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April 16, 2018

Director Michael Cohen  
Department of Finance  
State Capitol, Room 1145  
Sacramento, California 95814

The Honorable Holly J. Mitchell  
Chair, Joint Legislative Budget Committee  
1020 N Street, Room 553  
Sacramento, California 95814

Dear Director Cohen and Senator Mitchell:

I am pleased to send you the enclosed final report on pilot programs of activity-based costing for selected academic departments at the Davis, Merced, and Riverside campuses of the University of California. These pilot programs were completed earlier this year, consistent with the expectation articulated in Provision 2.1(a)(1) of the appropriation to the University of California in the Budget Act of 2017.

If you have any questions regarding this report, please do not hesitate to contact Associate Vice President David Alcocer at [David.Alcocer@ucop.edu](mailto:David.Alcocer@ucop.edu) or (510) 987-9113.

Yours very truly,

A handwritten signature in black ink, appearing to read "Janet Napolitano".

Janet Napolitano  
President

Enclosure

cc: The Honorable Phil Ting, Chair  
Assembly Committee on Budget  
The Honorable Anthony J. Portantino, Chair  
Senate Committee on Budget and Fiscal Review, Subcommittee #1  
(Ms. Anita Lee)  
(Ms. Cheryl Black)

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The Honorable Kevin McCarty, Chair  
Assembly Committee on Budget, Subcommittee #2  
(Mr. Mark Martin)  
(Ms. Katie Sperla)  
Ms. Jennifer Troia, Joint Legislative Budget Committee  
Mr. Danny Alvarez, Secretary of the Senate  
Mr. E. Dotson Wilson, Chief Clerk of the Assembly  
Ms. Amy Costa, Department of Finance  
Mr. Chris Ferguson, Department of Finance  
Mr. Jack Zwald, Department of Finance  
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Provost and Executive Vice President Michael Brown  
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Chief Policy Advisor and Executive Director Jenny Kao  
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Associate Director Seija Virtanen  
Associate Director Cain Diaz

# Activity-based Costing Pilot Studies Final Report

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April 2018

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## I. Executive Summary

As part of the Budget Framework Agreement between the Governor and the President and approved in November 2015 by the UC Regents, the University agreed that UC Riverside would pilot Activity-based Costing (ABC) for its College of Humanities, Arts, and Social Sciences. Two additional campuses would undertake a scoping study for piloting ABC in at least three departments (within the most popular disciplines) by January 1, 2016, with a goal of implementing ABC in those departments by September 1, 2016, depending on the outcome of the scoping study. UC Davis and UC Merced volunteered to participate.

At the time of the Budget Framework Agreement, UC Riverside had developed the information technology and budget allocation infrastructure needed to implement a classic ABC model for all academic departments at the campus and had begun its own ABC pilot work. The campus has produced a white paper about their early work on ABC.<sup>1</sup> No other campus had or has the infrastructure necessary for a classic ABC model. Consequently, UC Davis and UC Merced each completed scoping studies<sup>2,3</sup> that indicated that implementing a system similar to that at UC Riverside would be cost prohibitive, in large part because of difficulties both in integrating data across systems (such as campus financial systems and student information systems) and also in establishing a method for allocating indirect costs to courses. After discussions with State officials and UC Office of the President staff, UC Davis and UC Merced took an alternative approach to implementing ABC pilot studies and carried it out for three departments (UC Davis) or one disciplinary area within each of three schools (UC Merced, which does not have departments). The revised approach focuses on instructional revenues and costs that can be pulled from one data system.

UC Davis, UC Merced, and UC Riverside, therefore, each developed their own data set. UC Riverside did so using 2014-15 academic year data for all courses in all campus departments. UC Davis and UC Merced did so using 2015-16 academic year data for all courses in three departments (UC Davis) or a disciplinary area within each of three schools (UC Merced). In developing their data sets, UC Davis and UC Merced worked with UC Riverside to understand their model and then considered whether it was both appropriate and feasible to use any of the elements of that data set. The outcome is a set of three implementations of ABC that are related to each other but not the same.

The three campuses worked together, in consultation with UC Office of the President, to develop the protocol for obtaining feedback on the data set from campus stakeholders. UC Davis and UC Merced

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<sup>1</sup> *Optimizing Resource Allocation for Teaching: An experiment in activity-based costing in higher education:* [https://www.ucr.edu/about/admin/docs/ucr\\_abc\\_whitepaper.pdf](https://www.ucr.edu/about/admin/docs/ucr_abc_whitepaper.pdf)

<sup>2</sup> UC Davis scoping study: <http://www.ucop.edu/institutional-research-academic-planning/files/UCDavis-ABC-scoping-study.pdf>

<sup>3</sup> UC Merced scoping study: <http://www.ucop.edu/institutional-research-academic-planning/files/UCMerced-ABC-scoping-study.pdf>

focused on stakeholders in the three departments/disciplinary areas for which the data set was available. UC Riverside focused on stakeholders in the three departments that had participated in earlier pilot studies. Utilizing an agreed-upon core set of four questions, each campus then obtained information from these key decision makers on current practice for determining their course portfolio each year, utility of the new data set, recommended improvements to it, and whom else might use it. Finally, each campus produced a report of this last ABC pilot study that by agreement includes opinions of individual decision makers on each campus rather than summaries of responses overall. Copies of the campus reports are included in this final report (see *Section III: Campus Reports*).

Some common themes evident in the results of this pilot study include the following:

- Decision makers prioritize the offering of required courses needed for their majors to graduate on time, followed by electives where there is student demand. They also prioritize offering courses that are required preparation for other majors.
- Decision makers ensure faculty meet their required course load and teach courses where they have expertise; they then use temporary budget when necessary to fill gaps with alternate instructors (e.g., lecturers and graduate student instructors).
- Decision makers believe that there is little flexibility in establishing the course portfolio, due to the combination of large numbers of students, courses that must be offered, and limited budgets.
- Decision makers on campuses with existing curriculum planning tools generally found the ABC tool less useful or not useful at all, in comparison to decision makers on campuses that lack a consolidated view of course-related revenues and costs data.
- Some decision makers have (or report others have) concerns that a course by course comparison on profit and loss is not the best guide for instructional value and could degrade the quality of UC education.
- Decision makers have a variety of suggestions for improvements to the data set for their campus.

For a variety of reasons, the three campuses, UC Office of the President, and representatives from the Governor's Office and Department of Finance agreed that the experiences and opinions of the campuses and their decision makers, and the diversity across and within them, should be paramount in this report. Consequently, conclusions here are few and general. Readers are encouraged to draw their own conclusions from *Section III: Campus Reports*. Following completion of draft campus reports, each campus met with representatives from the Governor's Office and Department of Finance to discuss specifically the pilot studies reported here and more generally campus budgeting and course planning processes and ABC. They had available to them the near final draft of what in *Section III* of this report is the final campus report.

The work described in this report, in conjunction with the earlier two scoping studies and UC Riverside's implementation of a full ABC model, meets the expectations set for this initiative in the Budget Framework Agreement.

## **II. Background**

### **Context**

Activity-based costing (ABC) is a methodology for estimating the cost of providing a product or service based on a detailed assessment of the resources consumed in its production and delivery. ABC is an alternative to traditional cost accounting methods in which direct and indirect costs are typically allocated to products and services on a more general, aggregate basis. The underlying principle behind ABC is that having a better understanding of the true cost of production or service delivery allows an organization to make better decisions related to pricing, resource allocation, opportunities to increase efficiency, and the like.

ABC was first developed in the 1980s and has traditionally been used in manufacturing settings. More recently, ABC has been adopted by organizations in service-based industries as well – including, to a limited degree, higher education. Few US universities have deployed ABC, with the majority of higher education institutions using it based in Australia and the United Kingdom.

ABC represents a decision support tool for a campus where all inputs and outputs of the model are derived from management assumptions (such as the percent of a faculty member's time spent on instruction, types and amounts of indirect costs to include, and the proportion of revenue to associate with a course). Any campus that implements a similar system would need to make its own decisions on all revenue and expense allocation assumptions. These assumptions could differ significantly from campus to campus, depending, for example, on such factors as administrative structure, presence of health science programs, and student characteristics, resulting in very different outputs. To the extent that they do, ABC data are useful only as an intracampus tool and not as a tool for comparing campuses. In addition, ABC provides data on the cost side of the cost/quality equation. It does not provide data on quality, nor is there a way to make standard assumptions regarding quality to facilitate comparison between campuses. Additional data is needed to carry out any cost-benefit analysis. ABC data will be much more valuable if evaluated alongside data on quality.

### **Campus Information**

UC Riverside, established in 1954, enrolled approximately 23,000 total students in fall 2016; this included about 20,000 undergraduates and 3,000 graduate students. Its academic year consists of three quarters. In the summer of 2015, UC Riverside commenced in earnest a pilot study of whether ABC could deliver improved cost data to assist in academic decision making, specifically in optimizing resource allocation for courses. The ABC course optimization tool was part of a substantial investment in improving UC Riverside's budget models and financial and academic management. Riverside began modifying its data systems in 1999, developing a common set of keys (e.g., Organizational Structure Trees) that allowed the joining of different data bases (e.g., Financial, Space, Course Information, etc.). Prior to embarking on the ABC course optimization project, UC Riverside had already redesigned its

technical systems, selected revenue and expense allocation methodologies in support of creating an RCM (responsibility center management) environment, and chosen a new model for allocating revenue to the deans. In addition, the UC Riverside Vice Chancellor for Planning and Budget appointed as of February 2014 was very knowledgeable about activity-based costing and had recently prepared a white paper on it for the Gates Foundation.

The deployment of Riverside's RCM budget model and pilot ABC effort cost over \$1.4M in external fees (with the support of various grants, UCR's portion of this cost was approximately \$600k). This amount does not reflect the internal costs of existing UCR staff, which, while not tracked, were substantial: data sets from campus systems must be provided, mapping tables (e.g., many expenses and revenues are posted at the campus level, but for ABC to work, all costs and revenues must be allocated to campus departments) for use in the Pilbara ABC modeling system must be developed and maintained, outputs needed to be verified, etc. This level of effort would be required for each new year of data that becomes available.

UC Davis, established in 1908, is the oldest and largest of the three campuses participating in the ABC pilot study: UC Davis enrolled over 37,000 total students in fall 2016. This included about 29,000 undergraduates and 8,000 graduate students. Its academic year consists of three quarters. Shortly before UC Davis undertook that ABC pilot study, it had implemented a revised incentive-based budget model.

UC Merced, established in 2005, is the newest campus in the UC system. It is also the smallest, enrolling somewhat more than 7,000 total students in fall 2016; this included approximately 7,000 undergraduates and 500 graduate students. Its academic year consists of two semesters.

## **Pilot Project Goals and Methods**

As part of the Budget Framework Agreement between the Governor and the President and approved by the UC Regents in November 2015, the University agreed that UC Riverside would pilot Activity-based Costing (ABC) in its College of Humanities, Arts, and Social Sciences. Two additional campuses would each undertake a scoping study to estimate time and cost for conducting a pilot ABC project involving at least three departments (among the most popular disciplines) by January 1, 2016, with a goal of implementing an ABC pilot study in these units by September 1, 2016, depending on the outcome of the scoping studies. UC Davis and UC Merced volunteered to participate.

