University of California, Merced

Institutional Report for Reaffirmation of WSCUC Accreditation

July 25, 2017

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ESSAY 1 – INTRODUCTION (CFRS 1.1, 1.8)

UC Merced opened its doors to undergraduates in the fall of 2005 as the newest University of California campus, the first built in 50 years, and has been in a state of constant growth, change, and maturation ever since; indeed, the campus is still in the midst of rapid evolution. At present, the campus's greatest successes and most formidable challenges are best understood within that context.

Since opening our doors, and even since being granted initial accreditation in July 2011, the campus has experienced dramatic growth. Between fall 2011 and fall 2016, undergraduate enrollment increased 38%, growing from 4,938 to 6,815 students. During that same period, graduate enrollment doubled. As of fall 2016, 521 students were pursuing graduate degrees at UC Merced, 90% at the Ph.D.

Faculty and program growth has been similar. Since fall 2011, the number of Senate faculty[1] has increased by 65%, growing from approximately 130 to nearly 220 as of fall 2016. Over this same period, the number of non-Senate (Unit 18) faculty grew by 20 to nearly 150. At the time of initial accreditation, UC Merced offered 19 undergraduate majors, 21 undergraduate minors, and five graduate programs, including the interim Individual Graduate Program (IIGP) with seven emphases.[2] As of fall 2016, we offer 22 undergraduate majors, 23 undergraduate minors [1], and 12 graduate programs [1],[3] including the IIGP with three emphases.[4] All are offered onsite at our campus. We have no offsite locations, and we have no online degree programs. Currently, we also have no professional degrees, although a Master's of Management is in review. These faculty and programs are spread across the campus's original three schools: the School of Social Sciences, Humanities, and Arts (SSHA), the School of Natural Sciences (SNS), and the School of Engineering (SoE).

However, simple counts cannot begin to tell the whole story. UC Merced is a distinctive institution in a number of respects. Perhaps most importantly, our campus uniquely serves the University of California and the state as a whole. Relative to our sister UC campuses, we enroll the largest proportions of historically under-represented, UC eligible students. As of fall 2016, 71% of our undergraduate students are first generation college students, and over 60% are Pell grant recipients (a proxy for low income status). In addition to these socio-economic factors, the demographic makeup reflects a diverse student population. Over half are Hispanic and 5% are African American. Further, we have an unusually high proportion of students in STEM majors and are research productive relative to non-UC peer institutions [2]. Indeed, as per this 2013 report [2] from our Office of Institutional Research and Decision Support (IRDS), this particular mix of attributes makes "peer" institution a hard concept for UC Merced to define.

As described previously, the composition of faculty and instructional staff at UC Merced has undergone substantial change since the university opened, and indeed since 2011. As of fall 2016, the ratio of students to instructional faculty[5] is 20.3:1, higher in comparison to other campuses in the UC system and more generally. Though we have experienced rapid growth of faculty at UC Merced since 2011, in line with the rapid growth of the student population, there has been a relatively steady ratio of tenured to pre-tenured

[1] This includes faculty in the professor ("ladder rank") and lecturer with security of employment (LP/SOE) series.
[2] The interim Individual Graduate Program, offering master's and Ph.D. degrees with emphases in a set of broad areas, was established in 2003 to incubate the formation of standalone, degree granting graduate programs. Over time, these emphases have given rise to independent degree granting programs, typically more than one per emphasis. The IIGP, which is subject to oversight by the Coordinating Committee on Graduate Affairs (CCGA), the system-level Senate committee with the authority to approve all graduate degrees, will eventually close.
[3] M.A. and Ph.D. programs in Economics and M.S. and Ph.D. programs in Public Health will be implemented in fall 2017. Following this the Social Sciences emphasis of the IIGP will close.
[4] Biological Engineering and Small Scale Technologies (BEST), and Electrical Engineering and Computer Science (EECS). The third emphasis, Social Sciences, will close in fall 2017 following implementation of degree programs in Economics and Public Health.
[5] All faculty, Senate and non-Senate (Unit 18) lecturing faculty.

faculty; in 2016, 45% of ladder rank faculty were pre-tenured.[6] Although we have benefited from the high level of interest and performance of pre-tenured faculty members, there have been consequences for the service workload and burden this places on senior faculty in terms of curriculum development. Bringing on so many new faculty across the three schools, there have been increased resource pressures particularly with regard to space and start up packages. This has made it difficult, especially for fields requiring wet laboratories, to hire senior faculty because there is not enough space/resources for their labs and the students they usually bring with them. All this said, these constraints have been noticed, and there is a solution on the horizon with the space and resource expansion outlined in the 2020 Project [3].

To round out the picture of UC Merced, and especially of its first decade of development, two additional pieces of context are important. First, UC Merced opened its doors just three years ahead of the most serious recession since the great depression. The impacts were obviously substantial and wide-spread, but the resource constraints were especially difficult for our fledgling campus. Both growth and planning were significantly stunted. Second, as compared to all other University of California campuses (and most research universities nationwide), UC Merced is located in a substantially poorer region of the state. This is a region that has been historically underrepresented in higher education and that lacks local opportunity for students to get high tech internships and subsequent employment. Thus, where many universities are endowed with infrastructure and natural points of connection within the community, UC Merced had to start at the ground floor in this respect. In short, UC Merced has accomplished a great deal given the limited resources available to the institution – especially during years of severe recession – through creation and delivery of higher education.

Furthermore, this report connects to and reflects two important processes that took place during our reaffirmation preparation. First, it reinforces the ongoing work that the campus is doing to address the recommendations from our last review. Second, the campus undertook a "visioning" exercise during the spring of 2016, which was open to all campus faculty, staff, and administrators, with the intention of providing a unified strategic planning process. This essay – as well as many current campus planning processes – reflects the priorities developed during that visioning process.[7]

1.1 OUR VISION FOR UC MERCED: CURRENT PRIORITIES AND PLANS/SIGNIFICANT CHANGES TO THE INSTITUTION

The core vision at UC Merced has been to build a UC-caliber research university that serves a historically underserved student population. Accomplishing this mission demands innovation. For most of its first decade, UC Merced acted as a sort of "overflow" for other UC campuses. Students usually opted for UC Merced only when their first or second choice UC campus denied them admission. More recently, however, the campus has begun to establish an identity and a growing reputation; consequently, it is increasingly a top choice destination for students across the state. There are many factors contributing to this rise in popularity among students with choices, not the least being the relative intimacy of the campus and the sense of "family" felt by many students on campus, particularly among first-generation college attendees.

This transition towards a mature campus is evident in many of the changes that have occurred since our initial accreditation. As described previously, our undergraduate and graduate enrollments have grown substantially, and faculty and staff numbers have increased substantially as well. Our academic

[6] This includes only includes faculty in the professor ("ladder rank") series.

[7] Note, however, that significant strategic planning initiatives – strategic academic planning, long range enrollment planning, workforce planning, and capital planning (i.e. the 2020 Project) – had all been underway for months or years prior to the visioning exercise. A major impetus for visioning was to help build coherence and connections across these previously segregated undertakings.

infrastructure has also expanded since initial accreditation. We have added three undergraduate majors, approved nine standalone graduate programs and a total of 19 new graduate degrees,[8] initiated a number of new institutes and centers, and expanded our core research facilities. This rapid growth has also brought external recognition; we are the "youngest" campus ever to receive a "Very High Research Activity" R2 Carnegie classification, which was accomplished after only 10 years. Over the next three to five years, the campus will continue and even accelerate this growth trajectory. Our intention is to grow to a 10,000 student, 350 faculty, exceptional research university. The physical cornerstone of this growth is the 2020 Project [3], which will nearly double the size of the campus and provide the instructional and research space necessary for our academic expansion.

Over the last few years, we have undertaken several integrated initiatives to plan and facilitate our growth. In 2013, the campus embarked on a Strategic Academic Focusing Initiative (SAFI) [4] designed to build the academic stature of the campus by recruiting faculty through an interdisciplinary cluster hire approach. This approach acknowledges the need for strong interdisciplinary teams to attack today's global challenges, and it realizes an efficiency of effort as new hires with common research interests share equipment, space, and other resources. In 2016, we undertook a campus-wide "visioning" [5] effort to establish a clear framework for prioritizing growth and guiding change. In spring 2017, a campus-wide workforce planning initiative [6] was undertaken to align campus staff support, including the hiring of roughly 120 new staff over the next five years, with the institutional priorities outlined in our new campus vision. Our progress in this regard is summarized in a July 2017 communication [7] from the Chancellor. And finally, in spring 2017 we initiated a robust space planning [8] process, a critical step in preparing for the delivery of the 2020 Project and developing an integrated annual workforce, space, and budget planning cycle.

These efforts have been led by UC Merced's executive and academic leadership team [9], both of which have expanded since initial accreditation in concert with the ongoing growth of our campus. In December 2012, the campus established the position of vice chancellor for planning and budget (VCPB) to lead the newly established Division of Planning and Budget. The VCPB is also the campus's chief financial officer. In late 2016, the campus's inaugural VCPB, Daniel Feitelberg, assumed the role of senior advisor to the chancellor, with Veronica Mendez assuming VCPB responsibilities on an interim basis. In 2013, Elizabeth Whitt became the campus's first permanent, full time vice provost and dean of undergraduate education, in 2014, Marjorie Zatz the first, full time vice provost and dean of graduate education, and in 2015, Gregg Camfield the first, full time vice provost for the faculty. [9] Additional leadership changes include the appointment of Ann Kovalchick to the position of associate vice chancellor for Information Technology (IT) and chief information officer (CIO) in 2014, and in 2015, Haipeng Li as the campus' second university librarian, Jill Robbins as the third dean of the School of Social Sciences, Humanities and Arts, and Mark Matsumoto as the third dean of the School of Engineering. On August 1, 2017, Elizabeth Dumont will join the campus as the third dean of the School of Natural Sciences.

1.2 CONTRIBUTION TO PUBLIC GOOD

Making a contribution to the public good is rooted in part in of the mission of the University of California system. As a public university, we are tasked with providing a high quality education to a broad spectrum of students from around the state, and to do so at an affordable price. We take this mission very seriously, and this report articulates how we accomplish that mission. Moreover, our innovation in research is the driver for many parts of the state's and nation's economy, as well as the political, social, and cultural health

[8] Includes the programs in Economics and Public Health to be implemented in fall 2017; they will provide an additional four degrees.
[9] Prior to this, VPF Camfield held the role on an interim basis, beginning in August 2014.

of the community. This could be said of any University of California campus, and in this broad way, we are no different.

As compared to other UC campuses and universities, however, we serve a student population composed of a particularly diverse racial/ethnic and socio-economic composition. As of fall 2016, our undergraduate students represent, in part, the following: 77% are from a minority background; over 60% are Pell Grant recipients; 71% are classified as first-generation college students; and 35% come from homes where English is not the primary language. This unique group of students not only has helped to shape the community and identity we have built at UC Merced, but also has challenged us as a university – in the way we are able to teach and retain students to prepare them for life after UC Merced.

However, we are unique in public mission. We serve a region – the Jan Joaquin Valley, part of the larger Central Valley – that has been previously underserved by higher education, and it has rarely been the beneficiary of the innovation associated with research. In terms of our teaching mission, this means disproportionately educating students from underserved areas, from underserved minority populations, from families without any previous college experience. Simply put, we serve a University of California student population not served to the same magnitude by any of our fellow campuses.

Our faculty have identified unique ways to directly address regional issues by virtue of the congruities among the campus's research interests and regional needs (e.g. Blum Center). In a broader sense, however, we conduct research that draws outside attention, interest, money, investment, and opportunities to a region that is short on all of these fronts, thereby contributing to the advancement of the Valley even where the substantive focus of our research is not on the region itself. As the fastest university ever to attain R2 status, we are already seeing the benefits of bringing the resources of a research university to the region. In other words, while much of our research is not necessarily specific to the Valley, it does contribute to its economic and educational diversification (e.g. Venture Lab).

Finally, one of our overarching contributions is to promote sustainability and reflect that sentiment in our campus environment. The campus's Triple Net Zero Commitment is representative of our ambitions to establish UC Merced as a place to learn, work, and live sustainably. All of our buildings are LEED certified, most LEED gold. Our 2016 Gold rating by the Association for the Advancement of Sustainability in Higher Education's Sustainability Tracking, Assessment & Rating System (ASSHE STARS) represents the breadth of the campus's commitment to sustainability – in academics, engagement, operations, planning, and administration. Sustainability is engaged through the co-curriculum as well, where student leadership is advancing campus awareness and resources consistent with this ethos. We hope that this mentality will transfer and grow as we send our students into the community after graduation.

1.3 ACCREDITATION HISTORY AND RESPONSE TO PREVIOUS ACTION LETTERS

In its July 2011 Action Letter granting UC Merced initial accreditation, the Commission commended the campus' strong *esprit du* corps, our effective relationship with the UC Office of the President in support of campus strategic needs and goals, our extraordinary success establishing outcomes and assessment processes, including the Senate-Administrative Council on Assessment (SACA, now the Periodic Review Oversight Committee, PROC), and our diligent efforts "to balance [our] commitment to becoming a first-rate research institution with [our] commitment to serve students and the region." The Commission also highlighted three areas, and associated subtopics, to be addressed in the period leading up to this current review: (1) Financial, Strategic, and Academic Planning, (2) Assessment of Student Learning, and (3) Student Success. In 2014, the Interim Report Committee concluded we had made "meaningful and significant progress" in these three areas, and we received our Interim Report with no further follow-up. In the

paragraphs that follow, we briefly summarize our continued progress in these areas and identify the section(s) of this report where these topics are addressed comprehensively. We also briefly review our progress on the six recommendations (pp. 30-31), made by the external review team and endorsed by the Commission, and review the results of the 17 substantive change reviews for new graduate degrees approved by WSCUC since July 2011.

Financial, Strategic, and Academic Planning: UC Merced's advances regarding integrated Financial, Strategic, and Academic Planning are signaled most profoundly by the 2020 Project, a $1.3 billion public-private partnership to nearly double the size of the campus footprint and provide the space for 10,000 students, 10% of which will be graduate students, approximately 350 faculty, and associated support staff. As described in essay 7, this project has been informed and complemented by Strategic Academic Focusing Initiative (SAFI) to identify areas of research distinction, a campus visioning process to generate a shared understanding of our campus aspirations and priorities, integrative budget and staff and space planning to support priority-aligned, and fiscally responsible and sustainable decision making going forward. Project 2020 is underway. The first of three sets of buildings will open in fall 2018. In sum, this project responds to the 2011 review team's recommendation to "develop the necessary flexibility and creative approaches to the development of facilities planning and build-out."

Assessment of Student Learning: Under this topic, the Commission identified five areas for attention: (1) extend our assessment efforts to General Education (GE), graduate programs and administrative units; (2) integrate assessment efforts in different programs and at different levels to effect improvement efficiently and effectively; (3) continue to implement external program review, incorporating results of learning outcomes assessment; (4) optimize access to and use of data to inform campus-wide planning and improvement; and (5) identify a cohort of peer institutions and begin to benchmark UCM students' levels of learning against peers. Since 2011, we have made significant progress in all of these areas.[10]
As described in essays 3, 4, and 6, we have undertaken a comprehensive, periodic assessment of our General Education program, which has led to a wholesale redesign of the program. Annual assessment and periodic program review have been implemented by our graduate programs, leading to useful insights about student learning and actions to advance program goals. Assessment has also been extended to administrative units, and our undergraduate and graduate programs are undergoing program review, the program self-studies and the external review team reports of which routinely address student outcomes assessment.

In essay 6, we describe the advances Information Technology (IT) and Institutional Research and Decision Support (IRDS) have made toward an enterprise data reporting strategy to inform campus-wide planning and decision-making. This work has been informed by a consultant, and accompanied by a necessary reorganization and reorientation of IT led by our Chief Information Officer (CIO) who was hired in 2014. Also in essay 6, we describe steps taken to integrate assessment efforts to effect improvement efficiently and sustainably. Principally, we have continued to develop the practice at the level of academic programs and administrative units, where assessment is most likely to have substantial impact on student learning, success, and the achievement of the campus's research mission. This local focus is particularly important for a growing university that is continually adding new faculty and staff. We have, however, taken significant steps to better coordinate and integrate assessment activities across the university. For example,

[10]The exception is recommendation five. When written in 2011, this recommendation anticipated this requirement being promulgated in the new Handbook, following the redesign the reaffirmation process that was underway at the time. However, this expectation did not appear in the 2013 Handbook. As a result, we did not take this exact step. Rather, academic programs have been encouraged to benchmark the criteria and standards of performance, used to define student achievement of each program's learning outcomes, to resources developed by relevant scholarly professional societies, disciplined-based education research, and/or the AAC&U VALUE rubrics. As descried in essays 3 and 4, some have done this.

we have united under the Periodic Review Oversight Committee (PROC) campus-wide oversight for academic and administrative annual assessment and periodic program review, and established a committee to coordinate survey activity across the campus, build capacity for productive surveying, and promote use of existing survey data. In these and other ways, we are working to forge strong unit-level practice that is connected to larger institutional priorities and resources.

Student Success: Essay 5 provides an analysis of undergraduate and graduate student success at UC Merced, including our efforts at the undergraduate level to better align retention strategies with resources and to develop predictive models to guide the admissions process. As noted by the Commission in 2011, our undergraduates succeed at rates that exceed what the demographics predict. Data from the subsequent five years illustrate that this continues to be true; since 2011 our first-year retention rate [10] has essentially held steady despite significant enrollment growth [11] and a 16 percentage-point increase in the proportion of first-year students who are first generation (71% as fall 2016) [12]. Data available since initial accreditation[8] also illustrate modest improvements, with some variation, in four- and six-year graduation rates [10] for the most recent three to four cohorts for which we have data. At the graduate level, our Ph.D. students are completing degrees at rates [13] comparable to UC and national averages. Disaggregated analyses of undergraduate and graduate student success data are considered in essay 5 together with programs that facilitate our students' success, including significant new developments in graduate programming and mentoring support.

Team Report: Since 2011, UC Merced has also addressed the six major and two minor recommendations made by the external review team. As recognized by the Interim Report Committee, and further described in essay 7, we have taken significant steps to ensure the campus's financial viability (recommendation #1) and to meet the campus' space needs (#4). As described previously and in essays 3, 4, and 6, we have continued to advance assessment- and data-informed decision making as a campus practice (recommendation #2), and, as per team recommendation #3, the Senate Office is currently completing a periodic review. With regard to team recommendation #4, we have initiated an effort to recognize faculty contributions to program assessment, and assessment more generally, as part of teaching in the tenure and promotion for Senate faculty. We have also taken steps to integrate non-Senate faculty into academic planning processes (recommendation #6), most notably by formally adding lecturing faculty representatives to Undergraduate Council (UGC) and the General Education Subcommittee of UGC, consistent with the significant role of non-Senate faculty in undergraduate education. Finally, as described in essay 6, academic program review teams are now composed of faculty entirely external to UC Merced; in keeping with faculty preference, we are taking steps to make results of program assessments available to campus constituents (minor recommendations #1 and 2).

Substantive Change Reviews: As noted above, since July 2011, 17 new graduate degrees have been established following successful substantive change reviews. Recommendations [14] associated with reviews in 2013 and the early months of 2014 encouraged UC Merced more clearly to differentiate master's and Ph.D. program learning outcomes, to strengthen program rubrics, and to clarify program curriculum maps. Faculty responded to these recommendations by more carefully drafting curriculum maps, by clarifying the standards of performance communicated in rubrics, and by ensuring PLOs were differentiated by degree level and/or that differences in degree expectations were communicated in program rubrics, recognizing that performance expectations are best understood by considering PLOs and rubrics together. Recommendations have also included encouragement to ensure that students receive sufficient feedback regarding intended learning outcomes in the early stages of their programs. In response, we have tried to clarify that, in keeping with the apprenticeship model of education in these types of graduate degrees, students receive ongoing feedback through formal and informal interactions with their faculty advisors, and

program faculty more generally. Examples include coursework, seminars, annual reviews, and collaboration with faculty on research projects.

1.4 PREPARATION FOR THE REVIEW

In preparing for this review, the general strategy was to have work of the review run through a representative steering committee, small enough to work efficiently but broad enough to reach all campus constituencies at key points.

To accomplish this, in January 2015, the provost constituted the WSCUC Steering Committee for Reaffirmation of Accreditation. Chaired by a faculty member, the committee is comprised of a mix of faculty, student, and administrative representatives. This includes faculty representatives from Undergraduate and Graduate Councils, the two Senate committees with authority for academic programming, each of the three schools, and non-Senate faculty. Students are represented by individuals from the Graduate Student Association (GSA) and the Associated Students of the University of California, Merced (ASUCM). Administrative members include the vice provost and deans of undergraduate and graduate education, the vice chancellors of student affairs and planning and budget, the deputy university librarian, and the ALO and director of the Office of Periodic Review, Assessment, and Accreditation Support. The provost's charge to the Steering Committee is available here [15].

At every stage of the multi-year process, the Steering Committee led the initial deliberation and drafting of documents. It then broadly engaged the campus community gathering feedback that drove revision and reconsideration. For example, as described in essay 2, in early spring 2015 the Steering Committee completed an initial draft of the Review Under the WSCUC Standards (RUWS), disseminated the draft to a broadly representative list of campus bodies and individuals, and revised the document in response to feedback, finalizing an initial draft in fall 2015. In spring 2016, the Steering Committee Chair undertook a campus-wide tour, alerting the campus to the reaffirmation timeline. Key themes for improvement that had been identified in the RUWS occupied a central point of discussion with each group.

To draft the institutional report, the Steering Committee selected leads for each essay, and those leads invited other members of the Steering Committee, as well as non-committee members, to join their essay working groups. With input from their working groups, during spring 2016 semester leads drafted outlines for their essays. These outlines were finalized following a daylong Steering Committee retreat in June 2016.

Essay drafting took place over fall semester 2016. In January 2017, essay drafts were compiled into a draft institutional report. During February and March, this initial report draft was reviewed by administrative and faculty leadership (specifically, the Chancellor's Extended Cabinet and the Divisional Council of the Faculty Senate, respectively). Feedback from those groups informed the development of a second draft, which the entire campus community was invited to review and to comment on in April 2017.

1.5 ORGANIZATION OF THE REPORT

Following the 2013 Handbook of Accreditation Revised, the report is organized into eight essays. (UC Merced chose not to undertake the optional essay addressing institutional-specific themes.) Each provides UC Merced's interpretation of the descriptions included in the Handbook. Each begins with a brief introduction to orient the reader in the content and organization of the essay, and each ends with a conclusion, which includes any significant next steps related to the essay topic. Overarching conclusions and future directions are provided in essay 8: Reflections and Plans for Improvement.

