learning	Connections to Experiences
	Connections to Discipline
	Transfer (adapts and applies skills, abilities, theories or methodologies gained in one situation to a new situation)
	Integrated Communication
	Reflection and Self-Assessment
Intercultural Knowledge and Knowledge	Knowledge: cultural self-awareness
	Knowledge: knowledge of cultural worldview frameworks
	Skills: Empathy
	Skills: Verbal and nonverbal communication
	Attitudes: Curiosity
	Attitudes: Openness
Foundations and Skills	Curiosity
	Initiative
	Independence
	Transfer
	Reflection
Oral Communication	Organization
	Language
	Delivery
	Supporting Materials
	Central Message
Problem Solving	Define Problem
	Identify Strategies
	Propose Solutions/Hypotheses
	Evaluate Potential Solutions
	Implement Solutions
	Evaluate Outcomes
Quantitative Literacy	Interpretation
	Representation
	Calculation
	Application/Analysis
	Assumptions
	Communication
Reading	Comprehension
	Genres
	Relationship to Text
	Analysis
	Interpretation
	Reader's Voice
Teamwork	Contributes to Team Meetings
	Facilitates the Contributions of Team Members
	Individual Contributions Outside of Team Meetings
	Foster Constructive Team Climate
	Responds to Conflict
Written Communication	Context of and Purpose of Writing
	Content Development
	Genre and Disciplinary Convention
	Sources and Evidence
	Control of Syntax and Mechanics

STUDENT ACADEMIC SUCCESS CENTER
ACADEMIC ASSISTANCE AND TUTORING
WASC SUMMARY OF SUPPORT SERVICES
October 23, 2017
Carol Hunter, Director Academic Assistance and Tutoring

VISION

Academic Assistance and Tutoring (AAT) provides an inclusive and interactive environment where students participate to reinforce and retain knowledge in multi-disciplinary writing, math and science through workshops, individual sessions, drop-in tutoring, online resources, and supplementary courses, all provided by both professional staff and peer tutors. **We strive to support students in developing the academic competence and confidence that will help them succeed at UC Davis.**

We exist to serve the academic support needs of undergraduate students. We strive to support campus efforts to address achievement gaps of URM, first-generation, and low income students.

AAT SERVICES

SUBJECT AREAS
- Biology
- Chemistry
- Economics
- Mathematics
- Physics
- Statistics
- Writing

AAT served **30.28%** of all undergraduates enrolled 2016-17

8,895
29,379
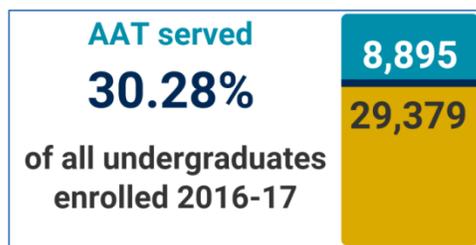
Source: CSAA Card Swipe System/Undergraduate Admissions

SERVICE DELIVERY
- Preparatory Classes
- Content Review Sessions
- Individual Tutoring Program
- Drop-in Tutoring
- Individual Writing Appointments
- The Writing Studio
- Office Hours

ASSESSMENT

In order to determine the impact our services are having on student success, AAT uses the Center for Student Affairs Assessment card swipe system to collect data on student usage. In partnership with CSAA, data analysis is available to support program directions, growth, and resource allocations.

LEARNING OBJECTIVES:
The key learning objectives of the Academic Assistance and Tutoring (AAT) programs at the Student Academic Success Center (SASC) focus on *problem solving*, *quantitative reasoning*, and *written communication*.

- Problem Solving—define the problem, identify strategies, propose, implement and evaluate potential solutions
- Quantitative Reasoning—interpretation, representation, calculation, application, analysis, assumptions, and communication
- Written Communication—context of and purpose of writing, content development, genre and disciplinary conventions, sources and evidence, and control of syntax and mechanics

OUTCOMES:
1) A hierarchical propensity score analysis was conducted by the Center for Student Affairs Assessment (CSAA) to evaluate whether AAT services had a causal impact on the spring 2016 cumulative GPA, unit progress, and retention outcomes on the freshmen cohort of 2016 participants when compared to their counterparts.

Cumulative GPA Outcome:
- On average, Asian students who participated in AAT's *writing service* activities increased their spring 2016 cumulative GPA by 0.24 ($p<0.001$) when compared to non-participants.

Unit Progress Outcome:

   When compared to non-participants,
- On average, Asian students who participated in AAT's *writing specialist activities* were 1.56 ($p<0.001$) times more likely to complete 45 units by the end of spring 2016 quarter.
- On average, Chicano/Latino students who participated in AAT's *math and science* course activities were 1.23 ($p<0.01$) times more likely to complete 45 units by the end of spring 2016 quarter.
- On average, Chicano/Latino students who participated in AAT's writing specialist activities were 1.31 ($p<0.001$) times more likely to complete 45 units by the end of spring 2016 quarter.

Retention Outcome:
- On average, White students who participated in individual tutoring were 2.33 ($p<0.1$) times more likely to be retained by spring 2016 when compared to non-participants.

2) A multi-variant linear regression analysis was also conducted by CSAA to determine the association between level of participation (dosage) and the outcomes of spring 2016 cumulative GPA, unit progress and retention.
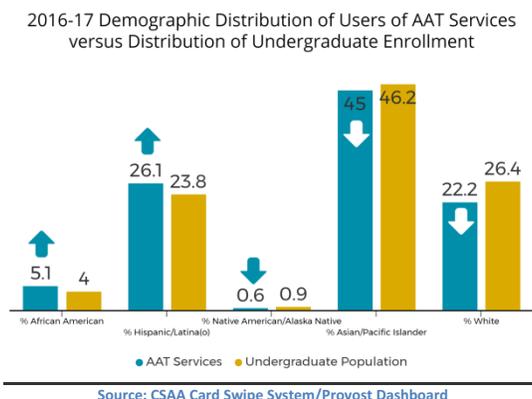
Cumulative GPA Outcome:
- On average, for each additional unit of participation past the eighth session in the AAT's writing specialist program, a participant's cumulative GPA increased by 0.001 ($p<0.05$) per additional unit of participation.

Unit Progress Outcome:
- On average, for each additional unit of participation past the sixth session in the AAT's writing specialist program, a participant is 1.003 ($p<0.01$) times more likely to complete 45 units by the end of spring 2016 quarter per additional unit of participation.

PROGRAM REVIEW

Using available outcomes from CSAA, AAT determines resource allocation and provides continuous review of academic support interventions. With extensive outreach to URMs, first-generation, and low-income students, AAT uses available data to create an equitable and inclusive learning support environment. In comparison with campus demographics we have shown that we are making progress towards increasing access.

2016-17 Demographic Distribution of Users of AAT Services versus Distribution of Undergraduate Enrollment

Source: CSAA Card Swipe System/Provost Dashboard

As campus enrollment has increased, with a concerted effort towards increasing URM students, we continue to adapt academic support services to address the diversity of academic preparation. These efforts include:

- Expand tutoring services to include weekend and evening services
- Research and pilot online tutoring
- Creation of a Writing Studio
- Utilization of Lecture Capture of classes and workshops
- Creation of online academic resource materials
- Development of tutor led subject content reviews
- Development of an online Aggie Grammar Guide
- Funding for additional professional staff and tutors
- Funding from LCFF+ for Writing and Physics support
- Partnerships with Strategic Initiative Centers, University Writing Program, Undergraduate Education, Intercollegiate Athletics, and Advising

Distinct Students Accessing AAT Services

Source: CSAA Card Swipe System