At the time the Budget Framework Agreement was made, UC Riverside had already been actively redesigning its budget model and financial and academic management, and had also begun an ABC pilot with Gates Foundation support. No other campus, including UC Davis and UC Merced, had the data infrastructure and budget model that easily support ABC and no other campus than UC Riverside had planned to pilot ABC. Consequently, UC Davis and UC Merced began the project by learning more about ABC and UC Riverside's work with it and carrying out scoping studies to understand what would be required in order to pilot a full-blown ABC model on their campuses. During this time, UC Riverside continued to develop a full-blown ABC model using Pilbara Group software; the work included a pilot

study survey of faculty in five departments to better understand faculty workloads and course requirements. When the UC Davis and UC Merced scoping studies indicated that piloting a model like that UC Riverside was developing would be quite costly, the two campuses took an alternate, less costly approach than that of the Pilbara Group software model.

The primary goal of the final set of ABC pilot studies by all three campuses was to develop and test the utility of having a defined data set of costs and revenues associated with individual courses that can support deans, department chairs, and other academic leaders in making decisions about the courses that they offer, the size of individual class sections, and how those courses are delivered. That is the work that is reported here. Each campus's ABC pilot entailed four major tasks, the first two of which were carried out on different timetables for UC Davis and UC Merced compared to UC Riverside. The last two were carried out in the same time frame by all three campuses. The tasks are presented sequentially below, although they overlapped:

Identify data sets that would be used. Each campus had to decide what data would be useful and accessible for its pilot. UC Riverside alone among all the campuses had technical systems that made it comparatively easy to build a single ABC data set from multiple systems. It was agreed that UC Davis and UC Merced each had useful data and would use it to create the ABC data set.

Determine cost and revenue variables, values, and calculations for the ABC model. Each campus had to create the defined data set of costs and revenues associated with individual courses that could support deans, department chairs, and other academic leaders in making decisions about their portfolio of course offerings each year. They had to decide on cost and revenue parameters to include (e.g., the type of instructor, what percent of each identified type of instructor's time was allocated to teaching). Each of the three campuses then assembled the relevant cost and revenue data for all courses offered in the 2014-15 academic year for UC Riverside and the 2015-16 academic year for UC Davis and UC Merced. Because UC Riverside had already developed its model in detail, UC Davis and UC Merced began their development by examining in detail what UC Riverside had done and determining whether it was appropriate and feasible for their campus.

Obtain feedback from key stakeholders on the utility of the defined data set. Each campus had to obtain feedback from key decision makers on the utility of the information and insights provided in the campus's newly created ABC model compared with the information that was already available from the campus's existing tools or resources. Decision makers included deans, chairs, and/or other faculty involved in establishing course offerings for the year, budgeting, and/or allocating departmental resources. The three campuses, in consultation with the Office of the President, agreed on a core set of questions to be posed in meetings with these key stakeholders; other questions could be added at the discretion of each campus. The standard four questions were as follows:

1. Can you please describe your process for determining how to deliver the curriculum? In particular, what tools do you currently use that help you make financial decisions and/or optimize resources associated with the curriculum?
2. What value would this tool add to your current decision-making process, particularly about curriculum planning and instructional full-time equivalents (FTEs)?
3. Are there revisions to the methodology/assumptions that would make this tool more useful? If so, what?
4. What do you see as the pros and cons of an ABC tool, particularly assigning revenues and costs at a course level?

Each pilot involved three disciplinary areas: for UC Riverside, the departments of Hispanic Studies, Psychology, and Theatre; for UC Davis, the departments of Chemistry, Mechanical Engineering, and Psychology; and for UC Merced, the areas of Chemistry, Computer Science, and Psychology in the Schools of Natural Sciences, of Engineering, and of Social Sciences, Humanities and Arts respectively.

Prepare a final report of the pilot study. Each campus had to produce a report that described the defined data set it had created, identified the types of stakeholders who would be likely users, and conveyed the responses of those stakeholders to the questions above.

To ensure transparency, it was agreed, first, that the three campus reports would not synthesize or alter the substance of the participating stakeholders' responses and, second, that UCOP would include in this final report each campus report in its entirety. Aside from minor changes to achieve consistent formatting, the three campus reports are included in the following section with no edits to the content.

### III. Campus Reports

#### UC Riverside

##### Overview

To assess the value of Activity-Based Costing (ABC) within our environment and to understand its potential for broader application across the UCR campus, we have developed multiple modules of the ABC model. As reflected in our ABC White Paper<sup>4</sup>, our initial pilot included three departments from the College of Humanities, Arts and Social Sciences (CHASS): Psychology; Hispanic Studies; and Theatre, Film and Digital Production, as well as two departments from the Bourns College of Engineering (BCOE): Computer Science; and Mechanical Engineering.

In surveying the faculty of these five departments, we were able to establish the faculty time estimates for various educational activities; the time estimates, in collaboration with a Deloitte consultant team, would later drive the direct costs of the first ABC module (see Approach #2 described below). Piloting within the departments also provided key insights as to the overall utility of faculty surveys and the feasibility of a campus-wide use of ABC faculty surveys.

Following our initial pilot, we developed a second ABC module (see Approach #1 described below) in which we applied a generic profile for faculty time utilization across campus for all faculty members. Under the generic profile module, we allocated all faculty time as follows: 40% on instruction, 40% on research and 20% on other activities.

At a later stage, we developed a third ABC module in which 100% of faculty time is allocated to instruction. That approach and related findings are not reported here, since the 100% allocation to instruction doesn't accurately reflect faculty time at research universities, and it was developed primarily for administrative purposes.

Establishing and comparing multiple modules and direct cost allocation methodologies allowed us to determine which module would provide the most accurate reflection of faculty time, with consideration also given to the time and effort required to apply a given methodology.

For this report, we focus on the data sources, methodological approaches, and feedback from the three CHASS departments (per the Budget Framework Agreement). Please also note that each of our ABC modules is based on data from the FY14-15 Academic Year.

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<sup>4</sup> *Optimizing Resource Allocation for Teaching: An experiment in activity-based costing in higher education:*  
[https://www.ucr.edu/about/admin/docs/ucr\\_abc\\_whitepaper.pdf](https://www.ucr.edu/about/admin/docs/ucr_abc_whitepaper.pdf)

## UC Riverside's ABC Methodology

UCR's Activity-Based Costing model integrated a number of different types of financial and non-financial data from across the institution, including:

- General Ledger Records
- Course Scheduling
- Student Records
- Space (Facilities)
- Human Resources and Payroll
- Faculty Time

The data was acquired through the campus Chief Information Officer and validated with campus data owners such as the Controller, Financial Planning and Analysis, Institutional Research, Registrar, Chief Human Resources Officer and the Academic Personnel Office. After the data was identified and extracted, a thorough review was performed on the "cross-mapping" of data between the ABC model and current source systems for accuracy.

### *Direct Costs - Faculty Time*

The direct costs for a given course in the model are driven by the amount of time instructors spend on academic activities for that course. In order to properly allocate the direct costs of instruction we needed data in two specific areas:

*Size of Teaching Cost Pool* - How faculty time is apportioned among instruction, research, administration, public service and other responsibilities.

*Course Effort Estimate* - Total instructional time required for each course, following six distinct activities:

- Course Development
- Course Management
- Teaching
- Tutoring
- Advising
- Assessment and Grading

Given the lack of significant precedents or established ABC best practices for higher education in the US, we chose to run the model using two approaches for a set of departments. This was done to determine whether there were noticeable differences in allocation outcomes across the approaches before deciding on a final approach for modeling across the entire university.

**Approach #1** - We created a generic profile that would assume the following default scenarios:

*Size of Teaching Cost Pool* - Faculty spend 40% of time on instruction, 40% on research and 20% on other activities, representing generally held assumptions for faculty time allocations at public research universities.

*Course Effort Estimate* - The amount of time spent on instruction for each undergraduate course could be based on the following formula, regardless of department or course delivery format:

Number of Hours Required					
Course Development	Course Management	Teaching	Tutoring	Advising	Assessment & Grading
40 hours	Same as 'Teaching'	Time spent in class	0.5 hr X # of students enrolled	0.5 hr X # of students enrolled	0.5 hr X # of students enrolled

*Approach #2*- We surveyed a sample of faculty members to better understand faculty workloads and course requirements. We hired a Deloitte consultant team to help execute its pilot faculty course study and develop faculty and course level profiles. For the pilot we surveyed faculty from five departments within two colleges to collect data about their workload and time spent on educational activities, attempting to capture both a spectrum of courses and faculty types (such as TAs, lecturers, full professors and assistant professors).

In allocating direct costs to the entire campus, we settled on a hybrid approach that would provide a higher level of nuance than Approach #1, allowing departments to account for variance in research levels and teaching loads, while also being more feasible for a full roll-out than Approach #2.

### *Indirect Costs*

The indirect costs for a given course in the model are driven by the amount of non-teaching resources (facilities, administration, etc.) that a specific course requires. Our indirect cost allocation methodology was largely determined through our incentivized budget process redesign. In this redesign, administrative organizations are considered as “cost pools” with each category having specific drivers used in calculating the indirect costs (see table on the following page).

<u>Cost Pool</u>	<u>Description</u>	<u>Driver</u>
<b>Infrastructure</b>	Facilities	Square Footage
	IT	Academic + Student + Staff FTE
<b>Administration</b>	Functional Administration (Finance, HR, etc.)	Academic + Staff FTE
	Central Administration (Chancellor, Planning & Budget, International Affairs, etc.)	
<b>Student Affairs Support</b>	Student Affairs	Undergraduate FTE/ Graduate FTE
<b>Academic &amp; Research Administration</b>	Research Administration	Academic FTE
	Academic Administration	Academic + Student FTE
<b>Student Financial Aid</b>	Student Financial Aid	Undergraduate FTE/ Graduate FTE

The data presented on the sample table below was provided at a working session to current and past department Chairs, Deans, Associate Deans, and the Chief Finance and Administrative Officers of the five departments that had participated in Riverside’s pilot survey on developing time estimates for various educational activities. The Provost, Vice Chancellor for Planning and Budget, the Associate Vice Chancellor for Planning and Budget, and other supporting staff were in attendance to lead the discussion, solicit feedback, and respond to technical questions regarding allocation methodologies and other technical details. For this initial, meeting the data set was limited so that the discussion could focus on whether the specific course level data was useful and how it might be used to influence the decision making process.

Note that the Pilbara ABC system relies on Excel based OLAP data queries to access data from the system’s data cubes and thus does not allow the manipulation of data, but rather provides output of fixed data sets in Excel tables. The system used during Riverside’s Pilot did not include any data visualizations, and required a technical understanding of data structure and system labels to extract data, thus it would not be possible to deploy the actual system at the department level. Rather, a Central Office would need to be staffed and trained to respond to department data requests by manually extracting the requested data and translating it into useful visualizations and tables.