ESSAY 2 – COMPLIANCE WITH THE STANDARDS: REVIEW UNDER THE WSCUC STANDARDS AND COMPLIANCE WITH FEDERAL REQUIREMENTS; INVENTORY OF EDUCATIONAL EFFECTIVENESS INDICATORS

In this essay, we describe the process by which we completed our Review under the WSCUC Standards (RUWS) and the Inventory of Educational Effectiveness Indicators (IEEI), including what we learned and how we are responding with respect to the Core Commitments and Standards of Accreditation. We also briefly describe how we are meeting federal requirements as revealed by the Federal Checklists. In sum, evidence indicates that we have in place a system for assessing, tracking, and improving the learning of our students and, further, that UC Merced meets the Standards of Accreditation.

2.1 REVIEW UNDER THE WSCUC STANDARDS

UC Merced completed its Review under the WSCUC Standards in two steps. The first step was designed to initiate awareness of – and, as necessary, action in response to – accreditation expectations as described by the Standards and Criteria for Review. The second step finalized our self-analysis, with the goal of capturing advances the campus had made in the two years following the initial review.

In spring 2015, the WSCUC Steering Committee engaged the campus in a formative self-analysis of the RUWS to identify and communicate campus strengths, areas to strengthen, and areas in need of immediate redress. For this effort, the Steering Committee developed a draft of the RUWS and sought feedback from a broad range [16] of campus constituents. Based on this work, by fall 2015, the Steering Committee had generated a document [17] identifying major themes for improvement. These themes were then discussed with campus leadership as important areas for action. They were also communicated to campus stakeholders as part of the "road show" [18] the chair of the WSCUC Steering Committee undertook during the spring and fall semesters of 2016 to update the campus on our reaffirmation of accreditation activities. The second, summative step of the review took place in spring 2017 when the RUWS were revisited and finalized, based on the campus's condition as described in this Institutional Report.

The initial RUWS [19], completed in spring 2015, revealed that, without exception, the campus practiced the expectations outlined in the Standards and Criteria for Review. Notably for a new, rapidly growing and changing campus, nearly half of our self-ratings [20] (47%) identified a strength with a score of "1 – we do this well; this is an area of strength for us." Again, unsurprising for a campus with high expectations and in rapid transition, another 45% of our self-ratings pointed to areas for continued development with ratings of "2 – aspects need our attention." In only four instances (6% of the total number of ratings), did we conclude "3 – this item needs significant development."[11] As noted in the "Comments" column of the RUWS [19], these scores reflected in-progress revisions to the General Education program (CFR 2.2a); the desire to better integrate co-curricular and academic programs at the undergraduate level and to improve the regularity with which assessment of co-curricular programs is undertaken, particularly at the graduate level (CFR 2.11); the desire to better understand the experiences of transfer students, a small (~5%) but nonetheless important minority of students at UC Merced, to ensure we are achieving our own aspirations with respect to the expectations outlined by CFR 2.14; and the need to upgrade our Information Technology (IT) infrastructure and increase staff expertise to better support the teaching, research, and service mission (CFR 3.5). Following review of the campus' state [21] in spring 2017, the percentage of

[11] It is important to note that this 6% is not 6% of the CFR, but rather 6% of the total number of scores; for a good number of the CFR, multiple scores were assigned to capture variation in the extent of development as relates to various constituencies, for instance, undergraduate versus graduate.

scores [20] of "1 – We do this well" increased to 58%. This 11 percentage-point increase, over spring 2015, was driven primarily by advances in support for graduate education [20; p.2, Standard 2] over the last two years. The percentage of "3" self-scores also declined by 3 percentage points to 3%. These revisions reflected the approval of a new GE program in spring 2017 and the associated transition to the implementation phase (CFR 2.2a), the system-level attention to transfer students and our related campus-level efforts (CFR 2.14), and improvements to available IT resources to support teaching and research (CFR 3.5).

As per instructions for the RUWS, the campus also considered how important it was to address, with an eye toward improvement, campus practices with respect to each CFR. Given the rapidly changing campus context, we also decided it would be useful to distinguish two types of high priority items: those that were "urgent" and those that require "ongoing attention in light of 2020-related growth." Again, consistent with the ambitions and needs of a new and growing campus, nearly a quarter of our ratings (23%) [20] identified areas for urgent attention. These ratings were relatively overrepresented in Standard 2 [20; p. 2] and, as a whole, reflected our desire to continue to prioritize in-progress efforts, including defining the baccalaureate degree, redesigning General Education, improving undergraduate advising, undertaking analyses to help improve four-year graduation rates, and strengthening services specific to graduate students. Significantly, half of our ratings (51%) [20] identified high priority areas for ongoing attention throughout the period of growth associated with 2020. In doing so, these scores reflect our awareness of the need to maintain and, as possible, advance existing strengths through a sustained period of rapid growth in student enrollment, in faculty and staff numbers, and in the doubling of the campus's physical plant. Following the review of the campus' status [21] in spring 2017, the percentage of "urgent" ratings [20] declined considerably, from 23% to 4%, while the number of items identified as requiring "ongoing attention in light of 2020-related growth" increased accordingly to 73% of our total scores. Again, these transitions occurred nearly exclusively in Standard 2 [20; p. 2]. They reflect advancements in GE, undergraduate advising, and graduate education, as well as the commensurate need to advance progress made over the last two years.

As it reflected upon the RUWS as a whole in 2015, the Steering Committee identified three strengths [22; p. 3][12] that would serve the campus well as it continued to mature as a UC-quality research university serving historically underserved populations: (1) the faculty's commitment to student learning outcomes; (2) commitment to UC Merced by faculty, staff, and leadership; and (3) commitment to quality assurance and improvement. The Steering Committee also identified six major themes [17] to emerge from a holistic consideration of the RUWS: (1) defining the meaning of the undergraduate degree and, separately, General Education reform; (2) developing inclusive institutional planning; (3) strengthening data/evidence informed planning and decision making; (4) developing a campus plan for data reporting; (5) utilizing strategic, goal-aligned communication; and (6) ensuring IT resources are sufficient to support, and are deployed in support of, the campus's teaching and research mission. As noted previously and as outlined in our synthesis [17], institutional actions were in progress at the time to address every theme.

For each theme, the Steering Committee also identified gaps that could impact the campus's ability to address fully the needs articulated in the themes. From this, two overarching gaps emerged [22; p. 4]: (1) the need for a campus-level strategic academic plan to enable institutionally-aligned and integrated planning and decision-making, including resource allocation; and (2) a more routine, strategic planning *process* for the campus. As described in the final 2017 version [21] of the RUWS and in the essays of this report, progress has been made regarding the six themes and the two overarching gaps. Specifically, in broad brush strokes, theme 1 is addressed essays 3 and 4, theme 2 in essay 7, theme 3 in essay 6, theme 4

[12] In contrast to the title of the document, this review did take place in fall 2015. Not fall 2016.

and in essays 6 and 7, theme 5 in essays 5 and 6, and theme 6 in essay 6.

2.2 INVENTORY OF EDUCATIONAL EFFECTIVENESS INDICATORS

UC Merced reviewed and finalized the Inventory of Educational Effectiveness Indicators (IEEI) [23] over the course of the 2016-17 academic year. During summer 2016, the school-based assessment specialists and the graduate assessment coordinator proposed revisions to the IEEI that was submitted to WSCUC as part of UC Merced's Mid-cycle Review in 2014. For each undergraduate and graduate program, these revisions captured new assessment practices as documented in annual assessment reports or other relevant materials, for instance, syllabi and program review documents. Practices that programs reported as planning to adopt in the future were also included in the IEEI with "P" for "pending." During January 2017, these drafts were reviewed by each program's Faculty Assessment Organizer (FAO) and documents were finalized. In June 2017, the IEEI for General Education (GE) was revised to summarize the assessment plan outlined in the proposal for the new GE program approved in May 2017, again using the "P" for "pending" schema.

In the aggregate [24], the IEEI data reveal that 100% of programs, undergraduate and graduate, have program learning outcomes (PLOs) that are published in the catalog, on program websites, and in some and/or all the course syllabi for a given program. Overarching, institution-level outcomes also exist for the master's and Ph.D. degrees and for undergraduate education in the form of Hallmarks of Baccalaureate Degrees at UC Merced. All are provided in the catalog.

In summarizing up to seven years of annual assessment reports for some programs, the IEEI shows [24] that programs have used, or are planning to use, diverse forms of direct evidence of student learning, with 95% of majors and 100% of graduate programs having identified more than one type of evidence ranging from course embedded assignments and exams to theses, dissertations and other capstone projects. Similarly, 100% of undergraduate and graduate programs have used, or are planning to use, more than one source of indirect evidence. Examples include data from institutional surveys, group interviews of current program students, curriculum maps, and program-specific surveys.

Across all programs [24], undergraduate and graduate, assessment results are interpreted at minimum by a subset of faculty either in the process of formulating a report or in response to the program's annual assessment report. Program assessment results are also considered by the deans, particularly accompanied by resource requests, and by the Committee for the Review of PLO Reports, a subcommittee of the Periodic Review Oversight Committee that provides program-specific feedback on assessment practices.

Finally, the IEEI results show [24] that all programs, undergraduate and graduate,[13] have at some point responded to program findings with plans to revise program curriculum as well as program assessment strategies. Programs also are variously, but generally at high rates, using the results to stimulate faculty discussions, reconsider pedagogy, re-examine the program's intended learning outcomes, and support resource requests for the purposes of improving student learning achievement. Evidence of student learning achievement is also included, or will be included in, the program review-related self-studies of all programs as required by policy. Also, all programs are scheduled for, or have recently undergone, program review as scheduled by the Periodic Review Oversight Committee at seven year intervals.
Overall, the IEEI demonstrates that UC Merced has both routine and periodic assessment systems in place for all individual programs, undergraduate and graduate. A more detailed description of UC Merced's quality assurance systems, including data summarizing the fraction programs engaging in assessment

[13] Those graduate programs that have initiated annual assessment.

annually and an evaluation of the quality of program assessment practices and of our institutional system of assessment, is provided in essay 6.

2.3 FEDERAL CHECKLISTS

UC Merced initiated completion of the four Federal Checklists in June 2016, with the intention of identifying, and as necessary rectifying, any discrepancies between Federal UC requirements and UC Merced practices. As required by the review, draft versions of the four checklists – credit hour, marketing and recruitment, student complaints, and transfer credit – have been submitted with this report for verification by the WSCUC review team of UC Merced's compliance with these expectations.

2.4 CONCLUSIONS

UC Merced has used the *Review under the WSCUC Standards* to engage the campus in a thorough and broadly inclusive review of our compliance with the WSCUC Standards of Accreditation and the associated Criteria for Review. Through the process, we found that we comply with the WSCUC Standards to a substantial extent. We also identified areas in need of attention and communicated these to campus leadership and the campus community more broadly. In most cases, the review highlighted and placed needs, already familiar to many campus constituents, in an accreditation-related framework to provide a vehicle for prioritizing their redress and/or to emphasize the connection between existing or anticipated campus planning initiatives.

As a result and as demonstrated in essays within this report, progress has been made. For example, in spring 2016, the campus came together to develop a vision and associated change alignment map [5] to guide change and resource allocation decisions to support our goals. The priorities and values elaborated in this pictorially rendered vision have subsequently informed the spring 2017 workforce planning initiative [6], space planning [8], and ultimately the campus's plans for an annual planning process that integrates workforce, space, and budget planning [8]. This is a significant move toward meeting our integrative planning needs, a gap identified through the holistic consideration of the results of our RUWS. Collectively, these efforts – together with 2020, the strategic academic planning initiative, the campus budget model, and the instructional planning model being developed by the Committee on Academic Planning and Resource Allocation (CAPRA) – also represent important steps toward more routine strategic planning processes for the campus and signify the maturation of our campus following an intensive startup period where the priority was to get the doors open and grow. Looking forward, our campus is keenly aware of the need to continue to develop integrative planning activities and data reporting, and it has in place plans to strengthen these areas. These topics are also addressed in more detail in essays 7 and 6, respectively.

The IEEI confirmed what the previous accreditation team noted; we have been very successful in establishing outcomes assessment. In the six years plus since initial accreditation, we have sustained and expanded these efforts, extending them to graduate programs and continuing to implement program review. In sum, our results confirm that every degree program has in place a quality assurance system for assessing, tracking, and improving the learning of its students. As described in essay 6, we have plans to continue to strengthen the efficacy of these efforts as a means for strengthening student achievement and success.

ESSAY 3 – DEGREE PROGRAMS: MEANING, QUALITY, AND INTEGRITY OF DEGREES (CFRS 1.2, 2.2 – 2.4, 2.6, 2.7, 4.3)

This essay addresses the meaning, quality and integrity of baccalaureate, master's and doctoral degrees at UC Merced and the institutional processes that ensure their high quality and rigor. For each degree level, we define the meaning of the degree in terms of intended outcomes and its alignment with the mission, values, and vision of UC Merced as a research university. We then describe how the curriculum and co-curriculum are structured to support student development of intended outcomes at graduation. The second half of the essay addresses the institutional processes through which we ensure the quality and integrity of these degrees. Throughout, we demonstrate how institutional resources are systematically aligned with our priorities to facilitate a high quality educational experience for all of our students and ensure that students meet the standards of performance the faculty set for them. The essay concludes with a description of next steps, in light of the continued growth of our campus, and the work done to define the meaning of the degree.

3.1 THE MEANING OF DEGREES AT UC MERCED

At UC Merced, the meaning of all degrees – bachelors, master's, and Ph.D. – is grounded in our identity as a research university serving a diverse student population in the San Joaquin Valley. At all three levels, the expectations we have for our students originate in the values and dispositions of scholars committed to the endeavor of the research university. In this spirit, we strive to prepare graduates with the skills and attitudes of a researcher, recognizing that these abilities are the 21st century skills desired by employers, that, when paired with significant intra and interpersonal skills, will enable our graduates to live rich, productive, and rewarding, professional, civic, and personal lives.[14]

3.1.1 The Meaning of the Baccalaureate Degree

As a growing research university in the San Joaquin Valley, we are at a cultural, socioeconomic, environmental, geographic, and historical crossroads for addressing problems of local, regional, and global significance. Within this context, we educate an undergraduate student population unique in the UC system – predominantly first-generation students from underrepresented minority and low-income backgrounds. In doing so, UC Merced also fulfills the mission of the University of California to increase access to higher education for eligible California residents, including those from the most underserved areas of the state.

These characteristics provide essential context for our campus's recently crafted definition of the baccalaureate degree: the Hallmarks of Baccalaureate Degrees at UC Merced (the Hallmarks) [25]. Drafted in 2014 by a broadly representative group of faculty and staff to provide a framework for revising our GE program, the "Hallmarks" are a set of five dimensions of preparation – intellectual development, cultural awareness, community engagement, and inter and intrapersonal abilities – each with a subset of skills, knowledge, orientations, and dispositions that a baccalaureate degree recipient from UC Merced should embody. The framing as "Hallmarks" is intentional; we expect our graduates to bear the unique imprint of having attended UC Merced. Approved in 2015, the Hallmarks were integrated into the catalog in 2016-17.

As a set of overarching outcomes, the Hallmarks provide a framework [26] for articulating the contributions the three major components of the undergraduate experience – the major, General Education (GE), and the

[14] National Research Council. (2012). *Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century.* Committee on Defining Deeper Learning and 21st Century Skills, James W. Pellegrino and Margaret L. Hilton, Editors. Board on Testing and Assessment and Board on Science Education, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press.

co-curriculum – make to undergraduate education. The contributions of each component are further defined through program learning outcomes. Although the campus is in the early stages of formally examining the contribution each component makes to student development of the Hallmarks, a preliminary alignment of the PLOs for majors, and the newly approved GE program, to the Hallmarks suggests that the majors contribute [27] primarily to the development of Hallmarks 1, 3, and 4 while GE supports [28] all five. We anticipate that the co-curriculum, particularly the part supported by the Division of Student Affairs, will facilitate student development primarily, though not exclusively, of Hallmarks 2 through 5. The division is currently in the process of reconsidering its existing learning outcomes [29] in light of the Hallmarks.

Student feedback [30] gathered in spring 2014, as part of the campus's review of the draft Hallmarks, suggests that the Hallmarks are already a part of the student experience. Across all three schools, at least 50% of the seniors participating in focus groups indicated that, as a result of their experiences at UC Merced, Hallmarks 1, 2, 4 and 5 described them "to a great extent." When "to some extent" is included in the total, over 90% felt they embodied the Hallmark. The exception was Hallmark 3, Community Engagement and Citizenship, for which only 46% and 85% of participants, respectively, felt the Hallmark described them. Participants also validated the Hallmarks. Over 75% agreed "to a great extent" that the Hallmarks should be true of a future UC Merced graduate. Looking forward, we expect an increasing proportion of our seniors to report bearing the imprint of the Hallmarks following the implementation of the new GE program and commensurate efforts to explicitly connect students' curricular and co-curricular experiences to these expectations for student achievement.

3.1.2 The Meaning of Master's and Doctoral Degrees

At the graduate level, the meaning of the degree is tightly aligned with the research mission of the University of California system and UC Merced as a campus. In 2016, UC Merced received a Carnegie ranking of research high (R2), and the campus aims for classification as research very high (R1) within 10 years of the R2 ranking. Accordingly, preparing graduate students to engage successfully in original research is a high priority.

This emphasis on research is reflected in the descriptions of our graduate degrees that appear in the general catalog, on institutional and program-specific websites, in recruitment materials, in the Policies and Procedures articulating degree requirements for each graduate program, and in the campus-wide policy manual known as the Graduate Advisors Handbook. For the campus as a whole, the meanings of our graduate degrees are described by the overarching learning outcomes [31] for the master's and Ph.D. degrees published in the catalog. In their purposes and preparation, our master's and Ph.D. degrees generally reflect standards established by the Council of Graduate Schools in their publications *Master's Education: A Guide for Faculty and Administrators: A Policy Statement* (2005) and *The Doctor of Philosophy Degree: A Policy Statement* (2005).

Interdisciplinary research and training are integral to UC Merced's mission to address pressing problems confronting our society. Most, if not all, graduate programs at UC Merced emphasize interdisciplinary research, and our commitment to these kinds of educational opportunities is reflected interdisciplinarity's status as a foundational pillar of graduate study at UC Merced. This commitment to interdisciplinary graduate preparation takes slightly different flavors across programs. Some stress the importance of integrating expertise across multiple fields (Environmental Systems). Others define themselves more in terms of multidisciplinary (Applied Math), cross-disciplinary (Electrical Engineering and Computer Science), transdisciplinary (Public Health), or interdisciplinary (Interdisciplinary Humanities) research and scholarship.

Graduate student opportunities to engage the intellectual traditions of more than one field of research are facilitated by the structure of our graduate groups; most include core and affiliated faculty trained in multiple disciplines, allowing students the opportunity to develop interdisciplinary supervisory committees. They are also facilitated by an emerging portfolio [32] of grant-funded, graduate training programs and centers focused explicitly on interdisciplinary research. Thus, preparation in interdisciplinary research is woven through graduate education at UC Merced, reflecting the campus's mission to foster academic activity that transcends traditional disciplines.

3.1.3 The Meaning of the Degree in Individual Academic Programs

At the level of individual undergraduate and graduate academic programs, the meaning of the degree is further defined by each program's learning outcomes (PLOs). As per essay 2, 100% of academic programs, including all majors, standalone minors, GE, master's, and Ph.D. programs, have publicly available PLOs that "describe the intellectual abilities, knowledge and values that students should demonstrably possess at graduation, as a result of a cohesive and coherent degree program."[15]

PLOs are made available and communicated to students through program websites, the general catalog, and course syllabi. Prospective undergraduate students also encounter PLOs on the Admissions website. At the graduate level, PLOs also appear in the Policies and Procedures [33] for each program, the document outlining the program's degree requirements, as per Graduate Council guidelines [34]. As of spring 2017, most programs have updated their Policies and Procedures to include PLOs or are in the process of doing so.

Each program's PLOs have been developed, or revised following program review, by the program's faculty in consideration of broader disciplinary or interdisciplinary norms but shaped to reflect the formulation of that degree at UC Merced. For example, UC Merced's undergraduate Anthropology program prepares students to address research topics through the lenses of the different subfields of Anthropology, while our undergraduate Physics program prepares its graduates with a rich set of research and professional skills through a program intentionally designed to "emphasize the increasingly interdisciplinary role played by physicists in the scientific and technological community." In the School of Engineering, the PLOs for ABET accredited programs, and those pursuing ABET accreditation (Bioengineering), reflect those established by ABET, the accreditor for Engineering programs.

Graduate level PLOs similarly reflect expectations of the field of study in ways that align with campus's philosophy and mission, regardless of their particular formulation. For example, the Environmental System Ph.D. program prepares graduates to be "knowledgeable, skillful and self-directed in the observation and analysis of environmental systems in terms of their capacity to independently identify important research questions, develop experimental plans, analyze data, and formulate conclusions in the context of a doctoral dissertation." Regardless of their particular formulation, the PLOs for all programs reflect our research university context. For undergraduate programs, this is reflected in the support [27] PLOs provide for student development of Hallmark 1: Depth and breadth in academic and intellectual preparation consistent with the values of a research university. At the graduate level, it is visible in the strong alignment [35] of the PLOs to the overarching outcomes for the master's and Ph.D. degrees.

[15] See guidelines for developing undergraduate and graduate program and course learning outcomes.

Within each degree program, the meaning of the degree is further defined through the rubrics used to assess student achievement of the PLOs, which convey via criteria and standards of performance, the skills and knowledge embodied in the PLO and the level of proficiency expected of a graduate.[16] In developing criteria and standards, many undergraduate programs have looked to published resources, for example, the AAC&U VALUE rubrics, materials provided by professional societies, or the literature. Others are locally developed. In some programs, rubrics may be specific to an assignment and course learning outcomes (CLOs), but aligned to a given PLO. With support from school-based assessment specialists, programs are increasingly developing programmatic, rather than assignment specific rubrics, for the purposes of program assessment. For example, more than 85% of rubrics used in 2013-14, 2014-15, 2015-16 were programmatic. Programs are also increasingly using descriptive rubrics, which outline standards of performance for each criterion, with approximately 95% of rubrics taking this form in reports submitted in AY 2015-16, an increase of about 20 percentage points over the preceding year.