**Display – UC Riverside Summary Data Example (Department of Theatre, Film and Digital Production)**

ACTIVITY BASED COSTING EXERCISE - MAY 31, 2017			A	B	C = A - B					
Department	Course Number and Name	Course Delivery Method	Total Revenue	Total Expense	Total Margin	Student Enrollments	Sections LEC	Sections LAB	Sections INDI	Sections DISCUSSION
Theatre	THEA010 : INTRODUCTION TO ACTING (GRP A - ON CAMPUS - FALL )	Lec Discussion	\$ 98,476	\$ 104,994	\$ (6,518)	89	1	0	0	3
Theatre	THEA010 : INTRODUCTION TO ACTING (GRP A - ON CAMPUS - SPRING )	Lec Discussion	\$ 97,741	\$ 105,847	\$ (8,105)	89	1	0	0	3
Theatre	THEA010 : INTRODUCTION TO ACTING (GRP A - ON CAMPUS - WINTER )	Lec Discussion	\$ 102,479	\$ 105,574	\$ (3,095)	89	1	0	0	3
Theatre	THEA010 : INTRODUCTION TO ACTING (GRP B - ON CAMPUS - FALL )	Lec Discussion	\$ 98,286	\$ 103,509	\$ (5,224)	87	1	0	0	3
Theatre	THEA010 : INTRODUCTION TO ACTING (GRP B - ON CAMPUS - SPRING )	Lec Discussion	\$ 99,355	\$ 105,132	\$ (5,777)	89	1	0	0	3
Theatre	THEA010 : INTRODUCTION TO ACTING (GRP B - ON CAMPUS - WINTER )	Lec Discussion	\$ 115,175	\$ 106,486	\$ 8,689	89	1	0	0	3
Theatre	THEA010 : INTRODUCTION TO ACTING (NO GRP - ON CAMPUS - SUMMER )	Lec	\$ 20,808	\$ 68,416	\$ (47,608)	20	1	0	0	0

## Feedback

We requested, and have received, written feedback from department Chairs (ladder faculty) in three CHASS departments associated with the ABC pilot: Psychology, Hispanic Studies, and Theatre, Film and Digital Production. Feedback from the departments has not been edited and may be found below:

**1. *Can you please describe how you determine how to deliver the curriculum? In particular, what tools do you currently use that help you make financial decisions and/or optimize resources associated with the curriculum?***

**Psychology:** The Department has Undergraduate and a Graduate Education Committees that annually review national/international educational trends and best practices, monitor student learning outcomes and assessments and recommend curricular updates and revisions to the department faculty. The priority in Psychology is to deliver UC quality courses and education while offering the required courses as frequently as necessary for our majors to graduate within four years. As the number of psychology majors is at capacity, we must offer all four of our required lower-division courses every quarter (enrollments of 120 to 570) and all of our required upper division courses (average enrollments are over 200 per course) twice per year, so that our majors have the courses they need to be able to graduate on time. Similarly, we offer virtually all of our required graduate courses once/year. As these offerings of required courses absorb most of the teaching capacity of our faculty (as well as the funding available for TAs), the slate of courses we offer tends to be similar year by year. Consequently, most faculty have a yearly pattern of teaching that is similar across years, and thus the assignment of teaching is largely focused on achieving the best match between faculty expertise and course content in cases when individual faculty are unavailable to teach “their” course or when new faculty are available.

As for process/tools, a Google document spreadsheet listing each PSYC course and the number of times it must be offered, with columns for fall, winter and spring is distributed to each of the departmental faculty. Each faculty inserts their name in their preferred quarter for each of the four courses needed to meet their required course load. There is also a link to a site for faculty to rank order their preferences for alternate courses and quarters, should we not be able to accommodate their 1st choices.

**Hispanic Studies:** Our curriculum has a service base (Spanish language courses at the lower division offered to fulfill the language requirement; generally, these would be Spanish 1 to 4, offered in a 4-quarter sequence) and a major/minor base. For the service base, we offer as many courses each quarter as we can accommodate with our temporary budget. All of the language courses are taught by TAs or lecturers, and all of our courses are filled to capacity (for the most part, they are filled beyond the capacity recommended by national foreign language association guidelines). The funding, as I say, is all derived from the temporary budget each year. If we had more funding, we would offer more of these courses—there is clearly student demand. (Currently we offer approximately 28 sections of Spanish 1 to 4 in the summer session, where also there is strong demand. If more sections were offered during the regular academic year, I imagine that fewer sections would be offered in the summer.)

Concerning upper-division courses for majors: generally we are able to offer courses that fit the 3 tracks of our major. The course sizes are generally set at 40 students, and this seems to accommodate all of our majors and minors. All courses are offered in Spanish, hence a certain level of fluency is required for students to enroll. The current planning model that we use (2 year projections of courses to cover our major, with 9 tenure/tenure-track faculty) seems to work. However, we are disappointed that 12 upper-division courses each year are always offered by lecturers, since we don't have sufficient tenure/tenure track faculty to cover these. It should be noted that our courses need to be relatively small so that sufficient writing/speaking skills in Spanish can be developed, though the 40-student limit is perceived nationally as too large.

**Theatre, Film and Digital Production:** We periodically review the curriculum as a department at our faculty retreats. (We have a retreat once every 3-4 years.) We consider the popularity of tracks within our major and enrollment numbers for the tracks and for the relevant courses in each track. In addition, we discuss the curriculum on a continuing basis during our monthly faculty meetings. When we have a bottleneck situation, when we need an additional course, or when an interesting course proposal arises, we discuss with the Chair and among the relevant faculty.

Recently, one of our tracks (film making) has become very popular among students, and has required our offering additional courses within the track. Since we only have one full-time faculty in the track, we have had to come up with a variety of solutions, none of which is as ideal as having another faculty member to alleviate the pressure and constraints on the single professor. This resulted in the Chair and four faculty members working together to create a new, large-format class to alleviate the bottleneck that has resulted for students wanting to take the smaller format courses that are production-oriented.

In terms of budget, the Chair meets with our FAO on a quarterly basis to determine which courses will be taught. We submit an annual temporary budget request to address any courses that are not covered by current faculty. In addition, the Chair meets with the academic advisors on a quarterly basis to determine where there is tremendous need and where additional courses should be offered. This results in our offering some courses on an annual, and others on a semi-quarterly basis.

Our larger courses (Introduction to Acting, Public Speaking, Shakespeare in Performance, Hip Hop Theatre) which are offered to 75-150 students per course, require additional TA's. In order to budget and assign the TA's, the Chair meets with an administrative assistant who is shared with another department.

## ***2. What value would this tool add to your current decision-making process, particularly about curriculum planning and instructional FTE?***

**Psychology:** Given the goal of delivering a world class education, the many constraints listed above, and the commitment by the Departmental faculty to have our courses taught by full-time tenure-track faculty (as opposed to lecturers) I see little value to ABC for the Department of Psychology.

**Hispanic Studies:** I see no value at all for our department, to be honest. We are able to deliver our curriculum under the current planning model that we use. What we actually need is stability in the

temporary budget allocations and appropriate growth in faculty lines to accommodate anticipated student growth at the University. Our discipline, with every course taught in Spanish, requires a certain type of pedagogy that seems to me is not helped by the ABC model. I suppose that our department could be hurt by the model, depending on how the model is used at the next level up that could reward/require larger class sizes.

**Theatre, Film and Digital Production:** We currently use a course-planning guide that we have been using for a number of years, and which has proven effective. It is not clear what additional benefit would be offered by the Activities Based Costing tool.

Our curriculum is so directly linked to student interest and need, and is so often reviewed by the faculty who are closest to the students, that the Activities Based Costing tool stands the risk of distancing the budgetary determination from those who are truly expert in the curriculum.

We would not want to make decisions that are derived from a purely economic rationale rather than a qualitative one. We would not want to make decisions based on a generic “activity” rather than on specific, subject-focused needs.

Within our curriculum, we already balance large-format courses with the smaller, seminar oriented courses that our field necessitates. It is not clear what ABC would provide us that we do not already in some way consider.

**3. *Are there revisions to the methodology/assumptions that would make this tool more useful? If so, what?***

**Psychology:** None that seem practical.

**Hispanic Studies:** No revisions.

**Theatre, Film and Digital Production:** The main concern we would have with an ABC tool is that we are an arts-based department in which much of the teaching and learning has to take place in a hands-on, small group context. The concern is having a purely economic formula attached to each “activity” and overlooking the cost needed to support the kind of learning that is necessary in our field.

Another concern is that ABC does not appear to take into account facilities that are needed in our teaching. A film studio, a television studio and a theatre space all require very specific equipment, spaces and staff support. Is the ABC flexible enough as a tool to address facilities needs within the “activities”?

**4. *What do you see as the pros and cons of an ABC tool, particularly assigning revenues and costs at a course level?***

**Psychology:** A major con is that assigning costs to courses without understanding their value to the students is likely to lead to decisions that are not in the best interest of the students’ education. For example, we offer undergraduate lab courses where undergraduate students have the opportunity to

e.g. perform recovery brain surgery on rats and will be offering a lab where undergraduate students will be imaging human brains. These are expensive offerings but also provide uniquely valuable and sometimes life changing experiences for the students.

**Hispanic Studies:** At one of the workshops I asked a principal of the plan “why should I care about this model, how would it help us when we seem to be doing pretty well?” He said that he couldn’t really say specifically, but thought that the model overall could be good for the University. This was quite unsatisfactory from my point of view, since our department was one of the participants in the program.

**Theatre, Film and Digital Production:** At first glance, it would appear an ABC tool would streamline budgeting. From an administrative position, that may be considered a Pro.

The Cons included the following:

- It is not clear how facilities and staff support, especially production staff (not administrative staff) are accounted for in the model. Yet, every theatre and film department requires additional production staff in order to operate our creative “laboratories” which function with specific equipment and with many needed safety precautions in place.
- Many of our courses (film making, film editing) include a course material fee, and that is not accounted for in the ABC tool.
- Many of our courses are practicums in which students create films and theatre productions. These are highly complex undertakings that require interfacing with outside vendors, production staff support (for the building of sets, for example), contract agreements that cover royalties to be paid for music and intellectual and artistic property (original screenplays, plays, music). These are not accounted for in an ABC model.
- An ABC tool might negatively pre-dispose the administration to under-funding arts-based programs that require many of the above mentioned budgetary supports. At the same time, a purely ABC tool overlooks the contribution of arts-based programs to the university and broader community, when the music, dance, art, theatre and film departments make original performances to be viewed and shared with the communities around them. How do we account for a non-monetary contribution?
- The ABC tool might favor large-format classes more than smaller, seminar type of courses. However, creative writing, art, theatre, film editing, film making and music all depend on the smaller class room for at least part of our curricula.
- The ABC tool does not account for the mentorship that faculty perform not only in office hours but in the many practicums, productions, independent studies, and special projects that students undertake.
- In a context where many of our students are first generation university students, faculty mentorship is especially important. Yet, the ways faculty offer this guidance are often intangible – more hours than official “office hours,” more interaction online, responding to emails, additional independent studies, extra guidance to students applying for further studies, etc... And for arts students, the attendance at public readings, and performances. These are not accounted for in the ABC tool.

- The goal of excellence in research may be obscured by cost considerations.
- Hiring eminent professors or eminent artists may be considered less desirable from a purely ABC perspective. However, those are important for a research *[sic]*.

**5. Do you have any additional feedback to provide?**

**Psychology:** While the K-12 education in the US is mediocre by international standards, our universities are the envy of the World, and the UC system is widely considered to be among the best public universities in the country. One of the features that may contribute to the quality is the relative separation of academic and administrative decisions, with the faculty of the Academic Senate having purview over the curriculum and the administration having purview over the funding. Instituting the use of ABC at the departmental level would tend to degrade that separation. More generally, the ultimate concern with ABC is that the most expensive courses will inexorably be eliminated to achieve costs savings, thus degrading the quality of the education offered by UC campuses.

**Hispanic Studies:** Based on what I saw and learned at the workshops, this program seemed like an enormous waste of money and time. I say this from a departmental perspective, where I haven't been able to see that it can help us. However, I don't know enough about the college/university modeling of finances to determine whether this could be helpful at that level. I found the workshops uninteresting, filled with platitudes, overseen by people who seemed not to have ever been in front of a classroom and not to have much experience with pedagogy and student learning.

**Theatre, Film and Digital Production:** Arts programs may be especially vulnerable if an ABC tool is adopted for many of the reasons mentioned above.

## UC Davis

### Overview

For this pilot study, we produced a report for three departments: chemistry, psychology, and mechanical engineering. Each report compared limited categories of revenue and costs for all courses (undergraduate and graduate) offered by those departments during the 2015-16 academic year. We distributed the reports to the departments and asked for feedback on the usefulness of the data.

Instead of attempting to replicate the full ABC model that UC Riverside created, we limited our focus to two categories of direct costs and one category of revenue. We did this to see if we could leverage existing data systems in order to produce a less costly version of ABC, but one that still tried to answer the overall question: Can an ABC model further support campus decision-making about the academic curriculum and resource allocation?

For direct costs, we limited ourselves to instructor and teaching assistant costs. We excluded other categories of direct costs such as supplies and minor equipment. We also excluded all categories of indirect costs such as departmental overhead and fractions of campuswide resources such as the registrar's office, library, etc. For revenue, we limited ourselves to the portion of undergraduate tuition revenue that is allocated based on student credit hours, and we excluded state support and graduate tuition revenue.

Also, based on the feedback that we received from the UC Office of the President, Department of Finance, and Governor's Office, we used averages for salary and benefit expenses instead of tying specific instructor costs to specific courses. This change allowed us to extract most of the data necessary from one system and eliminated the need to establish links to other data stores.

By incorporating these changes, we extracted most of the data from our instructional workload system. This meant that we avoided a major challenge of replicating the UC Riverside model which was to connect various data systems in new ways.

Given that our scope was significantly narrower than Riverside's, the report that we generated was completed over the course of about six months, primarily by two individuals.

### Methodology

The following provides a brief explanation about the methodology that we used for various components of the report.

### *Course Information*

Course information was based on historical data from our instructional workload system for the 2015-16 academic year (fall, winter and spring quarters; summer was excluded). From this system we extracted

elements such as course name, course number, total enrollment, instructor category, and the number of teaching assistants. Undergraduate and graduate courses were included in the report.

Courses are often offered more than once in a given term. We refer to these as sections of a course. For example, in fall 2015, five sections of General Chemistry were offered. On the report each section was listed on its own row.

### *Salary & Benefit Expenses*

Salary and benefit expenses were taken from a locally maintained data set. We used the average salary and benefit amount by instructor type for each college and division. For example, for the assistant professors in the Department of Mechanical Engineering, we used the average salary and benefit amount for all assistant professors in the College of Engineering.

We also prorated the salary and benefit amount for tenured and tenure-track faculty by 40 percent. This was based on the assumption that tenured and tenure-track faculty spend approximately 40 percent of their time on instruction, 40 percent on research, and 20 percent on public service. This proration could easily be adjusted for future reports. For lecturers and lecturers with security of employment, we used 100 percent of their salary and benefit amount.

### *Teaching Assistants*

For courses that offered multiple sections, we show the number of teaching assistants at the section level, but this was based on the average number of teaching assistants (TAs) for the entire course. For example, in fall 2015, five sections of General Chemistry were offered. Across all five sections there was a total of 58 TAs, for an average of 11.6 TAs for each section (58 TAs/5 sections).

### *Instructor Load*

To distribute the salary and benefit expenditures, load was calculated based on the number of course units taught by each category of instructor at the level of the college or division. For example, for the Department of Chemistry, we started at the level of the Division of Mathematical and Physical Sciences (MPS). The total salary and benefit expenses for full professors in MPS was \$26.6 million in 2015-16. If we assume that a tenured faculty member spends forty percent of her time on instruction (see above), then that amount becomes \$10.6 million ( $\$26.6 \text{ million} \times 40\%$ ). Full professors in MPS taught about 1,280 units (General Chemistry is a five-unit course, Organic Chemistry is a three-unit course, and so on). This gives you an average of \$8,300/unit ( $\$10.6 \text{ million} / 1,280 \text{ units}$ ) or \$24,900 for a three-unit course ( $\$8,300 \times 3$ ). Thus, the salary and benefits costs are derived from the number of units, not student credit hours.

### *Revenue*

For purposes of this report we show revenue as \$81 per student credit hour for undergraduate courses and \$0 per student credit hour for graduate courses. This is because, under a strict interpretation of our budget model, graduate tuition revenue is not allocated based on student credit hours – allocations are

based on enrollments. By contrast, there is a part of our budget model that allocates a portion of undergraduate tuition revenue for instruction. In 2015-16, that equated to about \$81 per student credit hour. Obviously, state dollars support both graduate and undergraduate instruction, but we do not have a formula for that source of funds, so, for this iteration, we limited the revenue to undergraduate tuition dollars. This could easily be adjusted for future reports.

## The Report

The participants received the report (see the next page for an example), an explanation of the methodology, and a questionnaire. The report was a formatted Excel spreadsheet. Although a recipient could manipulate it, the report was not designed with that kind of functionality in mind. Staff in the office of Budget and Institutional Analysis were available to answer questions about the report.

### Explanation of Report Columns

Column Title	Explanation
#	Running count of the total number of sections for each department
Acad Year	The academic year for the report; in this case, 2015-16.
Qtr	The quarter the section was offered. For this report, fall, winter, or spring. Summer is excluded.
Course Code	The code for each course that appears in the course catalog.
Course Title	The short name for the course.
Sect #	In a given quarter, multiple sections of a course may be offered. See General Chemistry on the next page. Five sections were offered and are shown as A00 to E00. The color coding also groups sections of the same course to make the report easier to read.
Units	Different courses have different numbers of units associated with them. For example, a lecture-only course that meets for three hours per week is a three-unit course. General Chemistry has a lecture component, a laboratory component, and a discussion section. It is a five-unit course.
Enrlmt	Enrollment is the number of students taking that particular section of a course.
SCH	Student credit hours (SCH) is calculated by multiplying the enrollment by the course units. For example, if 200 students take a three-unit course, then the SCH is 600.
Instr Type	The type of instructor that led the course.
Instr S&B Exp by Units	Instructor Salary and Benefits (S&B) Expense by Units is the cost of that instructor type multiplied by the units for the section.
TA Count	TA Count is the number of teaching assistants for each section. For courses with multiple sections, the number of teaching assistants is an average across all sections.
TA Salary Expense	TA Salary Expense is the TA Count multiplied by \$6,005 which is the average cost of a teaching assistant.
Instr + TA Cost	Instructor Cost + TA Cost is the sum of the instructor costs and teaching assistant costs.
Revenue (UG SCH x \$81)	Student credit hours for undergraduate courses are multiplied by \$81. Student credit hours for graduate courses are multiplied by \$0.
Net	The difference between revenue and instructor and teaching assistant costs.

Display – UC Davis Summary Data Example (Department of Chemistry)

#	Acad Year	Qtr	Course Code	Course Title	Sect #	Units	Enrlmt	SCH	Instr Type	A	TA Count	B	C = A + B	D	E = D - C
										Instr S&B Exp by units		TA Salary Expense	Instr + TA Cost	Revenue (UG SCH x \$81)	Net
1	2015-16	Fall	CHE002A	General Chem	A00	5	450	2,250	Lecturer	\$20,912	11.6	\$69,658	\$90,570	\$182,250	\$91,680
2	2015-16	Fall	CHE002A	General Chem	B00	5	469	2,345	Lecturer	\$20,912	11.6	\$69,658	\$90,570	\$189,945	\$99,375
3	2015-16	Fall	CHE002A	General Chem	C00	5	489	2,445	Lecturer SOE	\$49,211	11.6	\$69,658	\$118,869	\$198,045	\$79,176
4	2015-16	Fall	CHE002A	General Chem	D00	5	357	1,785	Lecturer	\$20,912	11.6	\$69,658	\$90,570	\$144,585	\$54,015
5	2015-16	Fall	CHE002A	General Chem	E00	5	451	2,255	Lecturer	\$20,912	11.6	\$69,658	\$90,570	\$182,655	\$92,085
6	2015-16	Fall	CHE002AH	Honors General Chem	A00	5	75	375	Asst Prof	\$28,469	2.0	\$12,010	\$40,479	\$30,375	(\$10,104)
7	2015-16	Fall	CHE002C	General Chem	A00	5	297	1,485	Lecturer	\$20,912	10.0	\$60,050	\$80,962	\$120,285	\$39,323
8	2015-16	Fall	CHE002C	General Chem	B00	5	448	2,240	Lecturer	\$20,912	10.0	\$60,050	\$80,962	\$181,440	\$100,478
9	2015-16	Fall	CHE008A	Organic Chemistry-Brief	001	2	421	842	Lecturer	\$8,365	4.0	\$24,020	\$32,385	\$68,202	\$35,817
10	2015-16	Fall	CHE008A	Organic Chemistry-Brief	002	2	117	234	Associate In	\$5,495	4.0	\$24,020	\$29,515	\$18,954	(\$10,561)
11	2015-16	Fall	CHE008B	Organic Chemistry-Brief	A00	4	217	868	Lecturer	\$16,730	5.0	\$30,025	\$46,755	\$70,308	\$23,553
12	2015-16	Fall	CHE010	Concept Of Chem	001	4	31	124	Lecturer	\$16,730			\$16,730	\$10,044	(\$6,686)
13	2015-16	Fall	CHE104	Forensic Analytical Chem	A00	3	41	123	Professor	\$24,936	4.0	\$24,020	\$48,956	\$9,963	(\$38,993)
14	2015-16	Fall	CHE105	Anal & Phys Chem Methods	A00	4	51	204	Professor	\$33,249	4.0	\$24,020	\$57,269	\$16,524	(\$40,745)
15	2015-16	Fall	CHE107A	Phys Chem Life Sci	001	3	251	753	Professor	\$24,936	4.0	\$24,020	\$48,956	\$60,993	\$12,037
16	2015-16	Fall	CHE110A	Phys Chem: Quantum Mech	A00	4	85	340	Assoc Prof	\$19,319	3.0	\$18,015	\$37,334	\$27,540	(\$9,794)
17	2015-16	Fall	CHE110A	Phys Chem: Quantum Mech	B00	4	69	276	Lecturer	\$16,730	3.0	\$18,015	\$34,745	\$22,356	(\$12,389)
18	2015-16	Fall	CHE110B	Phys Chem: Atoms & Molec	A00	4	69	276	Asst Prof	\$22,775	2.0	\$12,010	\$34,785	\$22,356	(\$12,429)
19	2015-16	Fall	CHE115	Instrumental Analysis	001	4	21	84	Professor	\$33,249	2.0	\$12,010	\$45,259	\$6,804	(\$38,455)

## Feedback

In addition to the three departments in the pilot program, we also sought feedback from offices and committees that have a campuswide perspective on instruction and planning/budgeting. The chart below lists the campus unit and title of the individuals who reviewed the report.