At the graduate level, program rubrics [36] exist for each degree-related milestone, such as qualifying exams, dissertation research proposals, and dissertations or theses. These are developed as part of the proposals for new programs in keeping with Graduate Council policy [37] and WSCUC substantive change expectations. Thus, all standalone graduate programs have, and are implementing, program-level rubrics, articulating criteria and standards for performance that address all PLOs. For some programs, these rubrics are informed by the broadly shared expectations for performance documented in Barbara Lovitts' *Making the Implicit Explicit: Creating Performance Expectations for the Dissertation* (2007) and her and Ellen Wert's series of publications for graduate students, *Developing Quality Dissertations* (2009). Increasingly, programs are also making program rubrics available to students consistent with evidence [38] from program assessment that doing so leads to improved student achievement. Mechanical Engineering, for example, provides its program-level rubrics on its website.

Our undergraduate and graduate students develop PLOs, and thus realize the meaning of the degree, through intentionally organized curriculum. To plan a coherent, scaffolded curriculum, all new proposals for programs, undergraduate and graduate, must include a curriculum map [39] that illustrates the intended contribution of each course and, for graduate programs, required educational experiences to the student's development of the PLOs. Thus, curriculum maps exist for all programs. Curriculum maps are reviewed and updated, as necessary, with each program review. Programs are also encouraged to examine, as part of annual assessment, the alignment of courses with the PLO being assessed that year, to confirm sufficient and appropriately scaffolded attention to student development of a PLO in the degree program. The contributions a course makes to students' development of intended PLOs are communicated to students in course syllabi and, for many undergraduate programs in SSHA, curriculum maps are available online. As of spring 2017, CLOs and PLOs appeared respectively in 94% and 45% of the undergraduate and 86% and 30% of the graduate course syllabi available for review.[17] We are also working to increase availability of curriculum maps to students and faculty alike.

Curricular organization and support for student achievement of intended program outcomes is strengthened through revisions resulting from program assessment activities, both annual assessment and periodic program review. Many examples exist. History, for instance, has re-sequenced courses, modified assignments, and adopted common citation conventions across the curriculum to strengthen student performance on the integrative capstone assignment that addresses all PLOs. When designing the English major, faculty flipped the curriculum (and convention) on its head, focusing introductory courses on the

[16] Example rubrics are available in PLO reports from the schools of Engineering [66], Natural Sciences [67], and SSHA [68].
[17] During spring 2017, syllabi were available for 73% of the undergraduate (n=273) and 39% of the graduate courses (n=66) offered. Graduate courses include all independent studies, journal clubs, etc.

fundamental skills of literary criticism and shifting survey courses to the upper division, so that students would practice the skills of criticism throughout the curriculum and in the context of specific genres in their upper-division years. When evidence showed that students were not achieving faculty goals for written mathematical communication, the Applied Math faculty integrated writing assignments throughout the curriculum, and student writing improved. Similarly, graduate programs have instituted improvements to the graduate curriculum, as described in essay 4.

General Education (GE) is perhaps the paramount example of how program assessment, in the form of program review, strengthens curriculum and, further, leads to a curriculum designed to cultivate the meaning of the degree at UC Merced. Following findings from our own self-study and recommendations [40] from the external review team, GE at UC Merced has been reconceived as an institutional program with an explicit mission [41] to engage students with the values, practices, and contributions of a research university as a framework for integrative learning. In contrast to the nearly retired GE program, which consists largely of school-specific breadth requirements, the newly approved GE program [42] consists of a single, flexible set of academic and co-curricular requirements for all students, regardless of school, that systematically supports [43] development of a Hallmark-aligned set of five program learning outcomes [41].[18] It also addresses the five WSCUC Core Competencies (see essay 4). The new curriculum was approved by the campus in June 2017; implementation is planned for first-year and transfer students matriculating in fall 2018. The program assessment plan describes how the program's success in meeting intended outcomes will be examined and strengthened as it is implemented over its first four years, and thereafter.

In sum, each program's PLOs and underlying programmatic design – as articulated through program rubrics, courses-level outcomes, and curriculum maps – bridge the broadly understood meaning of a given degree and its specific meaning at UC Merced. Inherent in this structure is our commitment to providing our diverse student population, a majority from a range of underserved populations, with a high quality education that reflects their time at this particular research university. This commitment is explicitly communicated to undergraduate students by the Hallmarks. For graduate students, it is reflected in diversity as a foundational pillar for graduate education. For all students, it underpins our efforts to make learning outcomes public and to weave them into the student's experience, because we know students learn more and demonstrate that learning, when expectations are clear, particularly true for the first generation students that comprise a substantial majority of our undergraduates.

3.1.4 The Meaning of the Degree and General Education

In June 2017, UC Merced's campus approved a new program [42] of General Education, following four years of work that began with a comprehensive program review [40] of the existing curriculum. To develop the new GE program, faculty and staff members, led by the General Education Subcommittee (GESC) of Undergraduate Council, used the Hallmarks to develop a mission and PLOs [41] for General Education at UC Merced. The result was a mission that makes explicit our desire for UC Merced students to engage in the values, practices, and contributions of our research university. The GE PLOs operationalize that engagement, particularly through the first PLO, "Life at the Research University: Asking Questions," which states, "UC Merced graduates take an inquiry-oriented approach to the world that reflects engagement with the mission and values of our research university." These GE PLOs informed decisions about the four-year arc of the new GE curriculum as well as curricular and co-curricular academic experiences for all UC Merced undergraduates.

[18] Until implementation of the new GE program in fall 2018 the current PLOs for GE are the Eight Guiding Principles for General Education.

The program [42] will be implemented with the first-year and transfer students matriculating in fall 2018. In the first year, students will participate in a small, faculty-led "Spark" seminar, the purpose of which is to use a contemporary question or problem to engage students with research questions, introduce them to life at a research university, and facilitate academic success at the lower division. Attention to reasoning and communication is initiated here in written communication, quantitative reasoning, and language requirements. Upper division GE requirements extend and integrate knowledge, understanding, and skills of research, reasoning, communication, cultural and global awareness and citizenship through an interdisciplinary team-taught "Crossroads" course, focused on communication and inquiry across disciplines, to be taken in the third year. In the fourth year, each student will engage in a culminating experience that integrates work in the major with the goals and experiences of GE. Finally, multiple approaches to knowledge undergird a variety of curricular and co-curricular experiences focused on reasoning, cultural awareness, citizenship, ethics, sustainability, diversity and identity, and leadership (e.g., undergraduate research, study abroad, service learning, and UC in DC). This map [43] illustrates the curriculum's support for student development of the GE PLOs. Although yet to be implemented, the program's curriculum offers the promise of making transparent to students, over four years, the nature of research and of the research university, while developing the associated knowledge and skills.

3.2 THE MEANING OF THE DEGREE AND THE CO-CURRICULUM

3.2.1 Undergraduate Co-curriculum

At UC Merced, the co-curriculum plays a vital role in supporting student development of intended outcomes. As at many universities, the co-curriculum is delivered by units across campus, including those within the Division of Student Affairs, the Office of Undergraduate Education, the schools, and the Library. These units provide support and experiences, including opportunities for leadership and civic engagement, through which students develop cultural awareness and sensitivity, inter and intrapersonal skills, and essential intellectual skills.

For example, over the past several years, staff in the Division of Student Affairs have been engaged in intentional and systematic efforts to assess student achievement of the division-wide student learning outcomes [29] that are cultivated through divisional programming. These efforts reflect the division's commitment to the campus's former institutional level outcomes, the Eight Guiding Principles of General Education, to which the division's outcomes directly align. As documented in the division's "Assessment Briefs" and presentations at the campus's annual Assessment as Research Symposium, the division has examined student growth in oral communication skills [44], written communication [45], leadership [46], and teamwork [47]. In spring 2017, the division began the process of aligning its outcomes to Hallmarks as a first step in ensuring its programs continue to directly support student achievement of the campus's educational priorities.

The Library, through its Research and Learning services unit, offers an array of instructional initiatives to develop student research and information literacy skills. These include in-person classroom instruction, custom research guides for courses ("LibGuides"), library tutorials, and workshops. Students may also request individualized research support online or in person. The library has also partnered with the Merritt Writing Program to pilot a Writing Center staffed by trained peer tutors with faculty support. Aims include assisting students with research, evidence, and the drafting process in support of assignment, course, program, and degree outcomes. Over the last several years, the Library's instructional staff have been assessing [48] the efficacy of their instructional activities and have been using the results to strengthen

curriculum and student learning. Of particular note is the Library's Assessment in Action [49] project which examined the impact of an embedded information literacy curriculum in collaboration with the MWP. This curriculum, Teaching and Information Literacy (TRAIL), focuses on increasing first-year students' information literacy competencies especially in the areas of source selection and use of evidence in arguments. As a result, more TRAIL students were able to demonstrate these information literacy competencies, at higher levels, than their non-TRAIL peers. Full project findings are published in the journal of *College & Research Libraries*. This publication was also recently included in the American Library Association's Library Instruction Round Table's Top 20 Library Instruction Articles for 2016.

The schools, the Office of Student Life (student clubs), and research centers on campus sponsor diverse opportunities for undergraduates to enrich their education by participating in the wider academic, research, and creative communities. These include departmental seminar series, center-sponsored conferences and symposia, and special events. Some programs such as the School of Engineering's Pathways to Progress and Service Learning programs integrate curricular and co-curricular learning.

3.2.2 Graduate Co-curriculum

Beyond the credit-bearing graduate curriculum, graduate students have diverse opportunities to further strengthen and broaden the skills and knowledge described in the graduate program and institutional outcomes. For example, students may conduct research alongside faculty through paid research appointments as Graduate Student Researchers and, increasingly, through fellowships and other opportunities provided by training grants awarded by the National Science Foundation and NASA (see also 3.1.2). Graduate students may also gain professional development in teaching through assignment as a Teaching Assistant,[19] working under the direct supervision of faculty.

The Graduate Division also offers co-curricular opportunities that directly support student achievement of intended program and institutional outcomes. Programs that are particularly tightly woven with PLOs include Dissertation Boot Camp, GradSLAM!, and a new innovation at UC Merced, the Graduate Division's Competitive Edge Summer Bridge program for incoming doctoral students who qualify as underrepresented minorities or first generation students. In addition, the Graduate Division offers programming that addresses the professional skills PLOs of many programs. The Preparing Future Faculty and Future Professional seminar series, and the Certificate in Undergraduate Learning Outcomes Assessment: Pedagogy and Program Planning,[20] provide student preparation for careers in academia and in industry, government, and the nonprofit sectors.

3.3 ENSURING THE QUALITY AND INTEGRITY OF UNDERGRADUATE AND GRADUATE DEGREES

At UC Merced, four processes promote the quality and integrity of undergraduate and graduate degrees: (1) the processes by which new programs are established; (2) the processes by which new courses and revisions to existing courses, and significant revisions to program curriculum, are approved; (3) annual assessment of program learning outcomes; and (4) periodic program review. Each process is governed by campus and often UC-system policy. All reflect the authority, delegated by the UC Board of Regents to the faculty for "authorizing and supervising all courses and curricula" (see Bylaw 40.1). As described below, each of our quality assurance processes engages the faculty and administration in ensuring that curricula are appropriately designed and resourced to support intended student outcomes and that students are meeting standards of performance established by faculty. Taken together, these processes also enable

[19] In many programs, at least one semester of teaching is required.
[20] Offered in collaboration with the CETL, OPRAAS and the Merritt Writing Program.

continuous improvement based on the results of inquiry, evidence, and evaluation.

3.3.1 Approving New Degree Programs

Quality and integrity of degrees begin with the processes by which new degrees are considered and approved. At UC Merced, administrative policy [50] outlines the review process for proposing new undergraduate and graduate programs, while Senate policies specific to establishing new degree programs provide the required elements of the proposal, and thus, the standards for approval. Given UC Merced's recent development as a campus, we have extensive practice with this process. Since the campus opened, we have implemented 22[21] undergraduate majors and have approved 14 graduate programs offering master's and doctoral degrees.[22]

All proposals for new programs undergo a rigorous process of review. At the undergraduate level, proposals are developed according to the requirements outlined in policy [51] established by Undergraduate Council (UGC), the Senate committee with approval authority for undergraduate curriculum, and are reviewed at school and institutional levels by faculty committees and administrative leadership. In keeping with policy, proposals include proposed PLOs, curriculum maps, and a multi-year assessment plan, thus establishing the framework for regular examination of student learning achievement. Resource requirements are also outlined, and new commitments must be approved by the school dean. Subsequent reviews by the curriculum committee of the school proposing the program, and ultimately UGC, address the academic merit of the proposal and ensure the program's design will facilitate student achievement of PLOs as well as timely degree completion for native first-year and transfer students.

The resource implications of the program are evaluated by the Academic Senate Committee for Academic Planning and Resource Allocation (CAPRA). In making its recommendation for approval, UGC considers the input from all of these committees as well as from administrative leadership and any affected academic units across the campus. Invariably, this process leads to revisions that strengthen the proposal prior to final consideration and approval by the provost and chancellor.

The review of the proposal [52] for a Global Arts Studies Program[23] (GASP) illustrates this process. At each stage, questions were asked, for example, regarding faculty resources sufficient to offer the program as designed, evidence of student demand for the major, and plans to ensure native students could complete the degree in four years. In addition, GASP PLOs as well as plans to assess the PLOs were given careful study to ensure GASP students' achievement of intended outcomes was measured and that assessment data would be useful for program improvement. An iterative process of review and response took place between Senate entities, primarily UGC, and the GASP faculty, ultimately leading to an effective proposal that received Senate approval.

New graduate programs are under system-level authority and require approval by the campus and system-wide senate and administration. Proposals for new programs are formulated according the requirements outlined in the Handbook [53] of the Coordinating Committee on Graduate Affairs (CCGA), the system-level Senate committee with approval authority for graduate degrees, and policy [37] of the campus's Graduate Council (GC), which oversees all graduate curriculum at the campus level. As per CCGA's guidelines [54], programs prepare a detailed proposal, which undergoes extensive faculty and administrative review, similar

[21] A 23rd, the Critical Race and Ethnic Studies major was approved in spring 2017 for implementation in fall 2017.
[22] This includes the Public Health and Economics programs that are being implemented effective fall 2017, and the Interim Individual Graduate Program with two remaining emphases: Biological Engineering & Small Scale Technologies and Electrical Engineering and Computer Science.
[23] Implemented in fall 2016.

to the process for undergraduate programs, prior to GC, Senate and campus endorsement. Proposals for each degree must include PLOs, a curriculum map, a multi-year assessment plan, and rubrics specific to critical milestones in the degree (e.g. qualifying exam, dissertation, and dissertation defense). Beyond providing descriptions of the program's admissions, degree requirements and curriculum, proposals address normative time to degree, student demand, post-graduate placement prospects, faculty qualifications, and resource needs. Once approved at the campus level, proposals are then subject to CCGA's review process, which includes reviews by faculty, selected for their expertise, both within and external to the UC, before endorsement and final presidential approval. Until WSCUC's 2017 policy change, all new proposals for graduate degrees also underwent WSCUC substantive change review. The recently approved proposal [55] for a program of Public Health and associated review correspondence [56] illustrate the comprehensive nature of the review process.

By way of this process, 13 graduate programs [1][24] offering 25 degrees have been approved over the last 10 years. All began as emphases within the Interim Individual Graduate Program (IIGP), which was established in 2003 by CCGA to incubate development of new degree programs at UC Merced. Once the two remaining emphases[25] advance to standalone status, anticipated in AY 2017-18, the IIGP will close.

3.3.2 Course Approval Processes

As with new degree programs, changes in program course requirements, modifications of course content and/or offerings, and removal of courses from curricula also have implications for quality and integrity of degrees. The careful scrutiny given to proposed majors must be carried forward as programs change. As such, both UGC and GC have specific, detailed policies [57] governing the review and approval of courses. Among expectations, both UGC and GC policies require new and revised course proposals to include course learning and program learning outcomes, as well as a brief description of the relationship between the two to make clear the course's contribution to the program's curriculum. Proposals must also adhere to the campus's credit hour policy [58], and provide sufficient detail so as to confirm that the course workload, and associated time on task, comport with policy requirements. Changes to program curriculum are also vetted as part of the catalog review process. Prior to review and approval by UGC or GC, all proposals for new courses are approved by the faculty of the proposing program, and they are reviewed by school assessment specialists to ensure learning outcomes are present, the dean to ensure resources are available, and the Registrar to ensure adherence with appropriate policy.

Similarly rigorous processes are in place to ensure Senate faculty oversight of other types of curricular revisions. GC, for instance, must review and approve all revisions to graduate Policies and Procedures, the document that outlines degree requirements. UGC similarly reviews all revisions to program curriculum including changes to prerequisites and degree requirements and revisions to PLOs. Through this careful oversight of incremental changes to program curriculum and requirements, the faculty promote the integrity of the degree.

3.3.3 Annual Assessment of Learning Outcomes

The third process that supports quality and integrity in academic programs is the regular assessment of program learning outcomes. Annually, each undergraduate major, standalone minor, and graduate program is expected to assess student achievement of at least one PLO, and summarize the results and

[24] This does not include the IIGP.
[25] Biological Engineering & Small Scale Technologies and Electrical Engineering and Computer Science.

related actions to improve student learning in an annual "PLO Report." Assessment is typically initiated the year after a program is approved. Through this process, faculty members examine aggregate evidence of student learning and consider its implications for curricular design, pedagogy, and student support. Faculty members also generate information on student achievement and learning needs essential to an effective program review process.

Annual assessment is overseen by the Periodic Review and Oversight Committee (PROC) with support from the Office of Periodic Review, Assessment and Accreditation Support (OPRAAS). PROC, a joint Senate-Administrative Committee co-chaired by the provost and Vice Chair of the Academic Senate, is charged [59] with campus-wide advisory and oversight responsibilities for academic and administrative assessment both annual and periodic.[26] As described in essay 6, annual assessment itself is subject to continuous improvement so that PROC can ensure the process is structured and resourced to achieve its purpose of facilitating regular program planning in support of student learning and success. Inherent in this systematic approach is the understanding that, through assessment, we can ensure the quality and integrity of each degree by shaping curricula that support student achievement of faculty-established expectations. Essay 4 describes further what annual assessment has revealed about student learning and, thus, the quality of our degrees as reflected in learning outcomes.

3.3.4 Program Review

Periodic program review is the final, faculty-driven element in the assessment of the quality, meaning, and integrity of UC Merced's degree programs. At UC Merced, each undergraduate major, standalone minor, graduate program, and the General Education program are subject to program review on a seven-year cycle[27] following a schedule [60] maintained by the PROC. For graduate programs that originated as emphases within the IIGP, the first program review has been the review for standalone status as per GC policy [61]. All new programs are scheduled for their first review upon approval and implementation. The program review process is overseen by PROC, following undergraduate [62] and graduate [61] specific policies established by the Academic Senate and with support from the program review manager and PROC analyst in OPRAAS.

As outlined in policy, the overarching goal of academic program review is to engage faculty and administration in collaborative, comprehensive academic planning rooted in program goals for student learning and success, informed by external disciplinary expertise, and aligned to institutional priorities. Toward this end, each program's review is comprised of (1) a self-study, drafted by the program's faculty, which includes, among elements, a holistic consideration of the results of the program's annual student learning outcomes assessments and of program-level student success data, including retention and graduation rates provided by Institutional Research and Decision Support; (2) a site visit and report by an external review team, with each external review team including two to three disciplinary experts from other universities, one of whom is expected to have expertise in student learning outcomes assessment;[28] and (3) an action plan for the program, including associated resources, to respond to the findings of the review, developed collaboratively by the program and school dean with guidance from PROC. PROC's oversight promotes the integrity of the process, including timely completion and alignment with institutional priorities via instructions to programs initiating review, written charges to the external review

[26] Essay 6 also provides an overview of our intuitional approach to assessment and quality assurance.
[27] The transition to a January start date for program review necessitated revisions to the review timeline for some programs. Specifically, their second review may begin in the 8th year since the initial review.
[28] Undergraduate only

teams, participation in site visits,[29] and guidance to programs and school deans for the development of the action plan. PROC also approves and prioritizes the slate of external reviewers, ensuring consistency in campus-wide expectations for reviewers' qualifications. Program reviews are generally organized to take place over a two year period, starting in January and concluding in the fall semester 18 months later. Reviews can be accelerated as programs desire. Program reviews from three majors [63], a standalone minor [64], GE [40] , Environmental Systems [65], the only graduate program to have undergone program review thus far, are provided as examples of the rigor and integrity of this process.

External review reports inform program improvement and enhance the quality of the degree by bringing together the program's self-study, data from the site visit, and expertise from the external reviewers to detail program strengths and challenges. Recent analysis of the 15 external reviews of UC Merced's undergraduate majors conducted so far have revealed the most frequent focus of recommendations was delivery of the curriculum: to offer courses more frequently, to adjust class sizes, to ensure that faculty numbers are adequate to deliver and supervise the curriculum, and to preserve research opportunities as student numbers increase. There were also recommendations about curriculum structure: to diversify course options, to add discussion sections, to improve alignment with PLOs, and to provide more hands-on learning experiences for students. Review teams have also encouraged increased adoption of active learning pedagogies. Examples of how programs have responded are provided in essay 6.

As mentioned previously, only one graduate program, Environmental Systems (ES), has undergone program review[30] thus far at the graduate level. All others are scheduled. A description of the outcomes of the review is provided in essay 6 as well. In general, the graduate process is consistent with effective practices for review of graduate programs identified by the Council of Graduate Schools in its 2011 publication, *Assessment and Review of Graduate Programs.* This includes the policy's focus on the program's contributions to the discipline and institutional goals, the efficacy of graduate preparation, and its efforts to assess and use the results to improve student outcomes.

Overall, our program review process yields self-studies, team reports, and action plans that aim to strengthen student learning and success through actions that address program and school support for curriculum, instruction and other aspects of the student experience. Our program review process is also the focus of continuous improvement. Our efforts to further strengthen this foundational academic planning activity are described in essay 6.

3.4 CONCLUSIONS

As detailed in this essay, UC Merced has thoughtfully and intentionally described the meanings of its undergraduate and graduate degrees, examined the support of the curriculum and co-curriculum for their development, and summarized the processes through which quality and integrity are promoted. The meanings of our degrees originate directly in our mission as a research university, with the Hallmarks taking this further, explicitly tying our intentions for our baccalaureate recipients to the unique context of the San Joaquin Valley and our commitment to serving historically underserved populations. By articulating the desired attributes of our students, each definition of a degree provides a framework for examining the contributions our academic and co-curricular programs make to our students' intellectual, personal, and professional development.