Campus Unit	Title
Division of Mathematical and Physical Sciences	Faculty Advisor to the Dean and Incoming Vice Chair of Chemistry
Division of Mathematical and Physical Sciences	Assistant Dean for Finance
College of Engineering	Department Chair of Mechanical Engineering
College of Engineering	Chief Administrative Officer
Division of Social Sciences	Outgoing Department Chair of Psychology
Division of Social Sciences	Incoming Department Chair of Psychology
Division of Social Sciences	Vice Department Chair of Psychology
Division of Social Sciences	Associate Dean for Undergraduate Education Provided an overall response, shown under question #5
Undergraduate Education	Vice Provost and Dean for Undergraduate Education
Academic Senate Committee on Planning and Budget	Chair

We received feedback from the Department of Chemistry, the Department of Psychology, the Department of Mechanical Engineering, the Division of Social Sciences Dean's Office, and the Office of Undergraduate Education. The feedback received is provided below and has been edited for clarity. The Academic Senate Committee for Planning and Budget (CPB) provided feedback on the ABC pilot and a draft of this report. Comments related to the pilot are included below under item five.

**1. *Can you please describe how you determine how to deliver the curriculum? In particular, what tools do you currently use that help you make financial decisions and/or optimize resources associated with the curriculum?***

**Chemistry:** Each year, the departmental leadership reviews a three-year rolling average of course enrollments. We use that data to develop baseline offerings. After central campus releases enrollment targets for the coming year, we review the baseline offerings and modify as necessary. In addition to this, when there is student demand for a course, we do everything to make sure the course is offered. Due to infrastructure constraints, we are at maximum capacity in the general chemistry sequence, lower and upper division organic chemistry, and many of the upper division analytical major offerings. These limitations impact the way that we deliver the curriculum. This is not an optimum way to make decisions but it is our reality.

**Psychology:** Our primary goal is to deliver a high quality curriculum to our students. Psychology is the largest major on campus because it graduates more than 10% of all UC Davis undergraduates each year.

Psychology has a Vice Chair who works with the Chair and members of the staff both to develop the curriculum and to manage costs. Each year the departmental leadership examines the curriculum from the previous year, considering enrollment for each section and how courses fit the major requirements. We broadly construct a curriculum that will provide enough seats for students to meet their major requirements, with an emphasis on major requirements rather than the popularity of an individual course (i.e., if the instructor of a very popular course will be on leave, we make sure that an equivalent course, in terms of the curriculum, is offered, rather than asking another instructor to prepare that popular course). We use online tools (e.g., Google docs) to plan our schedule and to communicate about the schedule among the team involved (Chair, Vice Chair, participating faculty and staff).

Individual faculty groups (i.e., each of our five disciplinary areas of Psychology, such as developmental psychology) plan the specific courses that will be offered and who will teach each course in each quarter. Areas are provided with goals—numbers of seats to be offered in each group of courses that meet our requirements. Using this information, the faculty coordinates how to cover the curriculum. We do not make decisions about teaching based on the rank or salary of faculty members. Our first priority is to match faculty expertise with the course demands for the major, and also to provide broad instruction to non-majors on campus.

After we have planned faculty teaching, we identify needs with respect to temporary lecturers and graduate student instructors (Associate Ins). One of our primary concerns is providing sufficient sections to accommodate student demands as well as TA support for those sections. Our goal is to offer students a mix of larger and smaller sections, and to ensure that our TA support is sufficient for the size of the class. We have over 100 Ph.D. students in our graduate program, so we typically have sufficient staffing for our courses. In addition, these TA positions provide important financial and training support for our own doctoral students, as well as students in other graduate programs.

Psychology has the highest teaching load of any laboratory-based science on campus; ladder faculty members are responsible for four courses per year. Therefore, most of our undergraduate courses are taught by ladder faculty, providing a tremendous advantage to UC Davis, especially given we are highly ranked nationally (top 15 among public research universities, and second among public universities in experimental-non-clinical psychology, behind UC San Diego).

**Mechanical Engineering:** The curriculum is determined by the department chair in consultation with the vice chairs of the undergraduate and the graduate programs, faculty, Chief Administrative Officer, and staff advisers. We follow a template of what we normally offer during a given quarter, while maintaining a balance between undergraduate and graduate courses. Inherent in this process is a thoughtful consideration on faculty coverage and their availability, enrollment size, temporary instruction budget, and availability of classrooms, laboratory teaching space, and other resources and logistical needs.

For curriculum planning purposes, we use a spreadsheet, listing the faculty/temporary instructors and course offerings by quarter in a given academic year. This list contains information on faculty who are on a leave of absence. For the assignment of teaching assistants, we keep a similar spreadsheet to help monitor our temporary instructional budget and actual expenses.

**Undergraduate Education:** In Undergraduate Education we work with the budget office to distribute \$2 million of supplemental funding to the departments/colleges so they can meet their obligations to offer courses that students need when those courses are beyond their current funds. We make the decision to fund based on the number of students on the waitlist and whether the course is a required course for a major or a gateway to another major's courses. The cost of instruction does not factor in this: rather we rely upon the department/college's regular practice of hiring faculty and determining appropriate cost.

**2. *What value would this tool add to your current decision-making process, particularly about curriculum planning and instructional FTE?***

**Chemistry:** The Division of Mathematical and Physical Sciences currently utilizes a course-planning tool that was developed for the division. Additionally, the campus is in the process of piloting the Instructional Planning and Administration (IPA) tool for which Chemistry will be a pilot department. This tool will help with the logistics of assigning instructors to courses. Moreover, our classroom size is mandated by American Chemical Society guidelines and our five year program review.

It is not clear to us that the Activity Based Costing tool provides any additional functions that our campus tools do not already offer.

**Psychology:** It is difficult to tell because our first priority is the quality of the curriculum and our offerings. It seems unlikely to us that we would change this priority to consider faculty rank and salary.

On the other hand, it is always useful to have data -- we are scientists.

**Mechanical Engineering:** The ABC tool would be valuable in our curriculum and instructional budget decision-making process to maintain a careful balance in our undergraduate and graduate course offerings while optimizing the use of our instructional resources and keeping in mind the cost of maintaining quality and value of education, time-to-degree, and other logistical constraints (e.g., limited lab space, classrooms).

On a side note, a new web-based curriculum planning tool called Instructional Planning and Administration (IPA) is currently being piloted and would streamline the curriculum planning process. There is a budgeting component that is currently in the development phase. We plan to adopt IPA in winter or spring 2018 for our course scheduling and teaching assignments.

**Undergraduate Education:** This would not add value. We do not look at the per instructor cost of a course. Instead, we work with chairs and the budget office to balance the cost of one course within the college's budget as a whole—recognizing that with student credit hour growth, our budget model does

not always provide sufficient funding for courses needed at that moment (because funds eventually catch up)—so top off funds may be necessary.

**3. Are there revisions to the methodology/assumptions that would make this tool more useful? If so, what?**

**Chemistry:** It appears as if the tool is not easily modified to include things like administrative costs to support the academic mission, teaching lab restraints, Fire Marshal occupancy requirements, other safety concerns, etc. Also, if the tool was more efficient than our current course planning tool, and if it was able to consider the quality of the delivered curriculum, then there might be more value to it.

**Psychology:** Without a chance to have a detailed in-depth discussion with those in Budget and Institutional Analysis, perhaps including some of our quantitative (statistical/mathematical) psychology faculty members, we cannot answer this question.

**Mechanical Engineering:** Include independent courses in the ABC report.

**Undergraduate Education:** Independent courses (usually numbered as 98 or 198) should be excluded. Those are research/mentored faculty experiences and are typically done on overload (in excess of the faculty member's regular teaching load) so they shouldn't show up as net "costs" to the institution.

[NOTE: The report that was provided excluded independent study courses. As you can see from the feedback, opinions differ on whether or not they should be included.]

**4. What do you see as the pros and cons of an ABC tool, particularly assigning revenues and costs at a course level?**

**Chemistry:**

Pros:

- An interesting financial perspective on our lower, upper, and graduate level courses

Cons:

- Does not capture Course Material Fee Revenue
- Does not capture teaching related expenses, not covered by the Course Material Fees such as laboratory staff, dispensary student assistants, equipment, and supplies in excess of what is allowable under the Course Material Fee max
- Does not factor in course administration cost
- Does not include course planning modules such as instructor and TA assignments which means this would be adding yet another system
- Does not factor in the quality of the delivered curriculum
- The ABC tool seems to negate the value of graduate education

**Psychology:**

Pros: Always good to be informed. One could imagine that how we involve doctoral students and lecturers in delivery of the curriculum might shift -- for example, the use of Lecturers with Security of Employment (LSOEs) might be seen as a better use of funds by permitting research active faculty to be more competitive nationally in their research and scholarship.

Cons: There is a significant risk that the campus could lose sight of its primary goals of delivering high quality instruction in favor of the bottom line cost. This runs a high risk of diminishing the preeminence of the University of California as a public research and education institution. There are certainly ways to teach with lower cost, but many of these are inconsistent with the goals of the university.

**Mechanical Engineering:**

Pros: The tool would help us:

- Have a better understanding about our use of current teaching resources from revenue/cost perspective and how we could further optimize these resources.
- Validate high-cost courses (e.g., with lab/design components) with an understanding that maintaining quality of education, time-to-degree requirements and other intangible factors would cost relatively more.
- Develop, plan, and implement reasonable, cost-effective alternatives of course delivery (e.g., in lecture courses) without compromising the quality and value of education.
- Explore, develop, plan, and implement investments in other course delivery methods (e.g., on-line, hybrid) and educational technology.

Cons: Though the ABC tool could provide useful revenue/cost data, it must be interpreted carefully within the context of the instructional program's needs, goals, and objectives.

**Undergraduate Education:** A con is that faculty who can help our students succeed due to their standing in their field and their experience can look too "expensive" and so more recent faculty or lecturers will be hired instead. This is a short term view of "cost." A senior faculty member is frequently very skilled at mentoring and securing long term employment for students where they can change the world for the better. This long term cost benefit to more "expensive" faculty is invisible in this calculation.

**5. Do you have any additional feedback to provide?**

**Chemistry:** As mentioned, it is not clear that the Activity Based Costing tool provides any additional functions that our campus tools do not already offer.

**Psychology:** We would be happy to engage in this exercise further, and believe that with a better understanding of the goals and methods, we might have more insightful and crystalized feedback for you.

We will also note that the short timeline in the turn around requested for this feedback, as well as the time of year, necessarily meant that we could not bring the full strength of the faculty wisdom to bear in answering the questions. That is, we did not have a chance to meet in the department and discuss this in detail. The outgoing Chair, incoming Chair, and Vice Chair consulted on these responses.

**Mechanical Engineering:** We support further development of the ABC tool.

**Undergraduate Education:** Pause and think of the unintended consequences of developing this kind of system for the transformational work we do at UC Davis for our state's—and our world's—young people. I see no way this is going to help us achieve our goals, and many ways this data will be used to create exactly the opposite of the learning environments we need our students to experience.

**Committee on Planning and Budget:**

- Using 100 percent of the salary and benefits for lecturers and lecturers with security of employment was an administrative decision without Senate input. These allocations may be ok for this document but they would require considerable consultation. Especially as these could be used as measures in making personnel decisions.
- Calculating of instructor load varies by department. In some, faculty teach a fixed number of courses. In others, large classes count more than smaller ones, even though they have the same number of units.
- The Committee on Planning and Budget sees no compelling need to continue to explore the ABC pilot. In reaching that decision, CPB discussed whether ABC could aid in the delivery of a quality academic program. CPB could find no academic program need that would justify the potential reallocation of resources to implement a new analytical tool that is unproven and based on unproven hypotheses. CPB is completely unconvinced that some quality measure could be overlain on a full-throated ABC tool as, say, implemented at UC Riverside.

**Social Sciences Dean's Office:** Although I believe that the excellence of operations at UC Davis depends on the careful use of information, I do not believe activity-based-costing (ABC) is the best route for UC Davis. UC Davis already has the information it needs to make good decisions. When combined, these data can answer important campus questions including those related to course delivery, admissions, and student success. The primary factor that prevents the fuller use of these data is not the lack of a vendor to handle the project, but the partitioning of data on campus.

For many years course scheduling at UC Davis was relatively simple at the department level. Economics and other departments kept records on the course seats they offered, and the associated enrollments. When enrollments were slack or tight, this information was used to modify the following year's schedule. Through this approach, course scheduling was highly efficient.

More recently, course scheduling has become more challenging as a consequence of changes in the overall number of students, which has forced courses to non-traditional hours, and due to the changes in the composition of students on campus, freshman/transfer international, etc. As these shifts occur, it is no longer possible to simply review and refine previous year plans. However, campus already appears

to be working on tools that could assist with this issue. A new tool called Degree Works is in the process of being implemented across campus. Once fully implemented, it should provide information about the courses students are planning to take. Another problem with focusing on historical data is that when classes run at capacity, the backward-looking approach is unable to provide information on the courses students would have taken if they had not been turned away due to the absence of seats.

More generally, it appears that ABC would give departments the equivalent of quarterly reports on their performance. While departments should be aware of their contributions to the financial health of their colleges, a course by course accounting of profit and loss is not the best guide of instructional value. In the case of Psychology, for example, a clear take-away in the ABC spreadsheets is that lower division instruction generates net revenue while almost the entire upper division is a source of loss. From a university level, it may be important to ask how much it costs to educate students in each of our majors, as students complete their full set of lower and upper division coursework. At the university-level, this also suggests that teaching resources should be adjusted as the allocation of transfer students (who take the relatively expensive upper-division courses) changes over time. However, as long as departments are running their upper division courses at a reasonably-high enrollment level, it does not seem smart to put department chairs or vice chairs in the position of thinking of their upper division courses as loss items to be eliminated. The same is true for the graduate programs which represent a pure financial loss under the budget model. While the financial cost is obvious in the sample ABC spreadsheets, in the absence of strong graduate programs there would be no TAs to help with the delivery of the undergraduate curriculum.

Departments would derive greater benefit from time-to-time reports related to new campus developments rather than quarterly monitoring of instructional costs and revenues. For example, increased transfer/freshman ratios and increased enrollment of international students may influence the composition of courses demanded on campus. However, rather than making a long-term commitment to an outside vendor, through the use of campus data, there are campus units that could answer these questions. The fact that data are kept in different places on campus makes it costly for lower-level units to address these questions. However, if the campus is considering ABC, which would give all the data sets to a vendor if it were to follow UCR, it is not clear why campus would not undertake the consolidation itself.

## UC Merced

### Introduction

In May, 2017 the Office of Institutional Research & Decision Support talked with central campus leadership and instructional and curriculum managers in the Schools of Engineering (SOE), Natural Sciences (SNS) and Social Sciences, Humanities and Arts (SSHA) at UC Merced about Activity Based Costing (ABC). Although UC Merced does not have organized departments, the campus created an ABC pilot data set (see Appendix A) for the equivalent of three departments (Computer Sciences & Engineering, Chemical Sciences, and Psychology), one in each of the schools, and discussed with key stakeholders what value the data set might provide to their planning and management activities (see Appendix B for an explanation of assumptions). The data set was presented in Tableau, which is capable of multiple perspectives on the data. Appendix A presents one such perspective only. The feedback from those viewing Tableau was positive and the instructional and curriculum managers expressed interest in being able to access the ABC data set in the future primarily for the development of temporary academic budgets.

### Overview

UC Merced does not currently have an enterprise data warehouse. Given our lack of integrated data systems, the Office of Institutional Research & Decision Support (IRDS) at UC Merced created the ABC data set primarily from the existing campus Faculty Workload data set. This provided the needed information on instructional activity at the course level including credit hours and instructional load. Whereas the Faculty Workload data is typically reported by Faculty member for teaching load assessments, the ABC data set created different views of the same data that showed teaching by instructor rank across areas of the curriculum and for specific courses and class offerings in the three pilot departments. For ABC, UC Merced added two new data points to the Faculty Workload data: 1.) a revenue figure which was a simple calculation of estimated (\$251) revenue per credit hour; and 2.) an instructional cost figure which required merging in salary data to calculate an average compensation amount by instructor rank.

There are significant limitations to the precision of these revenue and expense figures in the model. For example, because revenues are based on credit hours, secondary course sections such as discussion sections and labs that are not credit-bearing have no revenue amount yet have an instructional cost. As for expense, our figure only considers instructional cost and does not include indirect costs associated with mounting a course. In addition, to arrive at an average instructional cost by rank, we made a number of assumptions about how much of the instructor's annual salary should be associated with their teaching activity, etc.

Given the limitations of the revenue and expense figures in the model, the campus stakeholder review of the data set naturally gravitated away from a discussion of the apparent net gain or loss of offering a

particular course and towards the value of the data set for instructional budget and curriculum planning. See Appendix C for a list of stakeholders.

In each of our review sessions with stakeholders we asked the same set of 6 questions including:

1. Can you describe how you deliver the curriculum? In particular, what tools do you currently use that help you make financial decisions and/or optimize resources associated with delivering the curriculum?
2. What value would this data set add to your current decision-making process, particularly about curriculum planning and instructional FTE? Can you provide some specific examples?
3. At what time of year or at what point in your process would you use these data?
4. Are there revisions to the data set that would make it more useful? Would you combine it with?
5. What do you see as the pros and cons of an ABC tool/data set, particularly managing revenues and costs at a course level?
6. Is there anyone else on campus or in your school that you think would find it useful?

Detailed answers to these questions are provided in Appendix D. Below is a summary of what we learned from our stakeholders about the curriculum management process, the need for integrated data, when and how the ABC data would be used, and which stakeholders on campus might find it useful.

### **Instructional and Curriculum Management Process**

At UC Merced, there is a general process that the Schools appear to use for instructional and curriculum management. All of the schools described having a 3-5 year teaching plan. While they have multi-year plans, they mostly work from a comprehensive 1-year plan. The teaching plan specifies which courses in the curriculum will be taught by Ladder Rank and Senate faculty. The remaining courses are taught by non-Senate lecturers (Unit-18 Lecturers) and graduate Teaching Assistants (TAs).

Information on course offerings, enrollments and available seats is supplied by Platinum Analytics (Registrar's Office) and is used to estimate in advance how many courses and seats are needed. Decisions about what courses should be offered are based on expressed need from the Faculty. Graduate courses are decided based on what graduate students are in attendance.

Faculty placement and teaching costs are managed through a separate process directly administered by the Provost's Office. Instructional managers are responsible for managing the "Instructional Budget" which is limited to the placement of Lecturers and TAs in the curriculum plan. The primary application of the ABC data set would be to support planning and decision making on the placement of Lecturers and TAs.

All of the Schools report that they have not had a formal budget or budget process for 2 years. Representation from the Budget Office in the review sessions acknowledged that while there is a budget in place, there is significant confusion on campus given that the process has changed in recent years.

Regardless, two of the schools described projection models they have created that apply general growth rates to previous years' allocation amounts that they use in their planning.

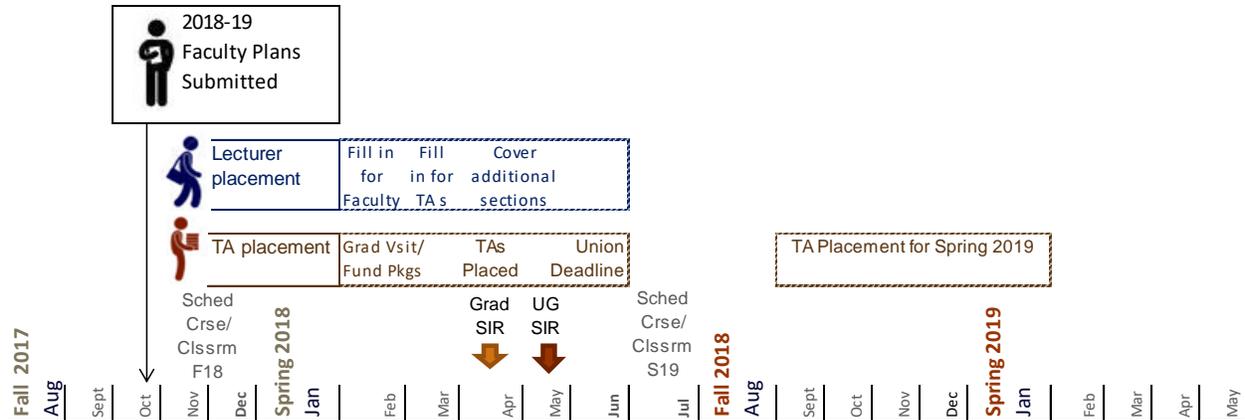
### Availability of Data

The ABC data set was new for 2 of the 3 schools. Currently, the School of Engineering has developed a local data set using Tableau that provides much of the same functionality of the ABC data set. It is used extensively by those managing the Instructional Budget. The local data set in the School of Engineering had many of the same fields as the ABC data set with the exception that teaching appointment FTE figures are used instead of estimated teaching costs. Instructional costs in that school are then estimated based on the FTE information. Both the School of Natural Sciences and the School of Social Sciences, Humanities, and Arts do not have a way to look at instructor information integrated with course detail and estimated teaching costs. When asked, stakeholders listed other types of data that would be useful to add to this data set:

- Instructor of Record
- Teaching Appointment FTE for Lecturers & TAs from the Graduate Lecturer Academic Appointment System (GLAAS)
- Historical Data
- Instructor Name
- For TAs – their Grad Group Affiliation
- Course by Course Offering Program (pilot featured data by instructor's administrative department)
- Course Fee Information
- Fee Remission Information
- Readers – TAs with exception

### Value of Integrated Data to the Planning and Management Process

The ABC data set would be used the most for Lecturer and TA placement during the period after Faculty plans are submitted in the late Fall through January. The Spring is also a time that Schools are learning about future Fall enrollment numbers and they may need to adjust their course offerings to meet unexpected demand. In January a plan is submitted for TAs. The goal is to have funding packages in place for Grad Visitation in February. While the campus strives to finalize TA placements by April, adjustments can be made up until the July 1st deadline (per Union regulations). For Budget System planning related to the Instructional Budget, it should be noted that the majority of planning work and commitments for classrooms, courses, Lecturers and TAs are made in the late fall to early spring for the following fall semester:



The following are examples of how the stakeholders would use the data set today:

- Initiating conversations with faculty and administrators about shifts and trade-offs. They are starting to have conversations today in their schools on shifts and trade-offs related to instructional and curriculum management. Eventually they won't be able to just fund everything that is requested and will need to have conversations about options and priorities. The ABC data would support those conversations.
- Some of the schools are in a position where they will need to decrease levels of Lecturer placement with new Faculty hiring – the ABC data would help with this planning.
- It would be helpful to know where Ladder Rank vs. Non-Ladder Rank instructors are teaching – which part of the curriculum they are covering. The ABC data provides an easy view of this and could support conversations with the Deans on whether goals are being met and how different departments are spreading out their Ladder Rank instructors across the curriculum.
- It would help with planning and requests for the Instructional Budget once that starts to happen more officially.
- While instructional and curriculum management is handled for the departments by the Schools today, the campus may move towards a department planning model and the availability of data at the department level, like the ABC data set, will be important going forward.
- For the school that already developed a similar data set, a centrally sponsored and supported data set would allow them to retire their local data set (save time in maintenance) and would improve confidence in the accuracy of the data.