[29] As per policy, each team is accompanied by a faculty member from PROC (the PROC liaison) to provide institutional context, and ensure process is followed. The liaison is not a member of the review team.
[30] Following the first review for standalone status, which is considered program review per Graduate Council policy.

At the undergraduate level, the Hallmarks are new to the campus, so this is a work-in-progress. Next steps include raising student, faculty, and staff awareness of their presence, purpose, and function by integrating them into the life of the campus – including, for example, embedding them in admissions' activities and new student orientation. We will also systematically need to integrate them into new program approval and periodic program review processes. Faculty members and staff then will have opportunity to consider program contributions to these shared goals and to align curriculum and co-curriculum purposely with the Hallmarks. Student Affairs' efforts to align its divisional outcomes to the Hallmarks are an important first step.

Significantly, the implementation of the new GE program in fall 2018 will provide our first opportunity to develop a cohort of students admitted under the Hallmarks. As this first cohort of students graduates, we will also want to begin to determine the success of our efforts to make transparent to our students the nature of the research university. As per the 2014 retreat that gave rise to the Hallmarks, the desire is for our graduates to recognize the distinctive nature of a research university and the particular opportunities it affords them. Making visible the campus's commitment to inquiry and research as a fundamental goal, and inviting students to join and contribute to this community of scholars, is of value to all students – perhaps particularly to our first-generation students who may identify paths to careers in academia or other scholarly endeavors that were previously invisible. It will be important to measure our success in this regard, and the questions about the Hallmarks put to small groups of graduating seniors in 2014 provide a starting point, and their responses, perhaps, provide a benchmark.

At the graduate level, we will want to continue the good work that has been accomplished establishing graduate programs and co-curricular programming that directly supports students' development of the intended outcomes of our degrees. As we grow to 10,000 students, including 1,000 graduate students, and add faculty and staff over the coming years, it will be essential to introduce them to our priorities as represented in the meanings of the degrees and the processes by which their quality and integrity are ensured. The need for systematically introducing our new faculty and staff to our robust quality assurance processes is further addressed in essay 6.

ESSAY 4 – EDUCATIONAL QUALITY: STUDENT LEARNING, CORE COMPETENCIES, AND STANDARDS OF PERFORMANCE AT GRADUATION (CFR 2.2, 2.4, 2.6, 2.7, 4.3)

This essay expands upon the discussion of meaning, quality, and integrity of the degree in the prior essay to examine student learning achievement at both the undergraduate and graduate levels, and the role of annual assessment and periodic program review in advancing student learning. At the undergraduate level, we review evidence of student achievement in the majors and with respect to the five WSCUC Core Competencies – written communication, oral communication, critical thinking, quantitative reasoning, and information literacy. At the graduate level, we consider support for individual student learning and how those efforts generate data for assessing student learning at a programmatic level. We also review the evidence of student learning achievement generated by graduate programs at this early stage in their assessment efforts. For all degree levels, we describe the ways in which faculty members respond to assessment results when evidence suggests that students are not meeting expected standards of performance. The essay concludes with a discussion of what we have learned about student learning achievement and what we must attend to as both our undergraduate and graduate student enrollments continue to grow substantially between now and 2020.

4.1 UNDERGRADUATE EDUCATION

4.1.1. Student Learning in the Majors

Faculty intentions for student learning in each of UC Merced's 22 majors are outlined by each program's learning outcomes and, in turn, the learning outcomes specific to each course. As described in essay 3, PLOs are established in proposals for new majors, as is the alignment of the WSCUC Core Competencies and program curriculum to support development of intended outcomes. Proposals for new programs also include a multi-year plan for assessing each PLO and associated Core Competencies, typically at the rate of one per year.[31] Annual assessment results and methods are comprehensively considered during the once every seven-year program review process, and a multi-year assessment plan is expected as part of the program's action plan responding to the outcomes of the review.

The overarching goal of annual program assessment has been to facilitate continuous advances in student learning achievement and, in turn, to enhance faculty goals for excellence in undergraduate education (assessment.ucmerced.edu). In keeping with our intentions that assessment impacts student achievement, our focus has been on cultivating locally owned, program-specific assessment practices so that student learning results reflect the curriculum faculty are implementing; connections between program-level results and course-level curriculum and instructional activities are direct; and revisions to curriculum and instruction easily implemented. This emphasis on locally owned, program-specific assessment efforts is reflected in the diversity of approaches to assessment exhibited across programs; the forms of evidence used (direct and indirect) and the rubrics, articulating criteria and standards of performance, are specific to the program and in turn the program's educational priorities as articulated in the PLOs. While resources external to the program often inform program efforts,[32] the criteria and standards of performance elaborated in rubrics reflect the professional judgement of UC Merced faculty. Program-specific approaches to assessment, including the evidence of student learning examined, associated rubrics elaborating criteria and standards, and faculty conclusions about student achievement and actions proposed in response (including the action of making no change), are detailed in each annual PLO report. Examples of which are

[31] Established minimum expectation at UC Merced since the first annual reports of program learning outcomes were submitted in January 2010.
[32] For example, the AAC&U VALUE rubrics, materials from professional societies, rubrics from the disciplinary literature, and sometimes rubrics used by other programs at UC Merced.

provided from the schools of Engineering [66], Natural Sciences [67], and SSHA [68].

In AY 2014-15, UC Merced began publishing on the campus's assessment website a summary of undergraduate student learning results for each academic year. Following a PROC-approved template, the site provides student and faculty conclusions about student learning in undergraduate majors and minors, actions faculty have identified to improve student learning, and the budget implications for proposed improvements to student learning. Data describing student perceptions of their learning are drawn from PLO-specific questions on the annual Graduating Senior Survey and from skills-based questions on the University of California Undergraduate Experience Survey (UCUES; offered in alternate years). Faculty conclusions about student learning achievement come directly from annual PLO reports and, thus, reflect faculty assessment of actual student work in combination with programmatically determined forms of indirect evidence. An institutional-level perspective on faculty satisfaction with student learning is generated annually by calculating the percentage of programs that are variously "pleased" to "displeased" with student achievement, after aligning program-specific conclusions about student learning to "pleased" Likert scale.[33] In keeping with the UC Merced Principles of Assessment [69], particularly principle 4, program conclusions about student learning are aggregated across all undergraduate programs to ensure that each program is free to candidly evaluate the evidence of student achievement and conclude, as warranted, that student learning needs to be improved.

Taken as a whole, the most recent three years of data – AY 2013-14 [70], 2014-15 [71], and 2015-16 [72][34] – indicate that both students and faculty members generally consider students to be proficient in the skills and knowledge outlined by the program learning outcomes for the major. On average over the last three years, 92% of seniors taking the Graduating Senior Survey reported being highly or moderately proficient at the time of graduation with the skills and knowledge described by the program learning outcomes for their major or standalone minor. Similarly, an average of 92% of seniors taking UCUES in 2014 and 2016 rated their "understanding of a specific field of study" as excellent, very good, or good. Over this same period, on average, 83% of programs submitting annual PLO reports concluded they were pleased[35] with student learning, while relatively few reported being displeased[36] (8%, three-year average) or unable to draw conclusions (9%, three-year average) due to, for example, small samples sizes or other concerns that render the results unreliable. As summarized in the January 2016 Report of the Committee for the Review of PLO Reports [73] to PROC, program assessment efforts focused on a range of PLOs, including those addressing fundamental disciplinary knowledge, discipline-based inquiry, contemporary issues and/or the discipline's role in society, written communication, oral communication, problem solving, teamwork, ethics and professional responsibility, and oral communication.

In drawing these conclusions about student learning, the vast majority of programs assessed student performance by reviewing program-specific assignments using programmatic rubrics articulating PLO-aligned criteria and standards of performance. Across programs, diverse forms of student work were considered, including final papers, senior theses, oral presentations, final exam questions, homework assignments, diagnostic examinations, group projects, capstone design projects, and course-level portfolios. As reported in essay 3, for all three years, 94% of programs used rubrics to assess student work, and of these rubrics, 85% were programmatic, meaning they were specific to the PLO assessed, rather than to the assignment. In 2015-16, 95% of rubrics used in program assessment were descriptive, an increase of nearly 20 percentage points over the preceding two years, when 61% and 74% of program rubrics were

[33] The "pleased" scale was developed from language used by programs in their PLO reports, and includes the categories very pleased, pleased, somewhat pleased, somewhat displeased, displeased, and very displeased.
[34] The summary for PLO reports filed in 2016-17 was not complete at the time this report was drafted.
[35] Includes ratings of very pleased, pleased or somewhat pleased.
[36] Includes ratings of displeased, displeased, or very displeased.

descriptive, respectively.

While most programs are generally satisfied with student performance, nearly all also conclude there is room for improvement. Annually, about three-quarters of programs (76%; three-year average) identify actions to strengthen student learning. This includes programs that are pleased, as well as those that are displeased, with student work. Consistent with the result that a majority of faculty members (83%) are generally pleased with student achievement, program actions to improve student learning most often target a subset of the skills encompassed by a given PLO. These performance criteria then become the focus of pedagogical or curricular attention. For example, in 2013-14, the faculty of the Earth Systems Science major [74] recommended increased curricular emphasis on problem formulation, hypothesis testing, and data and statistical analysis after results showed that – while a majority of students (70-80%) demonstrated medium or high overall proficiency with respect to critical thinking, quantitative and numerical analyses, and hypothesis-driven methods of scientific inquiry (PLO #3) [37] – students were weaker in areas related to hypothesis formulation and quantitative hypothesis testing as compared to areas like methods and use of background information. Similarly, in AY 2013-14, the faculty of the Environmental Engineering major [75] concluded that, while students were meeting program standards on six ABET PLOs, students would benefit from an earlier introduction in the curriculum to project management skills and an increased focus on design exploration and research breadth in the capstone course. Likewise, in 2015-16, the History program reported [76] that curricular revisions made in response to prior years' assessments had led to marked improvements in student preparation for the capstone course and, in turn, improved student writing. At the same time, the faculty noted that students' abilities to think historiographically and interpretatively would benefit from further attention, and proposed revisions to program courses as well as teaching assistant preparation for doing so.

More generally, over the last few years, several areas for improvement have emerged as common to more than one program.[38] These include skills in quantitative data analysis and data presentation, the ability to discuss real world applications of core disciplinary findings and theories, development of research questions or hypotheses, development of conclusions that are well supported by facts, concepts, or data, the ability to identify/cite appropriate scholarly sources, and aspects of academic writing. In response, programs have identified strategies for strengthening student performance that include increasing the frequency with which students practice intellectual skills throughout the curriculum, communicating learning expectations more clearly to students (e.g. by sharing rubrics), improving laboratory experiments, increasing coordination between instructors both within and outside of the program, strengthening the alignment of course-level curriculum across the program in support of intended program outcomes, sharing exemplary writing samples with students, and encouraging best instructional practices among teaching assistants.

4.1.2 Student Achievement of the WSCUC Core Competencies

UC Merced is in the first cohort of institutions required, for all five of the WSCUC Core Competencies (rather than a subset), to (1) describe how the undergraduate curriculum addresses each of the core competencies, (2) explain its learning outcomes in relation to the core competencies, and (3) demonstrate, through evidence of student performance, the extent to which those outcomes are achieved at or near the time of graduation.[39] Following an agreement [77] with WSCUC, UC Merced is expected to have assessed

[37] The PLO was assessed through independent evaluation of written assignments from two upper division courses. A total of 17 written assignments were ranked (low, medium, high) in three or four categories using a standard rubric by two independent evaluators.
[38] See p. 7 of the January 2016 *Report of the Committee for the Review of PLO Reports* [73].

[39] *2013 Handbook of Accreditation Revised*

four of the five Core Competencies by the time of its Offsite Review in fall 2017,[40] and all five by the time of its Accreditation Visit in spring of 2018.

To meet this expectation, in early February 2014, the Academic Senate approved a proposal [78] by campus administrative leaders to assess the competencies as part of the annual PLO assessment already conducted by each major. As described in the proposal, both the majors and GE were evaluated as possible loci for this assessment effort. Assessment through the majors, however, was ultimately endorsed, in part, because major-based program assessment was already well-established, making it a practical choice. In contrast, plans for assessing the GE program[41] awaited the outcomes of the program's periodic program review, which was beginning that spring (2014). Evidence also indicated that the core competencies were already being addressed by majors to some extent, offering the potential to broaden and formalize the effort ([78]; Table 1). Finally, assessing the core competencies in the majors aligned well with the set of principles [78; p. 4] developed to guide the campus's approach to addressing the core competencies.

Following the Senate's approval of the proposal in spring 2014, all undergraduate majors at UC Merced were asked to align all five WSCUC Competencies to their PLOs and, building on this alignment, develop and submit a multi-year plan to assess each of the five core competencies at or near graduation as part of the program's ongoing plans to assess its PLOs. At UC Merced, programs submit annual assessment reports by October 1 or by March 1.[42] Thus, to meet WSCUC's expectations, programs with a March PLO Report date were asked to develop a plan to assess all five competencies by spring 2018, with four of the five completed by spring 2017, while programs with an October PLO Report date were asked to have assessed all five by fall 2018, with four completed by fall 2017.[43] Programs began reporting on their assessment of the WSCUC Core Competencies in AY 2014-15. Consistent with the competency-related principles [78], programs could assess the competencies in any order, using forms of direct and indirect evidence, as well as criteria and standards, that reflected expectations outlined in their PLOs. A template [79] was provided to guide development of the assessment plan, and web pages [80] providing definitions and resources specific to each competency, including the AAC&U VALUE rubrics, were made available. School-based assessment specialists were also available to assist programs with this work.

As a result of this effort, 22 assessment plans [81] to guide program assessment of the core competencies were developed, one for each major, including the two new majors approved since 2014 (Public Health and Global Arts Studies). A comprehensive curriculum map illustrating the alignment of the WSCUC Core Competencies to program learning outcomes, and thus each major's support for student development of core competencies, was also compiled. A review of the map [82] shows that, for some programs, the relationship of the core competencies and PLOs is explicit; one or more competencies are named in the language of the PLOs. For a majority of programs, however, the competencies are implicit to the PLOs; students will demonstrably possess the skills identified by the competencies when they have mastered the abilities articulated by the PLO, but the competencies are not identified as outcomes of the program. This is consistent with the understanding, expressed in the principles [78], that the competencies are skills essential to successful achievement of intended degree outcomes, but they are not necessarily the outcomes themselves.

[40] Initially, the UC Merced's Offsite Review (OSR) was scheduled for spring 2017. In October 2013, it was rescheduled for fall 2017 consistent with evidence that it was not necessary to have a full year between the OSR and Accreditation Visit.
[41] Beyond that taking place in Core 1 and Writing 10, the two GE courses taken by all undergraduates (typically in their first year).
[42] The two PROC-established, annual, campus-wide reporting dates.
[43] Core competencies assessment dates were extended into fall 2018 for programs with October PLO reporting dates because the plan was rolled out in spring 2014, when their assessments to be reported in fall 2014 were already underway.

The map and program assessment plans also illustrate the extent to which the core competencies are addressed across the undergraduate majors. All majors in the Schools of Engineering and Natural Sciences, as well as the Social Sciences majors in SSHA, support student development of all five core competencies such that programs are able to validly assess student achievement of competencies at or near graduation. The exceptions are the humanities majors (English, History, Spanish, and Global Arts Studies, the latter implemented in fall 2016), which support student development of all core competencies except quantitative reasoning. Following careful consideration, faculty in these majors concluded that the programs' curricula did not address this competency sufficiently to ensure mastery at graduation, although several acknowledged quantitative versions of these majors existed at other universities. For students in these majors, General Education is the primary curriculum through which quantitative reasoning is developed, and the new GE curriculum [42] will support development and assessment of quantitative reasoning skills for humanities majors.

As of the end of spring semester 2017, 17 majors have assessed written communication, 15 critical thinking, 14 information literacy, eight oral communication and 12 quantitative reasoning, at least once within the last three years as part of their annual PLO assessment efforts. The number of programs having assessed each competency, organized by school, is available here [83]. Four of the nine programs[44] expected to have assessed four competencies by spring 2017 have done so, and three of the six programs expected to have assessed four by fall 2017 have already completed this work. All programs are assessing student performance at or near graduation, with near graduation including students with junior-level standing in some programs. Consistent with the campus's approach to the WSCUC Core Competencies, student performance is being assessed using assignments in program courses, and conclusions about student performance on the core competencies are included in annual PLO reports alongside those regarding performance on PLOs. (See example reports from the schools of Engineering [66], Natural Sciences [67], and SSHA [68].)

A summary [83] of program conclusions regarding student performance for each competency, made using the same "pleased" to "displeased" Likert scale and applied to the results of PLO assessment, shows that, thus far, a good majority of reporting programs identify being "pleased"[45] to some extent with student performance on all five competencies. Programs are most satisfied with student performance for written and oral communication (73% and 80% are pleased, respectively) and critical thinking (71%). Programs are less pleased with students' information literacy (63%) and quantitative reasoning (62%) skills. Notably, a smaller percentage of reporting programs (≤ 80%) is pleased with student performance on the core competencies than with student performance on the PLOs (83%, three-year average). This can be explained by the fact that, for many programs, the WSCUC Core Competency constitutes a subset of the criteria examined as part of the assessment of a given PLO. As a result, it is possible for a program to be displeased with student performance for a couple of criteria, but draw an overall conclusion consistent with being "somewhat pleased" with respect to the PLO as a whole.

Senior students, by contrast, generally report thinking relatively well of their abilities on skills associated with the Core Competencies. For example, a large majority [84] of respondents[46] to the 2016 UCUES administration rated their abilities as good, very good, or excellent (≥ 83% for all statements) on a set of core competency-aligned statements. Consistent with faculty findings, respondents felt the least capable

[44] Programs that have undergone program review within the last three years and therefore were not engaged in annual assessment will not complete all five competencies on the WSCUC timeline. So these numbers do not tally to 21. The total is 21 because Global Arts Studies was implemented in fall 2016, and will be beginning assessment this year.
[45] Includes very pleased, pleased, and somewhat pleased.
[46] 43% response rate overall; 44% for seniors.

with quantitative skills, for which only 83% reporting being good, very good, or excellent. When results [85] are broken down by school – and further by social sciences and humanities majors within the School of Social Sciences, Humanities, and Arts – clear differences appear with respect to senior self-assessments of their abilities. Generally, a larger percentage of students majoring in humanities and social sciences report being good, very good, or excellent at written and oral communication,[47] library and online information research skills, and the ability to design, conduct and evaluate research, than students in natural sciences and engineering majors. Reciprocally, a larger fraction of students in natural sciences and engineering majors reported facility with quantitative skills. Perhaps unsurprisingly, about 60% of humanities majors reported having good, very good, or excellent quantitative skills as seniors. These respondents also reported comparatively little change [86] between matriculation and graduation in their quantitative abilities relative to their peers in social and natural sciences and engineering majors.[48] The redesigned GE program is expected to increase the growth humanities students realize in this competency.

Collectively, these results represent a first, cross-campus look at student abilities with respect to the WSCUC Core Competencies. It is also an emerging look. Faculty members are defining the meaning of the competencies in the context of the intended outcomes of each major and are determining how best to integrate a focus on these competencies into their annual program assessment activities. For some programs, this shift has involved trial and error, as evinced by those programs that were unable to draw a conclusion [83] about student learning, due to unreliable assessment results. Several programs have also assessed a given core competency more than once. Our understanding of student proficiency with the competencies is also emerging because, while we are on track for completing the assessment of the WSCUC Core Competencies in keeping with WSCUC's timeline, we do not have results from all programs for all core competencies yet. This precludes, for instance, disaggregating results by school, which will be useful for coordinating support to strengthen student performance.

Nevertheless, the emerging results are an important starting point for discussion and action. Because these results represent the sum of annual program-level assessment activities, programs have already identified in their annual PLO reports actions to be taken to strengthen student performance. For example, to address disciplinary specific writing needs, faculty members are revising pedagogies to provide students with rubrics and model assignments, increasing the number of writing assignments, and are considering stronger collaborations with the Merritt Writing Program. To strengthen information literacy, programs are ensuring assignments explicitly address desired skills. They are also looking to the library for support to strengthen students' library research skills. Similarly, to address quantitative reasoning skills, programs are proposing revisions to curriculum to focus student efforts on desired abilities, for instance by revising the focus of assignments and increasing the number of assignments. In sum, program assessment results are encouraging discipline-specific curricular attention to these essential skills, which are necessary to achieving and to demonstrating achievement of each programs intended learning outcomes. This is consistent with the research on how people learn. Disciplinary intellectual frameworks and conventions shape how the skills identified as core competencies are defined and practiced. In turn, mastery of the intellectual content of a discipline also means mastering in discipline-specific ways the ability to think critically, communicate effectively, practice information literacy, and reason quantitatively.

From an institutional perspective, these emerging results offer new opportunities to initiate conversations and collaborations focused on well-defined goals for student learning. To some extent, this is already taking

[47] With the exception of "the ability to make a presentation"

[48] 13 percentage-point increase in the percentage of humanities students rating their abilities as good, very good or excellent between matriculation and the time of the survey vs. 45, 48, and 35 percentage-point increases for social science, natural science and engineering respondents respectively. The survey is retrospective; students report on their ability level as a first-year student from their perspective as seniors.

place, for example, as programs reach out to Merritt Writing Program for support with course development or to the Library for supplemental instruction related to student research. However, the increasing availability of relatively well-defined expectations for student performance in the form of rubrics, together with data indicating relative strengths and areas to be strengthened, may also bring new opportunities for coordination and collaboration with student support services like the STEM Resource Center, the new Math Center, and the Writing Center (a pilot project of the Merritt Writing Program and the Library). Similarly, these results may offer new opportunities for program and school-specific collaborations with the Center for Engaged Teaching and Learning (CETL), or new takes on prior CETL programs like the 2014 Writing in the Disciplines Certificate for faculty, under the guidance of the newly created and hired[49] position of Associate Vice Provost for Teaching and Learning.

4.1.3 Conclusions – Undergraduate Learning

Evidence gathered from faculty-led, programmatic assessments and student perceptions of their learning suggest that, in general, graduates are achieving intended program learning outcomes in keeping with faculty expectations for student performance. On average, 83% of programs submitting an annual PLO report between 2013-14 and 2015-16 drew conclusions consistent with some level of satisfaction with student learning. Similarly, on average, 92% of student respondents to the Graduating Senior Survey understood themselves to be highly or moderately proficient with the skills and knowledge articulated in the PLOs for their major or standalone minor at the time of graduation. Annually, as well, a large fraction of programs (76% on average) is also responding to program assessment results by identifying steps to advance student leaning, typically with a focus on a subset of criteria associated with a PLO. As a result, programs are documenting in annual assessment reports improvements in student achievement over time. For example, the Applied Mathematics, Earth Systems Science, and History programs have articulated improvements to student communication skills, and History has also reported improved proficiency with Chicago citation style (information literacy), following efforts to increase the program's focus on student preparation in these areas. In these programs, assessment has clarified program priorities and learning expectations to the benefit of their students.

Results emerging from program-level assessment of the WSCUC Core Competencies are somewhat less reassuring. While evidence to date suggests that the fraction of programs pleased with oral communication (80%) skills approaches that with PLOs overall (83%), the percentage of programs pleased with demonstrated skill in written communication (73%), critical thinking (71%), information literacy (63%), and quantitative reasoning (62%) are lower. To some extent, the core competency results may not be surprising. While all UC Merced students meet the standards for admission established by the faculty of the University of California by the Board of Admissions and Relations with Schools (BOARS; a system-level committee of the Academic Senate), large proportions of UC Merced first-year students place into the ramp up courses Writing 1: Academic Writing (~ 70% annually) and Math 5: Pre-Calculus (~72% on average[50]). UC Merced is also largely a STEM campus. Over 50% of undergraduates are enrolled in STEM majors,[51] and a significant fraction of non-STEM students[52] are enrolled in the quantitatively oriented social science majors of Economics, Management and Business Economics, Political Science, Public Health, Psychology and Sociology. Thus, a majority of UC Merced first-year students matriculate needing additional development of core academic skills, including writing (and associated information literacy skills) and mathematics, and they subsequently enroll in majors with significant performance expectations in these areas. In this light, it

[49] The incumbent joined UC Merced in summer 2016.
[50] Data from the School of Natural Sciences' assessment specialist.
[51] Based on NSF criteria.
[52] Indeed, as of 2016 only 3% of undergraduates were enrolled in the Humanities majors of History, English, Spanish and Global Arts Studies (GASP), implemented in fall 2016).

seems entirely plausible that program assessment results specific to the WSCUC Core Competencies reflect ongoing demand for attention to these core academic skills, particularly given disciplinary standards for proficiency.

Although the Core Competency data may change as programs continue to report, the results provide a first look at student performance in these areas as assessed through disciplinary lenses and suggest that institutional-level attention may be warranted, in addition to the efforts programs are already undertaking in response to results. Specifically, program-level efforts may be effectively complemented, and perhaps amplified, through cooperation and collaboration with campus-level services, as mentioned previously. These conversations have yet to take place, but importantly, data are now available to inform such conversations, and that can serve as a point of reference for tracking both programmatic and institutional progress in these areas.

4.2 GRADUATE EDUCATION

4.2.1 Individual Student Learning in Graduate Programs

As was discussed in essay 3, students graduating with a masters or Ph.D. degree from UC Merced are expected to possess the skills, knowledge, and abilities described by the PLOs specific to their degree programs. For all degrees, the skills and knowledge outlined by each program's PLO are cultivated and assessed through a structured experience, involving formal coursework, unit-based intellectual experiences like journal clubs, departmental seminars, etc., required examinations, and a capstone experience. For master's students, the capstone may be a thesis, exam, or equivalent intellectual experience. For Ph.D. students, it is the Ph.D. dissertation and defense. For all programs (and their students and faculty), degree requirements, together with the PLOs, are defined in the program's Policies and Procedures [33]. Each program's Policies and Procedures are established in the proposal for a new graduate program. Any subsequent revisions to the program's degree requirements (and Policies and Procedures) must be approved by Graduate Council.

Performance criteria and standards for all major milestones in a graduate student's education are set out by the faculty in rubrics [36] developed as part of the proposal for establishing a new program.[53] Collectively, program rubrics and the PLOs define the learning expectations appropriate to the degree level (master's or Ph.D.). Each student's learning progress is assessed at specific milestones, such as qualifying examinations, as well as closer to graduation when thesis or capstone projects are evaluated for master's students or dissertation prospectuses and dissertations are defended[54] by Ph.D. students. Ideally, rubrics associated with milestones are made available to students in preparation for the exams, and are scored by faculty at the conclusion of the exam as a means for providing feedback to students and for generating data to support program assessment. At the graduate level, routine use of rubrics is an area for continued development, particularly as early program assessment evidence suggests that student performance benefits from sharing rubrics and, thus, performance criteria and standards with students.

Student advancement from milestone to milestone is facilitated through ongoing interactions with the student's advisor and the members of his or her committee. Annually, student progress is formally assessed, and goals for the coming year established, via the annual progress review, undertaken by students and their advisors and/or committees. Annual reviews are guided by, and formally documented through, the graduate group's annual progress review form [87] (also developed as part of the proposal for new programs). In some graduate groups, students and faculty are asked to evaluate student progress with

[53] Including for all new programs formed from emphases within the IIGP.

[54] Graduate Advisor's Handbook VII(H): Standards and Requirements for Graduate Degree Programs: The Doctoral Degree

respect to the PLOs, facilitating formative feedback to students in relation to these overarching degree competencies and generating data for program-level assessment. Through feedback from milestone assessments and annual discussions among the faculty of the progress of each student, student learning is shaped, developed, and advanced both in relation to program expectations for student achievement and in relation to the students' career goals. Data collected between 2007 and 2015 through the Graduate Student Survey[55] [88] indicate that graduate students are finding good support in their programs for their degree and career progress. For example, in 2015, 95% of survey respondents agreed[56] that their research interests were incorporated into their thesis work; 92% agreed their advisor had their interests in mind; 90% agreed their advisor tracked their progress and will help determine when they have accomplished enough for their degree; 85% agreed they receive constructive feedback on degree progress from their advisors; and 84% agreed they were satisfied with the amount of time spent with their advisor.

4.2.2 Aggregate Student Learning in Graduate Programs

At the graduate level, expectations for program assessment parallel those for undergraduate majors and standalone minors; annually, each graduate program is expected to assess student achievement of at least one PLO. The program's methods, results, and recommended actions, to advance both student learning and the program assessment methods, are summarized and documented in its PLO report. In addition to facilitating dissemination of program results, PLO reports provide a record of program activities in support of periodic program review at seven-year intervals. Each program's assessment activities are guided by an assessment plan [89], developed as part of the proposal for establishing a new degree program. In keeping with effective practice and the graduate assessment planning template [89], all program assessment plans call for both direct and indirect evidence of student learning as well as performance targets for each line of evidence. For most program learning outcomes, direct evidence consists of aggregated rubric-based scores of individual students on key program milestones, including qualifying exams, defenses, theses and dissertations. Sources of indirect evidence include student reflections on their own progress gathered through annual progress reviews, program specific data extracted from the Graduate Student Survey and/or program specific surveys, group interviews of students, and exit interviews. Alumni surveys are a pending form of evidence. For a number of programs, execution of program assessment is the responsibility of the graduate group's Education Policy Committee, as codified in the graduate group bylaws. Nominally, however, the Graduate Group Chair is responsible as the Faculty Assessment Organizer (FAO) for the program. In planning and conducting this work, UC Merced generally follows the recommendations of the Council of Graduate Schools.[57] Support for both development and execution of program assessment activities is provided by the Graduate Assessment and Substantive Coordinator, who works in the office Periodic Review and Assessment and Accreditation Support (OPRAAS). In fall 2016, the first person to hold the position left the campus, and the position is anticipated to be filled in summer 2017.

Because nine of UC Merced's 14 standalone graduate programs[58] have been implemented since 2013, program-level assessment is still a relatively new activity at UC Merced. Program enrollments are also relatively low, which means that, at this stage in program and institutional history, program sample sizes are often small, limiting the reliability of results. Nevertheless, programs are conducting and reporting on program-level assessment. Following practice at the undergraduate level, these reports are reviewed first

[55] Last administered in 2015.
[56] Agreed or strongly agreed.
[57] These include allaying faculty concerns about excessive requirements of time and expertise, ensuring that faculty determine "what they want to assess, how they want to assess it, how often they want to assess it, and what changes they will make in light of their assessments," clarifying who will review assessment results and how they will be used, and integrating assessment into the institutional culture. Council of Graduate Schools (2011). *Assessment and Review of Graduate Programs.* Washington DC, pp. 39-41.
[58] Includes Economics and Public Health to be implemented in fall 2017.

by the lead dean[59] for the program, before being forwarded to PROC and, in turn, the Committee for the Review of Graduate PLO Reports, which provides formative feedback to graduate groups on their PLO assessment efforts in support of advancing program practice. This committee also generates a report to PROC, identifying common threads in the assessment of student learning-related strengths, weaknesses, and issues requiring further study or action. At this stage of our institution's history, the committee's review is particularly important because our programs are so new, and thus we do not yet have long-term indicators of program quality.

The committee's first report [38], which was issued in 2016, addressed a range of PLOs assessed by 14 programs over the two-year period of AY 2014-15 and 2015-16. These included PLOs focused on written and oral communication (42% of programs), disciplinary knowledge and application of theories and methods (21%), identifying new research question (14%), pedagogy and teaching effectiveness (14%), modeling real world problems and model analysis (7%), and professionalism (7%). Using the same six item Likert scale of "pleased" to "displeased" applied to undergraduate programs, 100% of programs were very pleased, pleased, or somewhat pleased with their Ph.D. students' skills and knowledge in relation to the PLOs selected for assessment. In making these assessments, 100% of programs in both years used rubrics, with 86% of these programs, using program-level rubrics articulating criteria and standards for performance developed by faculty.

At the same time, the programs [38] also spoke to efforts that could further improve student success in achieving desired learning outcomes. Forty-three percent of programs in 2014-15, and 57% of programs reporting in 2015-16, found that making expectations explicit to students (e.g., through sharing program rubrics) led to improved student performance, and several programs identified methods of increasing direct feedback on student performance, seeing this as a means of improving their curriculum. Programs also recommended finding ways to increase opportunities to practice oral communication skills in lower stakes environments. One-on-one work with a faculty mentor on a research project was also identified as a key component of student learning, noted by 71% of programs in each of the two years under review. In response, several programs are encouraging research collaboration with a faculty member. Professional development opportunities such as workshops, certificates, and opportunities to present their research at professional conferences were also noted by 71% of programs as central to student learning. In turn, programs recommended encouraging students to participate in workshops or certificates offered through the Graduate Division and the Center for Engaged Teaching and Learning (CETL).

In addition to annual PLO assessment, graduate groups are increasingly taking responsibility for regular, systematic reflection on their progress and steps they might take to improve student learning and performance. For example, a number of faculties have begun meeting for day-long retreats. These retreats [90] provide uninterrupted time for in-depth discussion of program objectives, student learning outcomes, other indicators of student success, and changes they might want to make in the program as a result of their assessments. Environmental Systems used this faculty time [90] to address recommendations stemming from its program review in support of developing an action plan to advance program goals.

Finally, programs are asked annually by the Graduate Dean to report on the graduate group's progress in relation to a set of indicators of program development and success. Complementary to, and distinct from, student learning outcomes data, these indicators focus on program progress toward enrollment goals, student diversity, student quality of preparation for the program,[60] the rates at which students apply for and obtain external fellowships and grants, student funding patterns (e.g. mix of TA,

[59] One of the three school deans.
[60] Based on GPA, GRE, research experience, undergraduate institution, strong letters of recommendation, and other indicators

GSR, and fellowship funds), and the percentage of students with publications and conference presentations. With a focus on enrollment, results of this analysis are used to adjust program funding levels for student travel, summer fellowships, or other awards. Time-to-degree, completion rates, and doctoral placement data are also collected, but in many of our programs there are too few graduates for these data to be reliable indicators of program success at this stage in their histories. Looking forward, these data, paired with that derived from regular assessment of program learning outcomes, will provide a robust picture of program strengths and areas to strengthen and, in turn, enable evidence informed development of the program's educational efficacy and profile.

4.2.3 Conclusions – Graduate Student Learning

Evidence available from program assessment to date suggests that graduate programs are defining, through their PLOs, and assessing, through annual assessment activities, the intellectual competencies that are foundational to each field. Further, this evidence indicates that faculty are satisfied with student achievement. Faculty are, however, not necessarily content, as illustrated the actions identified by programs to continue to strengthen student achievement.

The general topics [38; Table 1] assessed by programs in 2014-15 and 2015-16 also indicate that programs are attending to student learning in ways congruent with the intended outcomes of the Ph.D. as articulated by UC Merced's overarching PLOs for graduate degrees: the capacity for self-directed learning to advance knowledge; the ability to apply the underlying principles, philosophies, ethical norms, and research methodologies of their fields to produce new knowledge; proficiency with the communication formats of the field; and the possession of professional skills necessary to lead productive careers. The strong alignment [35] of PLOs with the overarching PLOs for the master's and Ph.D. degrees also indicates that future program assessment efforts will continue to further institutional and graduate student success.

Thus far, relatively little has been said explicitly about the assessment of master's programs. All programs offering master's degrees have multi-year assessment plans for evaluating student achievement of their PLOs. For programs with relatively low enrollments, it takes time to develop sufficient sample sizes to responsibly draw conclusions about student learning achievement at a programmatic level. That said, programs offering master's degrees assess master's outcomes alongside those for the Ph.D. in annual PLO reports, consistent with the fact that these students typically learn alongside one another in a common curriculum. Thus, much of what is learned about student learning and success from assessing the Ph. D. applies to both groups of students.

Looking forward, annual program assessment activities, including both the look at student learning outcomes and the review of program indicators requested by the Dean, is positioning programs well for their first periodic program reviews [60]. Program review policy [61] requires programs to report on their program assessment efforts, including the efficacy of their efforts for improving student achievement. It also asks program to reflect on the metrics programs are tracking with the support of Graduate Division. Longer term, as program enrollments grow, and program assessment methods mature, it is anticipated that programs will increasingly find greater benefit in learning outcomes data as a means for strengthening student achievement, student success, and, in turn, program profiles.

4.3 CONCLUSIONS

This essay has addressed how we document that students acquire knowledge and develop intellectual skills appropriate to the level of degree they earn. At both the undergraduate and graduate levels, the evidence

presented indicates that, annually, a large majority of programs conclude that students are generally meeting faculty-established standards for student learning with respect to intended program learning outcomes. This same evidence also indicates that program-level assessment is regularly revealing skills and knowledge in need of continued attention, that programs are identifying pedagogical and curricular changes intended to strengthen student learning over time, and that student achievement is being strengthened as a result.

This essay also provides an emerging institutional-level look at undergraduate achievement of the WSCUC Core Competencies. This information is important; proficiency in the skills outlined by core competencies – written and oral communication, information literacy, critical thinking, and quantitative reasoning – necessarily underpins student achievement of disciplinary outcomes, and ultimately, of the Hallmarks of Baccalaureate Degrees at UC Merced. Although not all programs have assessed all competencies yet, the evidence suggests that student achievement in these areas will benefit from conversations and increased coordination across academic units, and among academic units and co-curricular units that support student learning directly (e.g. the STEM, Math, and pilot Writing Centers) and indirectly (e.g. CETL). Consideration of program results with respect to the explicit standards and criteria elaborated by programs (in the form of rubrics) will help to inform and direct decisions to strengthen student learning, as well as facilitate shared understanding of expectations for student achievement in these areas among campus educators and students alike. The new four-year, campus-wide GE program will also facilitate coordinated focus on these skills in ways that complement and reinforce efforts in the majors, and the assessment of GE program outcomes will provide additional, actionable information about student development of these critical skills over their time at UC Merced.

As a program-level activity, academic program review will continue to play an important role in advancing student achievement. As described in more detail in essay 6, all programs (100%) consider the results of the program assessment in self-studies, and all external review teams (100%) comment on program assessment activities, often including the appropriateness of intended program learning outcomes and evidence of student learning achievement. Because assessment of the core competencies takes place within programs, in tandem with the program's focus on intended program outcomes, we expect that program-specific student performance on these skills will naturally, and as appropriate, be considered by programs and their external review teams. This includes future program reviews of the GE program.

As the coordinating committee for the periodic reviews of individual programs, as well as for periodic and annual assessment processes as a whole, PROC is well positioned to facilitate campus attention to common student learning needs, including with respect to the WSCUC Core Competencies. As a committee, PROC carefully discusses and advises on each stage of the program review process. In consultation with the school dean, PROC shapes the focus of each program's self-study. Following receipt of the self-study, it crafts the charge to the external review team. Finally, following receipt of the external team report, PROC advises on priorities for program action plans, before ultimately approving each plan. Thus, at each stage, there is opportunity to focus the review process, and subsequent program planning efforts, on program-specific needs with respect to student learning and success.
Under PROC's guidance, the campus is also well positioned to monitor progress on student learning as an institution. With support from OPRAAS, the campus tracks and reports on undergraduate student learning trends in the annual summary of student learning outcomes publicly available on the campus's assessment website. As graduate program assessment results become more robust over time, we expect to make public a similar summary for graduate education. More detailed summaries of student learning trends are reported to PROC through the summary reports generated by the undergraduate and graduate committees for the review of PLO reports. As initiated in the most recent report [73] from the undergraduate

committee, going forward these reports will specifically address the WSCUC Core Competencies. With the support of OPRAAS, it will be important for PROC to regularly disseminate summary results to develop campus awareness, and, as appropriate, initiate coordinated action.

In spring 2017, Graduate Council received from PROC [91] the first report from the graduate Committee for the Review of PLO Reports, and was considering priorities for communication to graduate group chairs. At the undergraduate level, campus discussions of the emerging learning results regarding the WSCUC Core Competencies had not yet been initiated at the time this report was submitted. In fall 2017, PROC will take up the question of determining effective routes for disseminating information and facilitating faculty discussion of results and possible actions. Over the longer term, PROC will want to develop regularized processes for facilitating ongoing engagement with these types of learning results, and related academic planning. This will need to be done in due consideration of newly emerging academic organization (the shift to academic departments), related re-organization of supporting staffing, and more generally academic organizational structures at school and institutional levels.

ESSAY 5 – STUDENT SUCCESS: STUDENT LEARNING, RETENTION, AND GRADUATION (CFRS 1.2, 2.7, 2.13)

Established as a student-centered research university – grounded in the University of California's mission of excellence in research, teaching, and service and focused on addressing the educational and economics gaps in the San Joaquin Valley – student success has been a central focus since the campus opened in 2005. In this essay, we describe the campus's newly developed definition of student success and our efforts to promote and support undergraduate and graduate student success as it relates to timely degree completion, high quality student learning, and preparation for future success in students' personal, civic, and professional lives. Finally, integrated throughout the essay are new initiatives, developed as a result of data analysis, that will be launched in the semesters ahead to help increase student success as well as to sustain and expand programs to meet the growing student enrollment.

5.1 DEFINING STUDENT SUCCESS

Since its inception, UC Merced has cultivated a comprehensive understanding of student success, an ethos reflected in its initial mission and affirmed in the development of subsequent documents, including the campus vision, Principles of Community, and Student Affairs co-curricular student learning outcomes. This commitment mirrors the mission of the University of California more broadly, including its focus on access, affordability, and degree completion as a means for social mobility for historically underrepresented populations.

Since the submission of the 2014 WSCUC Interim Report, planning activities on campus have advanced our commitment to student success. In 2014, faculty and staff developed the Hallmarks of Baccalaureate Degrees at UC Merced [25] which emphasize the intellectual and personal development dimensions of student success at UC Merced. A campus-wide review [92] of academic advising helped codify both the mission [93] and learning outcomes [94] of academic advising around the promotion of student success, with a focus on supporting student development of the abilities and orientations necessary for timely, meaningful degree completion as well as personal and professional development. The review is also leading to a reorganization of our first year advising structure. An Academic Policy Study Group, led by the vice provost and dean for undergraduate education and constituted of staff from advising, undergraduate education, the Registrar's Office, and institutional research, formed to review academic policies that may, unintentionally, create barriers to timely and successful degree completion. The Division of Student Affairs prioritized student success as the guiding principle for its strategic goals and subsequent resource allocation and organizational restructuring. Also, the Graduate Division launched a series of initiatives to support graduate student intellectual, professional, and personal success. Finally, in spring 2016, the campus-wide strategic visioning summit affirmed the campus's commitment to student success, formalizing it as a campus priority [5] to guide resource allocation, including the development of a campus-wide workforce plan [7].

Informed by this history, the campus spent the last year drafting a definition of student success [95] that addresses our aspirations for our undergraduate and graduate students alike:

> *Successful students at UC Merced develop a passion and capacity for lifelong learning and for creating and sharing knowledge, consistent with our distinctive context as a public research university. We celebrate our location in California's San Joaquin Valley, which provides unique opportunities to shape our communities and enable students to become engaged citizens. We*

believe every student possesses a unique and valuable perspective that enriches and transforms our community.

At UC Merced, student success results from a collaboration and shared responsibility among students, faculty, staff, and administration. Because student success is at the heart of our planning and decision-making, we use robust and meaningful evidence to inform decisions about programs, policies and practices. Providing support, guidance, and resources that equip students to pursue their educational journey creates the foundation for student success. Students achieve success by actively engaging in opportunities for growth in and out of the classroom. These experiences ensure that students have the tools to complete their academic, career, and personal goals.

At each point in the drafting process, campus stakeholders were invited to reflect on the definition. Materials [96] developed to facilitate the definition's review highlight the definition's origin in our campus' statements of purpose and commitment – including our mission, vision, Principles of Community, the Hallmarks, and the learning outcomes articulated for our academic programs, General Education, academic advising, and the Division of Student Affairs. They also explain the initiative's purpose: to facilitate a shared understanding of student success, to enable all members of the campus community to reflect on their contributions to student success, and to provide stakeholders with a framework to inform unit visions and missions and to develop and assess program learning outcomes. The final draft reflects input from the Academic Senate Deans' Council, academic advisors, senior leadership in Student Affairs, the Graduate Student Association, Associated Students at UC Merced, and Staff Assembly [97]. Because the definition is new to campus, having been finalized in spring 2017, next steps include raising constituent awareness of its meaning and purpose as well as integrating its use into the processes for establishing new and reviewing existing programs and units.