The team was cautioned that for a roll-out of the ABC data set to be successful we would need to:

- Ensure the data matches with other institutional data
- Provide a central location that makes it easy to access the data
- Be careful of including Faculty Names for all audiences as the focus could devolve to comparisons of work effort or compensation for individuals.

## Relevant Audiences

In addition to the data being useful to the stakeholders who participated in the focus groups, these stakeholders also suggested that people in the following roles on campus might find the data valuable:

- Dean; Associate Dean; Assistant Dean
- Graduate Student/Program Coordinator
- AP Chairs; Undergraduate Chairs
- Financial Managers/MSOs
- Staff who handle Lecturer Appointments
- Academic Personnel
- Enrollment Management
- Instructional Lab Coordinators
- Student Support/Student Advising

## Summary

The ABC data set would be immediately valuable to those responsible for Lecturer and TA placement in the curriculum and generally valuable to those on campus engaged in instructional and curriculum planning. The data would be most useful in the late fall to early spring and the pilot data set would be improved with the addition of FTE/Workload information as well as a few additional fields (depending on availability of data). Stakeholders would like a view that allows them to see all courses offered by a department (not only the instructor's department). Because the ABC data set was created from the existing Faculty Workload data set, it would be relatively inexpensive to expand it to include information for all departments on campus beyond the three pilots.

The process for managing instructional placement and delivery of the curriculum has changed at UC Merced in recent years. In the past, lack of instructor resources sometimes drove the number of classes offered. Currently, the discussion of what courses to offer and how many is driven by the academic need. At an institutional level the instructional cost is managed against the Campus Financial Model which sets the target for faculty hires and available funding for instruction. In the coming year, the campus will engage in discussions to determine what budget model to implement. As the institution matures, stakeholders noted that the decision-making process grows more complex and with new rounds of faculty hiring as well as a budget system implementation on the horizon, having easy access to integrated data, like the ABC data set, will be critical.

Appendix A

The ABC pilot data set features the average teaching cost to deliver courses in the department by instructor rank, course level, and class type. The department represents the home department of the instructor. We used Tableau to create an interactive display of the data. On the far right hand side of the screenshot you can see a set of custom filters that provided users with the ability to narrow the result set.

Tableau Reader - ABCPilotApril28

File Data Worksheet Window Help

Standard

### Instructional Expense by Rank, Level and Type

Course Level	Course Subj	Course Num	Course Title	Class Type	Class Sections	PROF				ASOC P								
						Sum Avg. Co mpenation..	Balance	Enrollment	Maximum Enrollment	Available Capacity	Class Sections	Sum Avg. Co mpenation..	Balance	Enrollment	Maximum Enrollment	Available Capacity		
Lower Division	CHEM	95	Lower Div Undergrad Research	Laboratory Research							1	162	89	1	1	0		
		002H	Honors Gen Chem I	Lecture							1	3,884	6,558	21	24	3		
		010H	Honors Gen Chem II	Lecture							1	7,768	9,300	17	20	3		
Upper Division	BIO	101	Biochemistry I	Lecture	1	13,758	89,654	103	169	75								
		102	Biochemistry II	Lecture	1	13,758	-9,742	4	20	16								
		195	Upper Div Undergrad Research	Seminar-Topical								1	1,232	-228	1	5	4	
	CHEM	111	Biochemistry I	Lecture	1	13,758	-2,714	11	169	160								
		113	Chem Thermo and Kinetics	Lecture	1	15,394	10,961	35	45	10								
		115	Instrumental Analysis	Lecture	1	18,493	6,356	33	45	10								
		120	Inorganic Chemistry	Lecture								1	5,826	22,788	38	60	22	
		122	Biochemistry II	Lecture	1	13,758	-3,718	10	20	10								
		140	Nanoscale Materials Chemistry	Lecture	1	18,493	-12,469	8	20	12								
		153	Physical Chemistry Laboratory	Laboratory Skills/Techniques								2	17,260	-8,224	36	36	1	
		155	Instrumental Lab	Laboratory Skills/Techniques								2	14,787	2,281	34	40	6	
		160	Scientific Computing for Chem	Laboratory Skills/Techniques	1	15,394	-4,852	14	30	16								
		194	Ethics and Communication	Seminar-Topical	1	12,401	-5,122	29	33	4								
		195	Upper Div Undergrad Research	Laboratory Research	2	1,438	-936	2	15	13			2	1,718	39	2	10	9
		198	Upper Div Directed Group Study	Individualized Instruction									2	1,295	713	2	10	8
Graduate	BEST	292	Group Meeting	Lecture							1	616	-365	1	5	4		
		295	Graduate Research	Laboratory Research								2	4,313	-2,556	2	20	18	
	CHEM	200	Adv Organic Synthesis	Lecture								1	13,150	-10,138	4	18	13	
		201	Organic Organometallic Mechani	Lecture								1	13,150	-9,385	5	10	5	
		231	Molecular Spectroscopy	Lecture	1	25,890	-22,878	4	20	15								
		250	Surface Chemistry	Lecture								1	11,090	-5,066	8	24	16	
		260	Intro to Scientific Computing	Lecture	1	15,394	-4,852	14	30	16								
		291	Physics and Chemistry Seminar	Seminar Research/Creative Dev								2	15,859	-3,560	49	60	11	
		295	Graduate Research	Individualized Instruction	9	74,287	-54,458	10	85	75			9	48,533	-28,202	9	90	81
		298	Directed Group Study	Individualized Instruction									2	5,826	-1,308	11	40	29
299	Directed Independent Study	Individualized Instruction									1	324	-73	1	5	4		
OSB	292	OSB Group Meeting	Seminar Research/Creative Dev			2	1,720	-967	3	10	7							
	293	OSB Journal Club	Lecture-Supplem Act (Discuss)			2	1,720	-967	3	10	7							
	295	Graduate Research	Individualized Instruction			3	26,258	-17,724	3	30	27							

Rank

(All)

ASOC P

ASST P

LEC-18

PROF

T-ASST

---

Term Code

(All)

F

S

---

Course Type

(All)

Independent Study

Regular

---

Course Level

(All)

Graduate

Lower Division

Upper Division

---

Instr Dept

(All)

Chemical Sciences

Computer Science &...

Psychology

**Appendix B**

Assumptions used in the development of the data set are included below.

**Notations on Methods & Terminology**

**Average Compensation Expended.** The average compensation for instructors by rank and discipline for those teaching in AY2015-16.

**Workload Assumption.** We assumed 40% instruction for Ladder rank faculty and 100% instruction for Lecturers and Teaching Assistants.

**Distribution of Average Compensation.** The Average Compensation Expended for Ladder rank faculty and lecturers with Senate membership (security of employment or potential security of employment) is distributed by number of course sections taught. Lecturers and teaching assistants are distributed by enrollments. Other titles (e.g., visiting, Deans, Student Affairs staff, emeriti) are excluded.

**Sum Average Compensation Expended.** The sum of the Average Compensation Expended for the instructors teaching the sections of the course. We can think of this as the estimated teaching expense for the course.

**Instructor Affiliation.** Our filters for department such as Computer Sciences & Engineering reflect the courses taught by faculty in that department. For this exercise we were asked to use the Instructor Workload data set so the data is grouped by instructor home department. If they teach a course outside of their home department affiliation it would be included in this data set. One of our questions for our stakeholders is whether they would also like to see this data from a course perspective - i.e. it would reflect this average compensation expense information for all the courses offered by a department.

**Balance.** This column reflects “Revenue – Sum of Average Compensation”. Where “Revenue” is a function of “credit”. If the course/section is zero credit, there is no tuition or revenue. We set the tuition amount at \$251 as used before for tuition minus return to aid and assuming that all enrolled were CA residents. We also used instructor credit hours for the credit hour amount. It is usually credit hours times enrollment but can be distributed based on percent responsible. That is why a lecture lab combination might have all revenue associated with the faculty member teaching the lecture (100% responsible for 75 students in a 4 credit hour course or 1 x 75 x 4 x \$251) and zero revenue with the 10 GTAs teaching labs -- zero credit.

**Example**

Professor A	\$150,000
Professor B	\$110,000
Professor C	\$190,000
<b>Professor' Rank Average</b>	<b>\$150,000</b>

<b>Professor Rank</b>	<b>40%</b>	<b>\$ 60,000</b>
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Professor B	Course 105	Lecture 1	\$30,000
	Course 110	Lecture 2	\$30,000

Course 105	Professor B	Lecture 1	\$30,000
	Lecturer A	Lecture 2	\$15,000
<b>Sum Average Compensation Expended</b>			<b>\$45,000</b>

**Appendix C**

First Name	Last Name	Title	School/Org	Related Roles	Meeting
Marjorie	Zatz	Vice Provost and Dean of Graduate Education	Graduate Studies		5/8/2017
Kathy	Briggs	Manager of Educational Services, Dean's Office	School of Engineering	Curriculum Management	5/8/2017
German	Gavilan	Senior Assistant Dean, Dean's Office	School of Engineering	Manages Instructional Budget	5/8/2017
Shannon	Adamson	Curriculum Manager	School of Natural Sciences	Curriculum Management	5/8/2017
Angie	Salinas	Assistant Dean for Student Support	School of Natural Sciences		N/A
Annette	Garcia	Assistant Dean for Faculty Support	School of Natural Sciences	Manages Instructional Budget	5/8/2017
Megan	Topete	Manager of Instructional Services	School of Social Sciences, Humanities and Arts	Manages Instructional Budget	5/4/2017
Mary	Kleba	Senior Assistant Dean, Dean's Office	School of Social Sciences, Humanities and Arts		5/4/2017
James	Ortez	Assistant Dean	School of Social Sciences, Humanities and Arts		N/A
Laurie	Herbrand	University Registrar	Office of the Registrar		5/25/2017
Elizabeth	Whitt	Vice Provost/Dean for Undergraduate Education	Undergraduate Education		5/25/2017
Jill	Orcutt	Associate Vice Chancellor, Enrollment Management	Vice Chancellor, Student Affairs		5/25/2017
Josh	Reinhold	Associate Registrar	Office of the Registrar	Supports Curriculum Managers	5/25/2017
Laura	Martin	Executive Director	Academic Senate		5/25/2017
Jenna	Allen	Director, Institutional Research & Decision Support	Office of the Vice Chancellor, Planning & Budget		All
Steve	Chatman	Principal Analyst, IRDS	Office of the Vice Chancellor, Planning & Budget		All
Romi	Kauer	Director, Capital and Long Range Planning	Office of the Vice Chancellor, Planning & Budget		All
Jessica	Duffy	Program Manager	Business & Financial Strategic Initiatives Center		All

## Appendix D

### *Stakeholder Feedback Notes*

These are paraphrased notes from the stakeholder review sessions. These notes should not be used for verbatim quotes.