5.2 PROMOTION OF STUDENT SUCCESS

At UC Merced, our focus on student success begins upon admission.[61] Messages to students who have submitted their intent to register initiate their transition to university life and inform them of how to assume the necessary responsibilities to complete their degrees successfully. These transitional activities continue with New Student Orientation where the campus's emphasis on their success is communicated to first-year and transfer students as they partake in workshops and activities to prepare them for success at a research university. Focused on the first-generation experience, learning outcomes [98] for these sessions address building relationships, engaging with the campus in the first week of school, developing knowledge of campus resources, adopting the behaviors of successful students, and identifying personal and professional goals for their first semester. The concurrent program for parents or guests, offered in Spanish and English, communicates expectations for families as partners in their student's success, with learning outcomes [99] emphasizing a student-centered perspective of the university experience.

These initial themes are reinforced and further developed through the student success conferences, ASCEND and TRANSCEND, offered for first-year and transfer students, respectively, immediately after students arrive on campus in the fall and before the first day of instruction. Through a set of workshops [100] distributed over two days, students are further prepared to succeed. Foci include increasing students' knowledge of campus resources and opportunities as well as developing successful academic habits. Results from the annual New Student Survey indicate that habits encouraged at these conferences are

[61] An exception is UC Merced's Center for Educational Partnerships (CEP). Located in Fresno, the CEP partners with schools and school districts to reduce the educational achievement gap and increase college access in the San Joaquin Valley. In 2016, the center received three grants totaling more than $3.6 million to support its programming.

consistent with those students find most helpful to their academic success in the first semester. First-year students may also apply to participate in the UC Merced Summer Bridge – First-year Program, an eight-week, on-campus, academic experience in which students complete nine units of first-year coursework, while building community and participating in activities focused on academic success.

At the graduate level, the graduate student orientation week (GROW) and Competitive Edge Summer Bridge fulfill similar roles. As reflected in the GROW learning outcomes [101] – and with the explicit intention of improving the student experience, academic success, and retention of graduate students – GROW introduces newly matriculated graduate students to the professional behaviors related to research, teaching, and study as well as the resources available to support students in their academic goals. It also initiates the development of community essential to student success. With a special focus on students historically underrepresented in higher education, Competitive Edge Summer Bridge is a two-month-long program to help incoming graduate students address apprehension about graduate school and to help them begin the process of writing graduate fellow applications. During this program, new graduate students acclimate to their cohort, graduate school, and the campus as well as strengthen technical and academic skills to be successful in graduate school.

Ongoing communication of student success is promoted through academic support services and co-curricular programs. In particular for undergraduates, the role of academic advising in supporting students' academic success is reflected in the advising mission [93], learning outcomes [94], and resources [102] which focus on enabling students to become self-directed learners who develop sound academic plans and take full advantage of their university experience. For graduate students, faculty advisors, members of their committees, and graduate support staff fulfill these roles.

5.3 RETENTION AND GRADUATION RATES

Student success is obviously important at every university. At UC Merced, initiatives to improve undergraduate and graduate student success based on quantitative evaluation of success metrics is particularly important. We offer a research university education to students, many of whom were largely underserved before UC Merced's founding.

Developing predictive analytical tools to better anticipate appropriate interventions requires a reliable database. Nationally recognized tools, such as the Student Success Collaborative, are most useful at institutions with extensive student data. UC Merced, as a fledgling institution, does not have such an extensive database, nor can it confidently extrapolate our student characteristics from data of other institutions. However, predictive models are iteratively improved as more student data are gathered.

The university's undergraduate enrollment goals are largely shaped by the University of California's enrollment commitments to the state and are heavily influenced by enrollment decisions of the other eight UC undergraduate-serving campuses. Shaped by the campus's 2013 Long Range Enrollment Plan, [103] UC Merced has renewed its memorandum of understanding (MOU) with the UC Office of the President. That MOU [104] articulates an enrollment target of 9,000 undergraduates and 1,000 graduate students by 2020. It also restates the campus's continued commitment to the University of California admissions guarantee to California residents who meet the minimum admissions criteria. Our critical responsibility to the system-wide referral pool and to the continued increase in native admissions applications shape the profile of our undergraduate student population.

With that in mind, the Office of Admissions and Relations with Schools and Colleges (Admissions), working with IRDS, has identified factors more likely to indicate success and predict potential yield of our students. Research on success of admitted students indicates GPA and SAT test scores are the greatest predictors of first-year success, although those two factors combined provide less than 18% predictability for actual success.

Over the last two years, Admissions and IRDS have focused on new student enrollment and student retention to provide a more multi-level and balanced approach to predicting success, especially given the socio-economic backgrounds of our students who are first-generation college-goers with the lowest SAT scores among the UCs. Greater emphasis on retention will likely be more beneficial to students, and it will potentially make meeting campus enrollment growth objectives more successful, manageable, and sustainable. These discussions have stimulated the development of new predicative models by IRDS. The new models will predict the level of success individuals may achieve once enrolled at the university. They will also aid those units on campus actively engaged in student success efforts and will serve to inform those responsible for planning support services to matriculating students. The models are currently being developed, and we hope to have the initial work ready to use as we move toward recruiting the entering class for fall 2018.

In 2010, the provost established an Enrollment Management Committee, charged [105] with monitoring admissions, retention, and graduation data. In 2014, that charge was broadened to include monitoring of both undergraduate and graduate student populations. The primary outcome of this reorganization is to develop a comprehensive plan to guide the campus's enrollment, retention, and timely degree completion for all our students. We summarize below progress to date in serving our undergraduate and graduate student success objectives.

5.3.1 First Time, Full Time Freshmen

Since 2012, UC Merced's four-year undergraduate graduation rates and first- to second-year retention rates [10] for first-year students have remained fairly stable despite significant enrollment growth (average growth of 7% a year for the last 5 years, [11]), and an increase in the proportion of UC Merced's first-year students that are first generation [12]. The four-, five- and six-year graduation rates [10] for entering cohorts 2012, 2011 and 2010, respectively, have all shown improvement over the analogous data for the 2005 cohort (38% compared to 33%, 60% compared to 52%, and 66% compared to 58% for the four-, five- and six-year graduation rates, respectively).

A closer look at peer institutions [2] assists in setting targets for continued improvement in first-to-second-year retention rates and four- and six-year graduations rates. UC Riverside, San Diego State University (SDSU) and the University of Texas, San Antonio (UTSA) serve as three comparator institutions to better contextualize the campus's undergraduate retention and graduation rates. The two peers external to the UC were chosen because, like UC Merced, they have the Research II Carnegie classification. All three institutions were chosen because they have somewhat comparable student populations to UC Merced with high proportions of Pell Grant recipients, first-generation and in-state students. Our sister UC campuses provide another set of reference points [106].

The first- to second-year retention rate [10] at UC Merced has remained steady, with a rate of 86% for the 2015 entering cohort. For UC Riverside, the rate is 91%; for SDSU, it is 89%; and for UTSA, it is 83%. Like UC Riverside, rates [106] for our other sister UC campuses generally exceed 90%. The four-year graduation rate for first-year student entrants is 55% at Riverside, 37% at SDSU and 13% at UTSA. UC Merced is 38%. Five-

and six-year graduation rates are 72% and 73% at Riverside, 67% and 74% at SDSU, and 28% and 35% at UTSA. UC Merced is 60% and 66%. For the UC as a whole, the most recent four- and six-year graduation rates [106] are 64% and 85% respectively.

When these data are disaggregated by race/ethnicity [10], first-generation status, and Pell Grant status, the data provide a better context to understand UC Merced's students' success. While 2017 national data show that, on average, White and Asian students are completing their college degree at a rate of 20 percentage points higher than Latino and African American/Black students, UC Merced data show students succeeding at generally equal rates across all race and ethnic groups. A similar report based on national data also reveals low completion rates for first-generation and low-income students. Again, UC Merced's data reflect this demographic of student, the majority of students at UC Merced, reaching this traditional measure of student success.

A noticeable difference [10] in four-year graduation rates exists by gender. Over the past three entering cohorts for which we have data (2010-2012), we see that women have graduated, on average, at a rate of 16 percentage points higher than men of the same entering cohort (44% as compared to 28%). While the gap begins to close with the six-year graduation rates, the difference is still substantial with a rate for 71% for females in the 2010 entering cohort as compared to 62% for males in that same group. As the campus and IRDS look closely at factors that inform these differences, developing intentional intervention strategies that address these discrepancies will be important.

Finally, a review of the most recent six years of absolute graduation rates [107] for UC Merced, from the WSCUC dashboard, show that rates have increased steadily over time. However, the most recent rate for 2015-16 (59%) and the long term average (38%) fall below UC Merced's most recent IPEDS[62] six year graduation rate of 66%, and long term average of 58%. These differences are explained by our rapid enrollment growth. The dashboard is most interpretable and useful for campuses in a relatively steady state of enrollment. It is also most useful for campuses with non-traditional, part-time students. By contrast, 95% of the 2016 incoming undergraduate cohort were first-time, full-time students. Thus, at this time in the campus's history, the WSCUC graduation rate dashboard does not contribute significantly to our understanding of student success.

5.3.2 Transfer Students

At UC Merced, the ratio of transfer students to first-year students is considerably lower than that for the other UC campuses. We continue to increase the number of admitted transfer students year over year, but our actual enrollments [108] and thus the ratio, remain low compared to our sister institutions. Nonetheless, since 2014, UC Merced's retention and graduation rates for transfer students [109] have steadily increased with modest gains in two-year rates and significant increases in three- and four-year rates. Some of the more pronounced gains have been in three- and four-year graduation rates for Pell Grant recipients and first-generation transfer students.

Two-year graduation rates for transfer students [109] have remained stable for the last four years at a rate of 41% for the 2014 entering cohort, with the UC average [106] at 55% for the 2013 cohort. The three- and four-year graduation rates have increased significantly with 81% of the 2013 cohort graduating in three years and 87% of the 2012 cohort graduating in four years. These are comparable to the UC average [106] of 83% and 88%, for 2012 and 2011 cohorts respectively. Peer comparisons show two-, three-, and four-

[62] Integrated Postsecondary Education Data System

year graduation rates for transfer students. At UC Riverside, they are 61%, 83% and 84%, respectively; at SDSU they are 46%, 78% and 85%; and at UTSA they are 16%, 45% and 56%. The first- to second-year UC Merced retention rate for the 2015 transfer cohort is similar to prior years at 92%. The rate for UC Riverside is 91%; for SDSU it is 91%; and for UTSA it is 83%. In short, we are doing well compared to our peer institutions.

Looking at the graduation rates [109] for UC Merced's 2014 entering transfer cohort by race/ethnicity, we see comparable achievement across Hispanic (38%), White (41%) and students of Two or More Races (43%). The two-year graduation rate for Pell Grant recipients is 36% as compared to 49% for non-Pell Grant recipients. This rate is similar in prior years. The three- and four-year rates have increased steadily and are significantly higher at 82% for the 2013 cohort and 89% for the 2012 cohort. The three- and four-year rates show steady improvement with transfer Pell recipients surpassing non-Pell recipients for three- and four-year rates (non-Pell three- and four-year rates are 81% and 82% respectively).

5.3.3 Master's and Ph.D. Students

As with our undergraduate programs, our graduate programs are in a state of rapid enrollment growth [11] year over year. Like other research universities, we draw graduate students from around the country and around the world, and the probability of attracting these students increases as our reputation and visibility increase. At the same time, we continue to admit a number of our own undergraduate students into graduate programs. Just as most of our undergraduate students are first-generation college students, an even higher fraction of those same students are first-generation graduate students. For many, given the percentage of UC Merced students who are first-generation college students, familiarity with academic programs and their surroundings bolster their academic ambition and success.

The majority [110] of UC Merced graduate level students are in doctorate programs, and graduate programs are heavily oriented in science and technology fields. The average percentage [111] of graduate enrollment in STEM fields, sciences and engineering, for the past six years, is 70%. From fall 2012 to 2016, graduate student enrollments increased from 329 to 521, with the majority of enrollments coming from Ph.D. students – in the same period, master's student enrollments only rose from 41 to 49. During this time of rapid growth of graduate programs, a range of assessments has been used to measure graduate student success and to identify institutional practices that can improve retention and graduation rates.

Increases in graduation rates also exist among the campus's graduate student cohorts. For the fall 2007 cohort, the percentage of students receiving a Ph.D. [112] in six and seven years is 53% and 60%, respectively. Rates for women and underrepresented minorities are 51% and 59%, and 58% and 58%, respectively. These data compare favorably to national averages of about 50-60% seven-year graduate rates for Ph.D. students. For the fall 2007 cohort of students enrolled in master's degree programs, 78% of master's [113] students received degrees, and over 85% of those who graduated did so within two years. UC Merced's graduation rates are on par with national data, and the rigorous degree programs we offer provide means for increasingly supporting graduate students through degree completion.
Degree recipients from our graduate programs have gone on to postdoctoral or faculty appointments, positions in industry and government, and a variety of other professional endeavors. With assistance from the Office of Periodic Review, Assessment, and Accreditation, graduate groups are surveyed annually to identify what our doctoral alumni are doing, and results are maintained and analyzed by the Graduate Division and reported to the UC Office of the President. Our faculty are generally pleased with the quality of placements for their students.

5.3.4 Undergraduate Retention and Completion Initiatives

For students, advancement from the first to second year and from the second to third year are critical first steps in their ultimate objective to graduate. We closely follow the retention rates for all students during their entire academic careers, but we pay particular attention during these two critical periods. Student retention rates are not improved by singular, isolated efforts or interventions. Rather, improvements are a result of a varied but coordinated effort to address the key reasons why a student may have barriers to success.

With a commitment to the undergraduate first-year student experience, first- to second-year retention rates are a focus. For UC Merced's undergraduate first-year students, initial academic performance positively correlates with degree completion. Analyses [114] conducted by IRDS suggest that students who struggle academically in their first semester are less likely to be enrolled in later academic terms and are subsequently less likely to graduate. A first-semester GPA of 2.0 or higher has also been identified as a key student behavior [115] associated with retention and timely graduation rates. Armed with these data, a series of first-year student initiatives have been or will be launched with student success as the focus. Examples include the following:

- The university's Educational Opportunity Program, known as Fiat Lux Scholars, assists students in gaining the skills to facilitate their success. The program was designed for low income, first generation, and under-represented minority students and includes a residential learning community with peer mentoring, cohort building activities, learning skills workshops, and faculty-student interactions to assist students to gain skills to facilitate their success. Among evidence [114; p. 26] of the program's effectiveness, the one-year retention rates for the fall 2015 entering first-year population were higher for Fiat Lux participants (93.2%) in comparison to Non-Fiat Lux participants with similar high school GPA's (85.2%).

- With limited on-campus housing, the campus is prioritizing on-campus housing for first-year students and Housing and Residence Life, through residentially-based programming, is focusing on building [116] safe, inclusive, and student-centered communities that support academic accomplishments. This strategy is driven by evidence [117] that retention rates, and ultimately graduation rates, are consistently higher for first-time, full-time, first-year students who live on campus their first semester relative to those who live off campus. Historically, about 80% of first-year students live on campus.

- To facilitate the success of first-year students who live off campus, a targeted effort is made to connect these students to their campus peers, thereby building community and facilitating their success. For example, the peer Success Mentor Program (SMP) specifically invites off-campus students to join the program and pairs them with continuing student mentors who were commuter students in their first year. All Success Mentors receive 35 hours of training before the academic year begins and participate in on-going training throughout that year,[63] which includes topics relevant to the commuter student experience (e.g. understanding your mentee, supporting commuter students, taking inventory of your mentee's situation). Commuter students are also the target of directed outreach efforts conducted via email as well as messaging at New Student Orientation.

[63] This training exceeds the requirements of the International Mentoring Training Program Certification (IMTPC) through the College Reading and Learning Association. The SMP is in the second year of certification through IMTPC.

- A number of intervention strategies have been implemented to support students who are struggling academically. For example, through mid-semester grade reporting, students enrolled in lower division courses receive an early alert regarding their performance. Students earning a failing grade at this point are directed to a mandatory workshop focused on successful academic behaviors. UC Merced has also implemented a robust advising intervention plan for students with a first semester GPA below 1.5. Additional intervention strategies (at mid-semester and at semester's end) developed by academic advisors, in partnership with other units on campus, have created resources and support to assist with student retention and success. About one in four new first-year students [118] will complete the first semester with a GPA of 2.00 or lower. About half of those students will move their cumulative GPA from probation (< 2.00) to good academic standing (> 2.00) by the end of the first year.

To further explore how the campus can holistically and systematically support first-year students, in summer 2016, the Office of Undergraduate Education hosted a First Year Student Success Workshop to facilitate cross-campus dialogue in support of first year academic success. Following the workshop, a working group of staff representing the registrar, advising, orientation and undergraduate education drafted a white paper [119] recommending development of a First Year Pathways Cross-Campus Working Group [120] to develop a holistic, integrative new student experience. The group will launch in fall 2017 and will concentrate on articulating clear student learning outcomes for new student transitions, taking inventory of all of the programs that support students' first semester, and making recommendations for new programs that complement existing initiatives.

While first-year success intervention strategies focus on the academic needs of first-time students, additional intervention and support systems have been developed for students in light of data indicating ongoing attrition [10] between the second and the third year. In 2014, the campus's academic advisors initiated Jumpstart Your Third Year (JS3), which requires second-year students to meet with an advisor during the second semester of their second year to develop a graduation plan. Students are also encouraged to consider enrichment activities in support of post-graduation plans. Data collected during these mandatory advising sessions have informed revisions to the academic planning support provided to students, including clarifying the types of resources student should be using to plan their coursework. The campus also continues to strengthen support for degree planning. In February 2017, My Degree Path was implemented, providing students with an easy tool to create a four-year degree completion plan and to evaluate "what-if" scenarios for pursuing different courses of study. Student degree plans filed with this program will also provide the campus with data useful for matching course offerings with demand.

Students who are struggling academically may also be at risk of losing their financial aid eligibility, a particular concern at UC Merced given the number [121] of students receiving need-based financial aid. To address this significant concern, Financial Aid, the Office of Undergraduate Education, Academic Advising, and the Calvin E. Bright Success Center have collaborated to require undergraduate students who have not successfully completed 24 units with a GPA above 2.0 by the end of an academic year to develop an academic recovery plan to have their financial aid reinstated. This intentional effort, which has students identify particular strategies to change behaviors, supports continued student enrollment, with 67% of the students in 2017 returning to good standing within an academic year.

Finally, it is important that we ensure that our own policies and practices are not barriers to student success. In 2014, the Academic Policy Study Group (APSG) was formed to identify policies, practices, and structures that can hinder student success. As a result of examining data, the group has recommended [122] alignment of start-of-term enrollment practices, integration of major and career pathways, and

consistent messaging to students regarding course repeats. The group is also generating reports and recommendations related to course repetition and probation policies. The first report [123] addressed the impacts of unsatisfactory course completion and course repetition on UC Merced undergraduate success. The group's work led to the previously described First Year Student Success Workshop and in turn formation of a student success listserv and website for staff interested in student success resources.

5.4 STUDENT LEARNING AND PERSONAL AND PROFESSIONAL GROWTH

Student learning is the core component of student success. Timely degree completion is less meaningful without robust growth in the knowledge, personal, professional, and the intellectual skills necessary for post-graduation life as a productive, engaged citizen. Toward this end, the university has a commitment to community engagement, leadership development, career exploration, and identity and integrity development. One reflection of this commitment is the university's Carnegie Foundation classification for community engagement. Here, we outline campus efforts that support student learning, through co-curricular initiatives that complement and extend curricular instruction, and that build community and engagement around students' educational goals. While grounded in theory and research, these initiatives are shaped, through planning and assessment, to address the needs particular to our students.

5.4.1 Initiatives to Support Undergraduate Learning

At the undergraduate level, the campus offers a portfolio of programs that (a) support our students' efforts to succeed in their academic endeavors and (b) enrich their student experience beyond the classroom. Offered by the schools as well as the Division of Student Affairs and Office of Undergraduate Education, many of these educational resources are tailored to meet specific needs of particular student populations.

For example, although a very large fraction of our students elect to major in STEM fields, some find that their high school preparation for pursuing such areas of study have left them wanting. Resources such as the STEM Resource Center, the Excel! Program, and the new Math Center provide a set of opportunities for students to address these needs through tutoring, individualized academic coaching, and support for individual math courses, respectively. For students looking to broaden in their involvement in STEM-related communities and experiences in support of academic and professional goals, the STEM Resource Center also helps to connect students to professional societies and research opportunities.

The Calvin E. Bright Success Center, by contrast, offers programs that facilitate student access to the networks of personal and academic support necessary to acclimate to university life and ultimately to complete a degree. The Guardian Scholars Program and the Degree Attainment for Returning and Transfer Scholars (DARTS) programs, for example, provide support specific to foster youth and transfer students. Others like the STEP Scholars Program, Success Mentor Program focus on first-year students, with the former specifically geared toward first generation and low income students. The Center also coordinates the delivery and instruction of University Studies 10, a one credit course for first-year and transfer students that help students develop the personal and intellectual habits that underpin academic success, and offers tutoring through its Peer Assisted Learning Support (PALS) program.

To support the success of our student-athletes, and help them meet the academic requirements laid out in the Student Athlete Handbook [124], UC Merced's Recreation & Athletics Department has established a set of academically oriented requirements. For example, all first-year student athletes are required to enroll in University Studies 10. This course, along with New Student Athlete Orientation, connects student-athletes with academic, career and health resources on campus and introduces them to skills and habits that will

lead to success in college and in life. The department's study table requirement promotes time on learning tasks, while individual and group tutoring are provided through the Student Athlete Learning Assistant (SALA) Program, which conducts over 65 sessions per week. Student-athlete's academic progress is also closely monitored by the Associate Director of Athletics and Student Athlete Services Assistant. A recent analysis [125] suggests that the department's efforts are effective; student athletes are retained at higher rates than other students and are more likely to be in good academic standing.

In addition to supporting our students in their academic pursuits, we very much want to offer avenues to enrich their educational experience. Our intent is to offer a true research university experience to every undergraduate student, most of whom have no first-hand knowledge of what it means to be a research university. Toward this end, the Undergraduate Research Opportunities Center (UROC) was established in the Office of Undergraduate Education, with a mission to encourage and facilitate faculty-mentored undergraduate research projects and creative activities across all schools and academic disciplines. Through its various programs [126], UROC has facilitated the participation of nearly 300 undergraduates in faculty-mentored research experiences. Of the students for whom we have data, 51% have gone on to graduate school [127]. More generally, over a third (37.5%) of the respondents to the 2016 UCUES survey reported engaging in research or a creative project with a faculty member outside of registered coursework. Undergraduate research experiences provide numerous benefits to students, regardless of their future career choices. Students who have the opportunity to engage in research or creative projects develop skills in critical analysis, problem solving, and communication in addition to skills in understanding and applying research methods or creative principles.

Finally, the Division of Student Affairs offers a wide variety of co-curricular programming that supports and enriches student development of divisional and institutional outcomes. As described in essay 3 and in the following section, engaging in work and volunteer activities outside the classroom develops leadership [46], oral communication [44] and teamwork [47] skills.

5.4.2 Undergraduate Personal and Professional Growth

At UC Merced, students have many opportunities to participate in programs that promote leadership and professional development through community engagement, which, in turn, promote personal and professional growth. These programs often involve student employment, thereby promoting student access to opportunities for experiential learning in a population that largely depends upon financial aid and must work to support their education. For example, the Division of Student Affairs' Collaborative Leadership Training educates employees in residence life, in its peer health educators program (H.E.R.O.E.S.), and in other offices, about the Social Change Model of Leadership Development. An intended outcome of the program is for students to be able to define themselves as change agents on campus or in the community more broadly. Similarly, the Student Success Interns program, initiated in 2015 by the Division of Student Affairs and Office of Undergraduate Education, provides students with a compensated opportunity to gain professional experience to support career or graduate school goals through internship experiences that intentionally link academic course work to on-campus projects. In this program, interns work with a mentor-supervisor to complete projects linked to their academic coursework, with a focus on integrative learning. By providing on-campus professional development opportunities, this program also increases the total number of internships available to UC Merced students, given the limits to community partners in the region.

These programs, and others, are supported through centers on campus that address particular aspects of the student experience. The Collaborative Leadership Training program, for example, is offered by the

Margo F. Souza Leadership Center. The Souza Leadership Center is also the home for the Yosemite Leadership Program (YLP), a partnership with Yosemite National Park that provides comprehensive leadership development and internship opportunities within the National Park Service System. The Student Success Internship program, in contrast is facilitated by the Center for Career and Professional Advancement (CCPA), which offers services in career development, experiential education, employment and graduate school. CCPA also partners with the schools to focus on internship experiences for all academic fields of study.

Efforts to assess these programs indicate they are advancing student learning in keeping with intended outcomes. For example, direct and indirect forms of evidence [46] collected over several years, and using several different methods, show that the Collaborative Leadership Training program positively impacts students' understanding of the Social Change Model of Leadership, that their personal definitions of leadership change over time, and that they know how to create positive change. Likewise, students in YLP reported growth [128] in leadership self-efficacy, commitment to civic engagement and volunteerism, the ability to create social change, and the belief that they have grown professionally and personally. The strength of the program was also acknowledged by the Federal Government when it granted the Yosemite National Park Direct Hiring Authority to hire YLP participants and UC Merced graduates directly into their workforce. Finally, evidence [129] collected in the first year of the Student Success Internship program showed measurable gains in achieving learning outcomes specific to the projects established by intern supervisors, which included evidence of growth in integrative learning.

At an institutional level, data from the 2016 UCUES administration suggest that our campus's focus on community and civic engagement and leadership is reflected in our students' dispositions and learning outcomes. For example, over 50% of respondents agreed or strongly agreed that opportunities to engage in community service, develop leadership skills, and connect academic work and community-based experience were important to them. Likewise, nearly 50% of respondents reported participating in community service off campus, and 37% in on-campus community service opportunities; 92% also acknowledged a commitment to community service work after they graduate. Over one in five respondents also reported participating in non-credit bearing internship experiences. Students also reported growth in their leadership capacity, with 50% rating their leadership skills as "very good" or "excellent" at the time the survey was taken, versus 18% when they started at UC Merced. These results

are consistent with campus data[64] indicating that 64% of UC Merced students participate in a campus student organization, and 48% of those hold a positional leadership role (e.g. an officer).

Finally, to better facilitate student access to leadership and community engagement opportunities and to track student learning in support of student success, Student Affairs has reorganized its services [130]. Starting in AY 2017-18, leadership development, community engagement, internship programs and career development will form a single unit, the office of Leadership, Service, and Career, to help students develop a stronger connection between civic and positional leadership roles and to translate those experiences into their careers. A concomitant refocusing in the Office of Student Life will further connect student identity development with campus involvement and sense of integrity. With these transitions, more comprehensive strategies to measure student learning and development will be identified, especially as these experiences are linked to the new General Education requirements.

[64] From information collected through a co-curricular involvement database.

5.4.3 Initiatives to Support Graduate Learning and Personal and Professional Growth

At the graduate level, co-curricular support for student learning and success is provided primarily by the Graduate Division, which offers a series of programs and resources in support of academic and professional success. As described in essay 3, these initiatives are tightly aligned with the faculty's goals for student learning as outlined in program and institutional level learning outcomes, and, as addressed in essay 4, their relevance to student learning and success is being validated by the annual assessment activities of graduate programs. For example, annual program assessment has revealed that professional development opportunities improve student learning alongside coursework and research. In response, programs are seeking ways to increase opportunities to practice oral communication in lower-stakes environments, and encourage students to participate in workshops or certificates offered through Graduate Division and the Center for Engaged Teaching and Learning (CETL).

The number and range of programs available to support students' academic and professional goals has grown considerably since initial accreditation in 2011, particularly with the addition of a full time vice provost and dean for undergraduate education in 2014. In 2015, GEARS (Graduate Enrichment and Advancement Resources and Services) was established to provide professional and personal development opportunities on a range of topics related to publishing, academic and non-academic careers, writing funding proposals, and adjusting to graduate school. Dissertation Boot Camp and the University of California's annual Grad Slam competition are GEARS programs. Boot Camp is an intensive workshop designed to provide dedicated and quiet writing space for students who are looking to jumpstart their dissertation, thesis, or proposal writing process, while Grad Slam encourages students to develop the capacity to present their research concisely to a non-specialty audience and panel of judges.

GEARS programming is regularly evaluated, with the intention of identifying what works and improving experiences, as necessary. For example, survey results from Boot Camp indicated that the week-long intensive format helped students get more writing done than usual – students often write thousands of words and complete whole chapters, drafts, and submissions during the week. Students appreciated the accountability of daily check-ins and check-outs, as well as personalized feedback from writing tutors who are hired to meet with boot camp participants. Students also indicated a desire for similar but less frequent writing support throughout the academic year. In response, the Graduate Division now hosts a weekly two-hour writing session during each semester. A graduate writing tutor helps run each session and also meets with students by appointment to provide feedback and advice on their academic writing. In response to student feedback on other aspects of GEARS programming, the Graduate Division diversified its special topics seminars, adding for example the Women in Computing and Careers in the National Labs seminars. The latter included a mini-conference held at UC Merced, with talks from members of four different national labs in the Bay Area.

Other recent additions to the Graduate Division's support for student success include the pilot Competitive Edge Summer Bridge and the UC Merced GRAD-EXCEL programs. Both programs are designed to promote early success in graduate school by helping students develop a network of peers for academic and social support, increase their awareness of discipline-specific expectations and shared best practices for graduate progress towards degree, and acclimate to UC Merced and the surrounding community. The former program does so through a structured summer experience, and the latter does so through coaching and engagement with a community of advanced doctoral peer mentors. Evidence collected in 2016-17, the pilot year for both programs, indicates that they are achieving their intended outcomes. Surveys of Competitive Edge Summer Bridge students showed that the program helped students address apprehensions about graduate school and initiated the process of writing graduate fellowship applications. Survey results also

indicated that one month was not long enough to help students build a foundation of programming and statistical skills for graduate school. In response, the Graduate Division applied for and received external funds to run the program for two summer months rather than just one in summer 2017. This expanded program includes more time and tutoring for cohort-building and technical-skill-building and will allow students to finish a complete draft of a pre-doctoral fellowship proposal. With respect to the Grad-Excel program, bi-weekly mentor logs reviewed by Graduate Division and Faculty Program Leads allowed the campus to identify and intervene in situations that normally would not be easily addressed. Some examples include referrals to campus resources such as Counseling and Psychological Services (CAPS) and Disability Services, assistance with navigating mentor-mentee and other sensitive issues with faculty, and information about off-campus resources specific to graduate students and their families.

Finally, in 2016, the Graduate Division established a virtual resource center to provide students with on-line resources for writing and statistical analysis to support their research-writing efforts. In addition, a campus-wide course on graduate professional development is planned to engage students more actively in professional development activities like writing a CV, applying to academic positions, and maintaining a web presence.

5.5 STUDENT HEALTH AND WELLBEING

Recognizing that student wellbeing is fundamental to student success, Student Affairs' Health Services has focused on students' health [131]. Recently accredited by the Accreditation Association for Ambulatory Health Care, the H. Rajendy Reddy Student Heath Center, Counseling and Psychological Services, and Health Promotion received high accommodations on every marker. These services are heavily used. For example, over the 2016-2017 academic year, there were on the order of 11,000 Student Health Center patient appointments, and there were over 5,000 visits to Counseling and Psychological Services' six licensed psychologists. Additionally, over 96 hours a month of on-site psychiatry with an additional 160 hours a month of tele-psychiatry appointments were offered. In counseling, the main presenting issues include anxiety and depression, often connected to adjusting to expectations of the university environment in conflict with familial expectations. At UC Merced, Counseling and Psychological Services sees on average 18% of the total student population, compared to a national average of 10%. Graduate students also disproportionally use counseling, accounting for over 15% of the visits, while only representing 7% of our student enrollment. These rates of use are consistent with other UC campuses. As an additional resource, UC Merced has 32 peer educators who work to educate the student population on healthy lifestyle choices, which include nutrition, stress management, healthy relationships, and substance abuse. As the demand for services that meet the physical and mental health needs of students increases, outreach efforts of peer educators provides practical learning experiences for the students involved and prevention models that will assist student success.

Food security is another issue closely tied to students' overall wellbeing and success. In the 2016 UCUES survey, more than 16% of the students reported "often" or "very often" skipping meals or reducing their food allocation because of insufficient funds, and 19% of undergraduates often worried about food security. Issues of food security and homelessness for students have emerged as a campus priority. A food pantry, meal voucher, and grocery gift card program is in place to support students' food needs. UC Merced has also partnered with CropMobster, an organization that works with communities to focus on food waste prevention and resource sharing. Through crowd sourcing and social media, a community network managed by UC Merced students posts alerts on food excess or potential food waste and connects that resource to individuals with food need. Fundraising efforts to supply students with emergency funds that

help meet essential expenses due to temporary or unexpected hardship are also in place. To date, more than $150,000 has been raised to help alleviate this pressure and help students focus on their scholarship.

5.6 TRACKING POST-GRADUATION SUCCESS

As reflected in our definition of student success and in the programming described above, UC Merced is engaged in preparing its graduates for post-graduate life. UC Merced's alumni are still a rather small group and most alumni are under the age of 30. Nonetheless, the institution was recently recognized by the *U.S. News and World Reports* rankings for one of the highest levels of alumni giving, often associated with satisfaction with their educational experience, among public research universities nationally.

Most national alumni career placement data begins 10 years after a student has graduated; UC Merced has not hit that threshold yet, given our first graduating class was in 2009. However, tracking alumni thus far has shown job placement in industry leaders – including Google, YouTube, Tesla Motors, Apple Inc., Boeing, Disney, Peace Corps, Teach for America, and Yosemite National Park – and some alumni are already practicing medicine or law or are in the classroom as certified teachers or assistant professors. Alumni have been admitted to graduate and professional programs in California and throughout the nation. According to data [132] from the National Student Clearinghouse, 31% of UCM students (1,477 students) who have graduated with a baccalaureate degree continued their education. Many alumni also choose to remain at UC Merced for graduate school, making us the largest alumni admissions institution (163 students). These students' choices suggest a high level of satisfaction with their undergraduate education, conclusions consistent with longitudinal alumni survey data [133] for the period 2008-2012.

In preparation for eliciting alumni input on their collegiate experience and its preparation for graduate school or career, Alumni Relations, the Career Center, and assessment staff are developing a survey to be released in summer 2017. This survey is designed to assess student employment outcomes and continuing educational pursuits and to evaluate how these factors are correlated with curricular and co-curricular experiences. The intent is to learn more about UC Merced's impact on student success post-graduation, in an effort to increase opportunities for students to engage in practices that will enhance career and life satisfaction.

5.7 CONCLUSIONS

UC Merced is at an exciting point in history around the promotion of student success. As demonstrated in this essay, the campus has a newly minted definition of student success and a portfolio of programs, resources, and initiatives to support student learning and success that are focused, through planning and assessment, on the needs and interests of our student populations. Despite rapid enrollment growth and annual increases in the percentage of our students who are first generation and Pell Grant recipients, our first-year retention rates for first-year students remain steady, and our graduation rates show improvement over those of early cohorts. At the graduate level, our students are completing degrees at rates on par with national averages. At both the undergraduate and graduate level, our efforts are united around the campus's mission to provide a research university education to historically underserved populations.

Looking forward, student success will remain a priority, particularly as the campus continues to expand its enrollments to 10,000 students. Its centrality to our work is highlighted in the campus vision [5], a map that represents campus consensus on what is most important, and in the deliberate design of the campus's physical expansion to provide interactive learning spaces that engage students, faculty and staff. Its

ongoing student success priority is reflected in it being one of the three foci for workforce planning and in turn the recipient of dedicated career staff positions and budget allocations.

As described in this essay, initiatives are also underway to advance student success. These include Admissions' and IRDS's efforts to develop predictive models, the First Year Pathways Workgroup's plans to strengthen the new student transitional experience – beginning with the development of a new student experience 'road map' – and the reorganization in Student Affairs that aligns unit functions to support student development in leadership, civic responsibility, career readiness, and the understanding of identity through intentional involvement. Finally, the Enrollment Management Committee will integrate into its charge a role in reviewing the contribution of campus initiatives to the campus's goals for student success, thereby strengthening campus-wide coordination, integration, and oversight. We anticipate that these efforts will positively impact retention and graduation rates and student learning, even as we grow, goals that the Enrollment Management Committee will monitor.

ESSAY 6 – QUALITY ASSURANCE AND IMPROVEMENT: PROGRAM REVIEW; ASSESSMENT; USE OF DATA AND EVIDENCE (CFRS 2.4, 2.6, 2.7, 2.10, 4.1-4.7)

As a new campus, UC Merced has endeavored from the very beginning to make quality assurance and improvement a core component of the planning and decision-making culture of our campus. Our success in this regard was highlighted by the WSCUC Commission in its 2011 letter granting initial accreditation, and again by the 2014 Interim Report Committee.[65] In this essay, we articulate our institutional approach to annual and periodic assessment, its relationship to data collection and analysis, and its use in planning and decision-making. For academic programs, the Division of Student Affairs, and non-Student Affairs administrative units, we describe how the basic tools of quality improvement – annual assessment and periodic program review – support planning and decision making at UC Merced. For each area, we also analyze the effectiveness of these practices and the extent to which they are institutionalized. IRDS's capacity and support for these activities is also described. We conclude by identifying areas to strengthen, particularly in light of our ongoing rapid growth and its implications for sustaining and advancing our culture of assessment for improvement.

6.1 INSTITUTIONAL APPROACH TO ASSESSMENT

UC Merced's efforts to assure quality, and to facilitate continuous improvement, are anchored in the coupled annual assessment and periodic review processes expected of campus academic and administrative units. As per policies, all undergraduate programs – including majors, standalone minors and GE, graduate programs, and administrative units – are expected to undergo periodic program review every seven years.[66] Evidence for these comprehensive reviews is expected to include that generated from an annual outcomes-based assessment process.

The campus's assessment processes are overseen and coordinated by the Periodic Review Oversight Committee (PROC), a joint committee of the Senate and administration. In fall 2014, PROC assumed responsibility for oversight of academic program review from the Academic Senate,[67] unifying within a single committee the responsibility for annual and periodic assessment activities for both academic and administrative units.[68] A central purpose was to better integrate academic planning, as engaged by faculty members, with resource allocation, a responsibility of the administration. As part of this transition, the position of PROC Analyst and Program Review Manager was created in OPRAAS.[69] This full-time position was filled in February 2015.

PROC's efforts are supported by two subcommittees: The Committee for the Review of PLO Reports and the Campus Working Group on Assessment (CWGA). The Committee for the Review of PLO Reports facilitates on-going development of academic program assessment activities, as well as institutional learning from the aggregate results of annual program assessment, by providing programs with individualized, rubric-based feedback [134] on their annual assessment efforts and by summarizing, in

[65] The Commission recognized the degree of faculty ownership of assessment as "particularly impressive," and concluded "UC Merced has made remarkable progress in developing assessment processes and diffusing them throughout academic programs and student affairs." In 2014, the Panel noted that the campus had "substantially strengthened and institutionalized its assessment and program review processes and has used the results to make improvements."

[66] In 2016, Student Affairs extended the review period to eight years to accommodate the number of programs to be reviewed.

[67] With this transition the Senate-Administration Council on Assessment and Planning (SACAP, initially founded as SACA) was renamed PROC.

[68] The Senate-Administration Council on Assessment and Planning (SACAP, initially founded as the Senate-Administration Council on Assessment or SACA) oversaw annual and periodic administrative assessment and annual academic assessment, but not periodic academic program review. The latter was overseen by the Program Review Committee of the Academic Senate, with administrative support provided by the Office of the Academic Senate.

[69] Formerly the Office of Institutional Assessment.

reports to PROC [73], emerging assessment and student learning-related strengths or challenges and related recommendations for action, as appropriate. The CWGA, in contrast, focuses on the campus more broadly, supporting development of a culture of evidence-based improvement through capacity-building initiatives, its coordination of campus surveying, and its annual Assessment as Research Symposium. PROC's work is also informed by the annual assessment reports filed jointly by OPRAAS's and the school-based assessment specialists, which examine aspects of campus assessment activities, as well as periodic reviews of academic programs and administrative units. In conducting its work, PROC and its subcommittees are guided by UC Merced's Principles of Assessment [69].

At the level of individual academic programs, assessment is facilitated by the Faculty Assessment Organizer (FAO), which is an administrative appointment with a specific set of responsibilities for which the faculty member receives a modest, annual stipend. At the graduate level, FAO responsibilities are formally held by the graduate group chair. However, in some groups, the Education Policy Committee (or equivalent) facilitates assessment, as per group bylaws. At the undergraduate level, a program's undergraduate chair may hold the FAO role. Alternatively, FAO and undergraduate chair responsibilities may be distributed between two faculty members.

In conducting their work, FAOs and programs are supported by administrative staff with expertise in assessment. In 2011, following recommendations from SACA,[70] UC Merced established a distributed system of assessment support for academic assessment. For undergraduate programs, the system consists of a full-time assessment specialist in each of the three schools. Support for assessment of graduate programs is provided by the Graduate Assessment and WSCUC Substantive Change Coordinator in OPRAAS. Centralized coordination of assessment support, including liaising with PROC, is provided by the director of OPRAAS, who is also the campus's Accreditation Liaison Officer. In supporting programs' annual and periodic program review activities, OPRAAS and school staff collaborate with IRDS and CETL, including CETL's Students Assessing Teaching and Learning (SATAL) program.

The system of support for administrative assessment continues to evolve in response to stakeholder and institutional needs. Currently, the school assessment specialists assist school administrative units with their assessment work. In Student Affairs, capacity building for unit-level assessment is provided by the coordinator for assessment, research, and evaluation in collaboration and the Assessment Team (A-Team). The CWGA has also undertaken efforts to build administrative assessment-related skills and knowledge, developing templates, guidelines, and a glossary and implementing a process to provide units with feedback on their annual assessment reports.

In sum, UC Merced has a deliberate, comprehensive quality assurance system for academic and administrative units that involves academic and administrative leadership at all levels and that facilitates data-informed planning at unit and institutional levels. In the following sections, we analyze the effectiveness of these practices and the extent to which they are institutionalized. We also describe our work to strengthen these systems in support of educational and institutional effectiveness.

6.2 ASSESSMENT OF ACADEMIC PROGRAMS

6.2.1 Annual Student Learning Outcomes Assessment

Since the first annual PLO reports were submitted in January 2010, UC Merced's undergraduate programs,

[70] Senate-Administration Council on Assessment, a precursor committee to PROC.

both majors and standalone minors, and graduate programs have demonstrated high levels of commitment to annual assessment. Each year since 2010, at least 83% [135] of undergraduate programs that were expected to submit a report have (except in 2010-11) for an overall submission rate of 84% (87% if 2010-11 is excluded). For graduate programs, this statistic is 81% [136].[71] Programs are also responding to annual assessment results by identifying actions to improve both student learning and program assessment methods. At the undergraduate level, data collected since AY 2013-14[72] show that annually, on average, 76% of reporting undergraduate programs include actions to improve student learning, and 72%[73] include actions to improve program assessment methods, in their PLO reports. At the graduate level, for reports submitted in AY 2014-14 and 2015-16, greater than 55% and 85% of programs, respectively, took these actions. Graduate programs that did not identify actions to improve student learning cited concerns about sample size or assessment methods, consistent with being in the early stages of initiating assessment. Actions to improve program assessment practices include adopting instruments from Discipline-Based Education Research (e.g. concept inventories), identifying explicit benchmarks for student performance, revising assignments, shifting courses from which student work is collected, revising PLOs and/or rubrics, developing programmatic rather than assignment specific rubrics, broadening faculty involvement, increasing sample sizes, and implementing focus groups.[74] Thus, a substantial majority of both undergraduate and graduate programs are engaging regularly in program-level assessment and are responding to results with an eye toward improvement.

Although annual program assessment is well established at UC Merced, we continue to systematically review program and institutional practices and processes to advance the integration of assessment into campus culture, and we continue to advance access to information to inform teaching, learning, and student success. For example, in fall 2013, PROC recommended to faculty chairs [137] that faculty work in assessment be evaluated in the academic personnel process as part of teaching. In spring 2016, following recommendations from OPRAAS's and the school specialists' assessment report, PROC reemphasized this need, asking the vice provost of the faculty [138] to facilitate campus efforts to address its 2013 recommendation. In 2015, the school assessment specialists also began offering to email "assessment digests," a summary of each program's most recent annual assessment activities, including proposed actions and related rubrics, to all program instructors at the start of the semester for consideration in instructional planning. At the graduate level, assessment digests were circulated for over 85% of programs in the first two years of the effort.