**1. *Can you describe how you deliver the curriculum? In particular, what tools do you currently use that help you make financial decisions and/or optimize resources associated with delivering the curriculum?***

**Computer Sciences (Engineering):** We have created a historical data set/shadow system using Tableau. We have TAs, Lecturers, historical by Class. We use FTE – but don't have estimated salary by rank. We don't care about Faculty teaching, in that we don't need to do planning and budget related work for that. It's not a part of our budget/targets – those are fixed and go through the Provost. There is a part of budget that is operations and a part that is academic/instructional. The instructional is where this (ABC) data would be helpful. We also do budget/planning for Supplies/Materials. We would have used this data set earlier this day for a conversation about adding two new sections for fall. We need to increase by 3 TAs – so this would be a great application for this (ABC) data set. In our data set we create a % for FTE. We also include summer. We have instructor name – we often use that and the historical to see who has taught a course previously when we are trying to place a lecturer today. Kathy does the course scheduling and she gets what she needs from the Registrar's office through Platinum Analytics. It doesn't need to include the instructional side or budget implications. MSOs cover the staff and faculty salaries. We have to do the instructional budget.

We have a 3 year teaching plan per University policy – but we really only have the 1st year figured out and part of the 2nd year.

**Chemical Sciences (Natural Sciences):** We currently deliver a faculty plan a year in advance that specifies who will teach the curriculum. We also use information on enrollment planning/targets to estimate in advance how many courses and seats we will need. Our Curriculum Manager uses data from the Registrar's Office on course offerings, enrollments, available seats, etc. Our internal budget person uses prior year data and actuals to extrapolate what the budget growth would be based on number of lecturers and TAs. For the last two years we have not had a "Budget" per se. We used to provide projections on Instructional Budget needs (Lecturers/TAs) and submit to the Budget Office but that hasn't been happening. We are not required to do it, but we have continued to do it anyway just in case we are asked to rationalize our requests and also because it helps us for planning. Currently, the decision on courses is made based on expressed need from the faculty. So the dollars don't drive the discussion, the academic need is presented and it is funded at this point. The Faculty costs are all managed through a separate process and funding structure that is tightly maintained and goes through the Provost. So this (ABC) data set would really be relevant for those planning & managing Lecturer and TA staffing and curriculum deliverables.

**Psychology (Social Sciences, Humanities & the Arts):** We don't have an instructional budget right now so if we don't know what we are working with, we do know what we are working towards. In the past we did not have enough faculty to teach everything so lecturers were used. We are doing faculty hiring and we have enough faculty now, so we will need to decrease the use of lecturers. We have 5 year teaching plans, they are challenging to use though. We ask for a 1 year concrete teaching plan, which is when the lecturer and ladder faculty split out happens. We don't plan for teaching assistants until closer in the term. In the past we would not have enough grad students or lecturers to mount the secondary sections, but now that is not the case. Now, if we need the courses, we can cover it. The enrollment levels are planned using the Registrar's tool (Platinum Analytics).

*2. What value would this data set add to your current decision-making process, particularly about curriculum planning and instructional FTE? Can you provide some specific examples?*

**Computer Sciences (Engineering):** It would replace our current data set with some improvements. It would add validity to this data view. We would want (this data) to come from the systems of record. We could save a day every 3 months in maintenance effort of our current data set if we could replace it with this one (ABC). Also, it's a matter of credibility - for people to come in the room and not question the data – but instead make decisions based on the data. We do projections based on historical so we can make “Reasonable” requests – even though there isn't a budget right now – we still do these projections to keep ourselves on track and if anyone asked us to provide justification for our requests. (The Budget Office representative in the discussion added that there is a base budget – but it is not communicated well.) Instructional budget is sent to MSOs but it should be sent to us. We also want to tie in the one-time costs for class requests. We also wonder about course fees.

**Chemical Sciences (Natural Sciences):** Currently we do not have course information tied to instructor tied to financials. We can look at course detail. We can look at budget information but it doesn't connect the instructor costs to the types of courses they are teaching. So this data set that includes all of these views would be very helpful. Examples are:

- a. Initiating conversations with faculty and administrators about shifts and trade-offs. Eventually we won't be able to just fund everything that is requested and so shifts and trade-offs will need to be made. This data would support those conversations. Particularly Lecturers vs. TAs and with new Faculty Hiring – Faculty vs. Lecturers.
- b. It would provide a needed view for where Ladder Rank vs. Non-Ladder Rank instructors are teaching. Which part of the curriculum are they covering? Is that meeting our goals? We do it very differently from one department to another and the Dean may want to see those differences.
- c. Would help with planning and requests for Instructional Budget once that starts to happen more officially – and even now when that planning occurs throughout the year – see the calendar.
- d. How many employed Lecturers are doing the job of a TA?

**Psychology (Social Sciences, Humanities & the Arts):** Highly valuable – could be used to determine where we are losing money or making money. For example, is it profitable for Ladder Rank to teach certain courses? What about summer?

It's good to have more information when we have to talk to the faculty about course offerings or denying requests. For example, if there is a new major, (faculty) say they need 20 class sections, but there is no data for the conversation. What is the class utilization now?

Out of the registrar you get courses – use Platinum Analytics tool – but it has nothing to do with the instructor and instructor rank and estimated compensation – that's the value here (ABC data set).

**3. At what time of year or at what point in your process would you use these data?**

**Computer Sciences (Engineering):** Used a calendar to mark milestone events for the academic year.

**Chemical Sciences (Natural Sciences):**

1. Fac plans are submitted in October
2. Lecturers are decided from that point through to January.
3. Submit plan for TAs on January 15.
4. Feb 2nd Fellowships during Grad visitation mid-February they try to have funding packages selected. Then the remainder from mid-February to end of April they try to finalize the TAs and have it settled.
5. July 1st deadline for TAs per the Union
6. They would do work on instructional budget in the spring because the fall is really the Faculty piece.
7. They have gotten good at predicting the needs for courses, they even set aside seats for Transfers and take other actions to plan for space for the coming year.

**Psychology (Social Sciences, Humanities & the Arts):** This would be useful for the 9 months of the Academic year. We use Platinum Analytics – we could look at the course information first and then pair it with this information for instructional planning. We submit spring schedule in June, Aug is next summer and October is when you are submitting for the following Fall.

**4. Are there revisions to the data set that would make it more useful? What would you combine it with?**

**Computer Sciences (Engineering):**

- Course Fees
- Teaching Appointment FTE, Readers – TAs w/ exception
- GLAAS data

**Chemical Sciences (Natural Sciences):** Yes, we would like to see these things added:

- Instructor of Record (disc. about Teaching Fellows)
- Teaching appointment FTE and GLAAS data
- Historical
- Instructor Name
- TA – Grad Group Affiliation
- From Course Perspective
- Course Fee information
- Fee Remission Information

**Psychology (Social Sciences, Humanities & the Arts):** No changes. Looking at IRDS methodology, the 40% of salary for teaching for Ladder Rank seems reasonable based on standards for teaching, research, etc.

*5. What do you see as the pros and cons of an ABC tool/data set, particularly managing revenues and costs at a course level?*

**Computer Sciences (Engineering):** No “Cons”. For “Pros” – in addition to what was already said about producing efficient data and replacing our system with a central one, it would be to make the data more easily accessible in a central portal so that we could get to it any time of day.

**Chemical Sciences (Natural Sciences):** The course by course analysis is a “Pro” for us – it’s difficult with our current data to do this. The only “Con” is that the data needs to match other data on campus or people will get more upset.

**Psychology (Social Sciences, Humanities & the Arts):** A “Con” would be sharing the names of people – who is teaching – it could be political – we wouldn’t want that focus. A “Pro” is that even without a budget this is still useful. Faculty hiring is increasing so lecturers need to decrease – this would be helpful to use now.

*6. Is there anyone else on campus or in your school that you think would find it useful?*

**Computer Sciences (Engineering):**

- Deans
- Assistant Deans
- Those who handle Lecturer Appointments

**Chemical Sciences (Natural Sciences):** Yes, these people on campus might be interested:

- Academic Personnel
- Grad Program Coordinator for TA piece
- Deans
- Enrollment Management – are we driving majors from student demand or faculty clusters – could shifting Ladder Faculty into courses increase interest in a major program?
- Instructional Lab Coordinators

- Student Support/Student Advising
- Instructional Managers

**Psychology (Social Sciences, Humanities & the Arts):**

- Associate Dean
- Assistant Dean
- Graduate Student Coordinator
- Academic Program Chairs make that for their unit (no names)
- Undergraduate Chairs
- Financial Managers/Office Managers
- Curriculum Managers
- General Faculty access

## **IV. Conclusion**

The UC Davis, UC Merced, and UC Riverside pilot studies presented in this report all involved a campus-specific data set that supported comparison of estimated revenues and instructional costs for all courses offered in one academic year for three departments (UC Davis and UC Riverside) or three disciplinary areas each within a different school (UC Merced) on each campus. It also included a compilation of feedback from key campus representatives. These pilot studies built on prior scoping studies by UC Davis and UC Merced and substantial development of a complete ABC model (using Pilbara Group software) and related pilot studies by UC Riverside.

Feedback from a set of decision makers and stakeholders highlighted a common set of issues that academic units must address when determining the curriculum to offer. They must provide courses that advance learning outcomes, prepare students for the next course, meet pre-major or major requirements, meet any accreditation standards, and support timely graduation. The decision-making process includes determining such factors as how frequently courses need to be offered, how large they can be, how they will be taught, what classrooms are available, and who will teach them. Those responsible decide, typically in consultation with the faculty, how best to deploy faculty to teach courses where they have expertise and meet but do not exceed their expected instructional load. Remaining courses that must be offered are handled with additional temporary instructors based on the available budget. Although they plan ahead, they must be flexible and attentive in order to identify and handle unexpected changes in demand or need.

These pilots presented to a sample of stakeholders and key decision makers a course by course comparison of estimated revenues and costs and asked whether this additional information could help better understand and optimize resources related to offering the curriculum. UC Riverside continues to be committed to ABC, but it also continues to adapt its use in ways that make sense for the campus. UC Davis is unlikely to proceed with ABC, because it is in the process of implementing a new web-based curriculum planning tool (Instructional Planning Administration) that includes a budgeting component. The ABC pilot has informed the development of that component. For UC Merced, most of those stakeholders and decision makers who reviewed the current data set expressed interest in its further development, extending it to all those who offer courses, particularly ladder faculty, and all courses, and making it available to everyone in a central location on campus. As the campus improves its data warehouse and reporting to the campus, the lessons learned from this pilot study will be very useful.

All three campuses that participated in the ABC pilot project have benefited from the exercise, as well as from the increased interaction with each other. Participation in the pilot study is likely to lead to an expansion or improvement in the data accessible to academic stakeholders and decision makers. This will help them improve how they deploy, evaluate, and optimize resources related to the curriculum.