In fall 2016, on a pilot-basis for undergraduate programs, the campus also began to implement the "Guide for Program Stewardship" (GPS), an assessment management and reporting system. This system is intended to simplify assessment reporting for programs, facilitate access to and communication about program-level learning outcome results, rubrics, and student success data, as well as to enable cross-program sharing of assessment reports as desired by programs. For deans, PROC, and the institution, more generally, GPS is intended to provide access to assessment outcomes and student success data, to facilitate workflow related to the review of annual reports and be a database for gathering information describing program assessment practices, including their degree of development, in support of continuous advancement of our practices. In fall 2016, 50% of undergraduate programs invited to pilot the new reporting process volunteered to do so. Broader adoption of the system is pending on progress with the campus's data reporting strategy and on the hire of a new OPRAAS director.

[71] For the period AY 2011-12 to 2015-16. The first graduate PLO reports were submitted in spring 2012 [136].
[72] When the campus began to track this type of information.
[73] 18% of programs (an average of four per year) report being satisfied, and so identify no improvements.
[74] Examples of actions to improve student learning are provided in essay 4.

Collectively, our efforts are to (1) connect program assessment to the faculty personnel process, (2) simplify assessment reporting to free up time for collaboratively reviewing student work and acting on results, and (3) advance instructor access to assessment-related information in support of instructional and program planning. These efforts address a number of the assessment-related recommendations that emerged from the 2016 Report of the Committee for the Review of PLO Reports [73] and the 2016 periodic review of OPRAAS [139]. In spring 2017, with the goals of strengthening assessment's connections to school-level planning, PROC also invited [140] school executive committees (school-level faculty leadership) to consider their role in the annual assessment workflow and in broadening awareness of program practices and outcomes.

6.2.2 Academic Program Review

Consistent with the Commission's 2011 recommendations, we have continued to implement academic program review and to strengthen the process along the way. In AY 2016-17, the first seven-year cycle of undergraduate program review concluded with reviews completed [141] for 76% (16/21) of the programs initially scheduled for review in 2009-10. All of these programs have been scheduled [60] for their next reviews. The remaining reviews [141] are on target to be completed in AY 2017-18.[75] At the graduate level, 13[76] programs stemming from seven IGP emphases have successfully undergone review for standalone status, thereby completing their first reviews as per Graduate Council policy.[77] All have been scheduled [60] for program review.

The campus has also completed its first program review of a graduate program. In fall 2016, the review of the Environmental Systems (ES) program [65] was closed. This first review of a graduate program has been productive. Outcomes for the program included a new student handbook, a re-established and strengthened charge for the program's Advising Committee, and a substantially revised curriculum that originated in a re-examination of the program's learning outcomes. For this cross-school, interdisciplinary program, the review also led to improvements to school staff support for the program's students. Attention has also been paid to the process by which teaching assistantships are allocated to ensure student access to this important means of support. The review process itself will also benefit. The program review policy is currently being revised to ensure that student and program success metrics align with campus priorities for raising the profile of our graduate programs and that processes are put in place to ensure these data are available. Revisions are also being made that will enable simultaneous review of undergraduate and graduate programs, as appropriate, to support integrative resource planning.

Student learning is a focus of all program reviews, as reflected by the requirement[78] that each review team include a member with expertise in student outcomes assessment. In our interim report, we reported that 100% of program review self-studies explicitly considered the program's learning outcome assessments, including findings, and 100% of external review team reports addressed the program's assessment efforts. Since then, 16 additional self-studies have been developed and 15 additional external review team reports have been received, all of which explicitly address the program's work to assess and improve student learning outcomes.

[75] With the exception of Mechanical Engineering, an ABET-accredited program for which the review team failed to produce a report. ME, however, was successfully ABET accredited shortly thereafter and, thus, has been subject to a robust external review process.
[76] Includes Economics and Public Health to be implemented in fall 2017.
[77] As per Graduate Council policy, for programs emerging from an IGP emphasis (all thus far), the first program review is for standalone status.
[78] Undergraduate only.

As intended by the program review process, program self-studies and recommendations from external review teams form the basis for program action plans to advance faculty goals for student learning and success, and the assessment thereof. Following their action plans, undergraduate programs have variously added discussion sections to lower division courses (Chemistry, Psychology), revised program requirements to better prepare students (Computer Science and Engineering, Management and Business Economics), and redesigned curriculum or established honors programs (GE, Psychology). Program reviews also lead to strengthened program assessment practices. For example, programs have revised PLOs and associated assessment criteria – to more clearly specify learning expectations and to identify appropriate assessment instruments (e.g. papers, Anthropology). They have also improved the alignment of CLOs and curriculum with PLOs (History), and have committed to ensuring assessment results are communicated to lecturing faculty (Psychology). To facilitate ongoing assessment, policy also requires that a program's response to program review include a revised multi-year assessment plan. PROC is also intent on ensuring that program action plans are realized. As per the program review policy [62] adopted in January 2016, programs and deans will need to provide independent evaluations of program progress on the action plan annually to PROC. PROC, in turn, will be expected to provide its evaluation of the program's progress when acknowledging receipt.

The review process itself has been a focus of continuous improvement. The goal has been to increase the efficacy of the process as a planning tool for programs and the campus. In support of this goal, the undergraduate policy has been revised twice since initial accreditation. Revisions adopted in May 2014 shifted oversight of academic program review from the Program Review Committee of the Academic Senate to PROC and shifted administration of the process from the Office of the Academic Senate to OPRAAS. The intention was (1) to strengthen connections between program planning, a faculty responsibility, and the institutionally-aligned allocation of resources, an administrative one, and (2) to increase administrative support for the review process so that programs could successfully meet expectations for the review with an appropriate investment of time and resources so that reviews would proceed on schedule and so that the process would be subject to continuous improvement. Evidence [142] suggests that this transition is having the desired impact.

The revisions adopted in January 2016 were designed to improve further alignment of the policy with PROC's charge and institutional and program needs. New emphasis, and more specific guidance, was provided to ensure (1) institutional priorities relevant to the review are communicated to the program and to the review team; (2) the review team is prepared to execute its charge in an informed and timely fashion; (3) the outcome of program review is an action plan for the program outlining a strategic direction, related actions, and a timeline, for the period leading up to the next program review, together with the resource commitments needed to realize those plans; and (4) the program, school dean, and PROC examine annually the program's progress on its action plan. The policy was also reorganized and templates were developed to provide programs, PROC, and the external review team with explicit, easy-to-find instructions and guidance for each stage of the review process.

6.3 ASSESSMENT IN STUDENT AFFAIRS

Since 2009, when the Division of Student Affairs began earnestly assessing programs and services, the emphasis has remained on improving annual assessment practices at the unit level, conducting meaningful and transparent program reviews, and building staff assessment capacity.

6.3.1 Annual Assessment

The Division of Student Affairs currently requires each unit to submit an annual report to the vice

chancellor. This report includes assessment highlights [143]. The full assessment report and assessment plan are appended [144]. In 2015 and 2016, 100% and 94% of Student Affairs' units submitted assessment reports, respectively.

Since 2014, the Student Affairs Assessment Team, or A-Team, has expanded to reflect divisional organizational changes. The reconfigured A-Team includes staff from Enrollment Management, Campus Life, Wellness, Auxiliaries, and Educational Partnerships. With additional participation and renewed momentum, the A-Team revisited the annual reporting template used since 2010, in part to reinstitute the self-scoring component that was not being fully implemented. To support staff in this transition, the A-Team presented a workshop [145] outlining the expectations, sharing the streamlined self-assessment rubric [146], and the A-Team continues to provide coaching to staff.

After reviewing the assessment reports and plans from 2014-2015, the A-Team determined that focusing on dissemination of information might yield more participation and interest in assessment activities. Thus, in June 2015, the coordinator of assessment created the Assessment Brief [147] to share assessment findings and survey results in an accessible format.

6.3.2 Annual Assessment – Division Level

In AY 2014-15, Student Affairs initiated systematic assessment of the divisional student learning outcomes. Conceived and adopted in 2006, these seven student learning outcomes [29; SLO] represent a commitment to our students: *if you engage in meaningful co-curricular involvement at UCM, you will have opportunities to master these learning outcomes before you graduate*.

After some experimentation, we determined units were not systematically assessing our divisional SLOs, thus a centralized approach was instituted in 2014. Three staff teams piloted the first orchestrated assessment of Effective Communication. Findings were shared in assessment reports, at the institutional Assessment Symposium, and at divisional leadership meetings. Eventually, these findings about student gains in communication skills were disseminated through the initial two Assessment Briefs [147].

In AY 2015-16, the centralized assessment focused on the SLOs Teamwork and Leadership, with significantly more staff participation. Nine programs assessed teamwork while four units measured leadership development. While some initial results were published in an Assessment Brief, units submitted their centralized SLO assessments as part of their unit's annual assessment report.

For AY 2016-17, the SLO addressing the appreciation of human differences was selected, and a larger steering committee was appointed by the VCSA, co-chaired by two coordinator-level staff. Their committee charge [148] included updating the language and definition, then determining an assessment strategy for this complex learning outcome. The steering committee selected a longer time frame to explore this SLO, first updating the language, then planning to conduct smaller assessments in addition to utilizing institutional campus climate results collected during the spring semester (2016 and 2018) administrations of the UCUES survey.

6.3.3 Periodic Review in Student Affairs

Since 2009, the Division of Student Affairs has participated in rigorous program review, conducted in the spirit of learning and improvement. The Program Review Guidelines [149] are available on the webpage to maintain a transparent process. The program review cycle [150], originally proposed to be seven years, was

expanded to eight encompassing a total of 18 units, and restarting in summer, 2017. Aside from updates reflecting organizational and institutional changes, the most significant difference in the updated guidelines impacts the last phase of the process. When we adapted our Program Review Guidelines from UCLA's, we reduced the scope of the final document to what we referred to as the "Departmental Response," which allowed units to merely respond to the external report, and reach closure on the process. As we gained more experience with the proven worth of the program review process, we were able to replace this reactionary response with a more robust and strategic Action Plan [151], which now synthesizes the recommendations into a grid diagramming the short- and long-term goals necessary to achieve the recommended improvements and facilitates ongoing monitoring of progress toward those goals.

The program review process has yielded larger insights and, after eight years, we see some trends emerging. A prevalent recommendation [152] encourages units to communicate more with all constituencies. Additionally, updating unit mission statements was another common recommendation as units (and UCM) have morphed since statements were conceived. The recent reports focus more on the efficacy of the units and less on their impact on student learning as well as indicate commonalities in our need to think more strategically and institutionally at the unit level and to develop collaborative relationships across campus, outside the division. We attribute this to the startup of programs and services initially and the continued pressures of consistent growth in our student population. While we anticipate this pattern to continue as the campus embarks on this unprecedented period of growth until 2020, staff participation in recent institutional visioning process [5] and a new focus on campus partnerships will help the division be more institutionally-minded and better serve our growing campus.

6.4 ASSESSMENT OF ADMINISTRATIVE UNITS (NON-STUDENT AFFAIRS)

6.4.1 Annual Assessment

The expectation that all administrative units engage in annual assessment is articulated in the Policy for the Annual Assessment and Periodic Review of Administrative Units [153]. Adopted in 2011 in response to recommendations from UC Merced's Capacity and Preparatory Review for initial accreditation, the policy is designed to facilitate continuous improvement, transparency, and accountability while enabling units to adopt approaches to assessment consistent with their professional cultures. As such, the policy is an umbrella policy; it establishes the minimum requirements for a coupled annual assessment and periodic review process, but it does not proscribe the details of either process.

Since annual reporting commenced in 2012, report submission rates have been generally low. This contrasts with the comparatively good record of conducting periodic reviews of administrative units (see next section). Two factors primarily explain these low rates. First, as part of the campus's maturation, several of our major administrative divisions[79] have undergone substantial reorganizations over the period since the policy was implemented. In this context, annual assessment was not a reasonable expectation given that unit staff members must reconceive unit visions, missions, and goals as a foundation for assessment. Second, as described in this 2016 Assessment Report [154], the policy was implemented without due consideration to resourcing and capacity building. For units that have not been impacted by divisional reorganizations (n=15), the overall reporting rate between AY 2012-13 and AY 2016-17 has been 31% (20/64[80]). For units where academic assessment staff have been able to facilitate capacity building (n=6), the reporting rate has been 80% (16/20). Since the 2016 Assessment Report, a number of actions [155] have been taken to build campus capacity for administrative assessment.

[79] E.g. IT, Business and Administrative Services, Planning and Budget, and Research and Economic Development.
[80] This is the number of reports received of those expected. Annual reports are not expected from units in periodic review or reorganization.

Despite this context, administrative units across the institution have been engaged in assessment-driven improvement. For example, over the years, the Library [48] has confirmed the value of its services and identified additional user needs and actions to address these needs. The SSHA Academic Personnel Office [156] has systematically advanced its support for faculty hiring, review, and promotion processes, and SSHA instructional services have been improving student response rates for online course evaluations. More recently, the experimental Administrative Coordination Team (ACT) has been using data [157] generated by the Service Now platform to identify bottlenecks in workflow and to improve the quality of its service delivery in relation to performance goals. As the use of Service Now expands on campus, this kind of data-informed process improvement is expected to grow. With support and guidance of the Business and Strategic Initiatives unit, the university is also gathering data to support planning and manage change – for example, as new work space configurations [158] are adopted by the campus. A number of units, including Business and Administrative Services, ACT, Transportation and Parking Services, and the administrations of the School of Natural Sciences and Engineering, also have surveys in place to gather stakeholder perceptions on the quality of unit services and related needs to complement data on process outcomes.

6.4.2 Periodic Review

As described in UC Merced's policy [153] governing administrative review, all administrative units are expected to undergo periodic review on a seven-year cycle for the purposes of maintaining a focus on contribution, quality, and improvement and of supporting transparency and accountability. Much like its academic equivalent, the review [153; pp. 4-5] involves development of a self-study, a site visit by a review team and, ultimately, an implementation plan. Beyond what is required by the umbrella policy, the details of the process are undefined, and a school or division may develop its own periodic review process. The periodic review schedule [159], which is maintained by PROC, lists the fundamental units of review as identified by school and divisional leadership.

Since administrative periodic review was initiated in AY 2012-13, 15 units [160] have undergone review as guided by policy or are currently in the process of review. Another five units [160] have undergone external reviews that have not included all the steps outlined by policy, but which have led to re-organizations and revisions to practices and processes. Examples of how units have responded to the findings of periodic review include reorganizing staff functions, revisiting policies, hiring consultants to support organizational development, and sharing review findings with higher levels of campus leadership to inform decision making. A number of units have also been created, have undergone major leadership changes, and/or have reorganized substantially in response to campus needs (e.g. the demands of the 2020 Project) and growth. As per policy, PROC has scheduled or rescheduled these units for review. Including these units, as well as the five mentioned previously, a total of 23 units are scheduled [159] to undergo review by the end of 2020-21. Example periodic reviews, including self-studies, team reports, and implementation plans, are here [161].

As noted previously, the expectation for administrative assessment was implemented with insufficient consideration of the resources needed to support the campus's activities in this area. This support includes dedicated administrative support to track and guide unit progress with periodic review. The addition of a full time PROC analyst in spring 2015 substantially strengthened the capacity for facilitating progress, including completion of these reviews, a responsibility which had previously belong to the Director of OPRAAS alone. Extra support has also enabled development of additional resources, including templates, to provide guidance otherwise not provided by the umbrella policy. These are substantial developments that will continue to increase timeliness and positive impact of reviews.

Experience with the review process is also revealing clear avenues for increasing the effectiveness of periodic review. Areas for particular focus include continuing to strengthen the preparation and guidance provided to external review teams, as well as ensuring that self-studies include a body of evidence demonstrating unit successes, and areas for attention, as generated through annual assessment. As reinforced in an ad-hoc committee's report to PROC [162] regarding the periodic review process, a unit's candid and evidence-based evaluation of its own effectiveness is critical to the team's overall assessment of the unit's performance and to the validity of review more generally. Finally, building on expertise in UC Merced's Business and Financial Strategic Initiatives unit, the integration of organizational diagnosis, and support for organizational health, into the periodic review process is being considered as it addresses organizational behavior to support organizational goals and, in doing so, offers a critical lens on unit effectiveness. This is particularly important at a growing university where effective change management is essential to success.

6.5 INSTITUTIONAL RESEARCH AND DECISION SUPPORT (IRDS)

UC Merced's Office of Institutional Research & Decision Support (IRDS) provides ongoing support for campus planning and decision making to help advance the educational mission and effectiveness of the institution. IRDS is located organizationally in the Division of Budget and Planning with a staff of four analysts and a new director. The IRDS analysts provide the campus with the following services:

- Monitoring campus goals and performance metrics.
- Integrating and analyzing campus and external data sources.
- Enhancing institutional effectiveness by making information and analysis widely available to the campus community.
- Complying with Federal, State, Regional Accreditation and UC System reporting requirements.
- Serving as the primary source for official campus statistics.
- Providing research methods and statistical consultation and support to campus units and committees.
- Providing a suite of survey development, administration and management services.
- Conducting advanced statistical analyses including predictive modeling.

6.5.1 IRDS Institutional Support for Planning and Decision Making

IRDS supports decision making and planning in the following ways: through active participation on campus committees and campus and UC system initiatives, by providing direct and ongoing analytical support to decision makers at all levels of the institution, and by making the institution's data and their services available on an ad hoc basis to the campus and the public. While the unit has conducted analyses in areas of key concern to the institution, IRDS has had varied success at communicating the results of that work in a way that contributes to institutional improvements.

IRDS sits on multiple committees to provide consultation on available data and to produce analyses in support of committee initiatives. The range of involvement includes the Periodic Review and Oversight Committee (PROC), Campus Work Group on Assessment (CWGA), the Enrollment Management Committee (EMC), the Data Operations Stewardship Council (DOSC), the Data Governance Council (DGC), and the Academic Policy Study Group (APSG). The IRDS Director is also the interim chair of the Survey Coordination Committee.

One area, the Campus Planning Model [163] has seen a successful use of IRDS analytics. The sophisticated model integrates a range of data points – including applicant and enrolled student data, student demographics, staff and faculty counts, financials including revenues and expenditures, as well as space (e.g. classroom, lab, residence hall) information. The model evolved from a long-range enrollment planning tool to become a comprehensive planning tool for the campus and the 2020 Project. Another area where we see direct use of IRDS outputs is academic program review. IRDS has provided data for this core assessment activity since the campus opened in 2005. Information provided to programs undergoing review includes student academic preparation at entry (High School GPA & SAT/ACT scores), demographic data (gender, ethnicity/race, first generation, Pell Grant eligible), enrollment trends, student GPA at UC Merced, retention and graduation rates, and survey data describing the student experience and student satisfaction.

Undergraduate student success is an area of investigation that, given its scope and complexity, has proven to be a challenge for the office to deliver clear actionable information. IRDS analysts have conducted myriad analyses to further the institution's understanding in this area, including the impact of admissions variables – (H.S. GPA, SAT scores, etc.), student demographics (gender, ethnicity/race, first generation, Pell Grant eligible), and academic activity (GPA, units taken, major declaration) – on retention and graduation. While the majority of these studies are circulated on campus or posted on the office's public website, the format is academic and thorough. To improve the usability of this work, IRDS is developing a series of research briefs that summarize information on key research findings designed to reach a non-technical audience. Another area for improvement is in the way data display on the website, which are static and do not allow users to easily probe the data for trends. The office is beginning the work to replace those with Tableau displays that allow the user to customize the results.

6.5.2 Data Collection in Support of Reporting

IRDS supports a wide range of survey activity on campus. IRDS administers most of the required full population surveys of students, faculty, and staff for the institution or for the UC System when campus-level administration is needed. The IRDS survey administration calendar [164] lists 20+ surveys that can be occurring throughout the year.

When UC Merced opened in 2005, there was no data infrastructure to handle official or ad hoc reporting for the campus. IRDS built an enrollment data mart, the campus's first integrated, relational data warehouse deliverable that pulls and integrates data from across the Banner student information system and from across employee data from the HR system. IRDS also created an integrated data set for Student Success (graduation and retention cohorts integrated with student demographics and enrollment data) using SPSS as well as developed a faculty workload and instructional activity reporting data set. IRDS has led the campus in designing and storing snapshot data (Census and End of Term) in various databases maintained by IT for use in campus reporting.

While these efforts have successfully provided the office with integrated snapshot data for key institutional and ad hoc reporting, the campus need for self-serve access to basic descriptive and trend data has outgrown the unit's capacity to deliver. As occurs in many higher education institutions, and following the recommendation of an external review team, the data warehouse effort that began in the IRDS office was moved to the Data Services department in Information Technology (IT) where resources would be provided to support development and system maintenance. This transition occurred in late 2016.

The new IRDS director[81] was asked to be a partner with the Data Services manager in developing Project ENABLE [165] – a broad campus-wide initiative to re-architect and rationalize campus-wide data services and reporting infrastructure. The work will be done under the oversight of the Data Operations Stewardship Council (DOSC) and the Data Governance Council (DGC), the two bodies [166] responsible for data operations and governance on campus.

6.5.3 Data Access and Dissemination to Campus Stakeholders

While IRDS provides information to campus requestors and to the public, the demand for greater access to information is significant. In response to findings from two reviews of the IRDS unit and from team observations on areas for growth, IRDS has been working to develop reporting solutions that improve the usability of the data for decision-makers and that further the overall vision of a Campus BI solution.

IRDS publishes and distributes non-sensitive information via their public website. Excel dashboards are used, such as the new student enrollment dashboard, to provide stakeholders with the latest information during key decision-making cycles. Access to data in the IRDS Enrollment Data Mart is gained through the COGNOS reporting tool. Canned reports were created for campus users, and IRDS ran trainings to teach "power users" how to query the data directly. IRDS led the initiative to buy a Qualtrics site license to support administration of surveys and improve access to survey data. IRDS trains campus users on how to administer their own surveys via Qualtrics and how to generate and use reports of their survey results from within the tool. More recently, IRDS has developed expertise in the Tableau reporting and data visualization tool. Tableau has been used to develop user-friendly interfaces to data sets that promote self-service analytics. IRDS is in the process of converting the Campus Planning Model from Excel to an IBM software package called TM1, which will automate the maintenance of the model, add complexity, and present a reporting front that will promote scenario building by stakeholders.

6.5.4 Periodic Review of IRDS

IRDS has undergone two reviews in the last 5 years (CFR 4.2). The first review in 2014 was part of the UC Merced internal assessment process for administrative units. The unit was also reviewed by an outside consultant (Deloitte) in 2015-16. These two reviews [167] offered the following recommendations:

- Improve communications with campus stakeholders.
- Develop strategies for prioritizing projects.
- Develop a vision for the data warehouse project to provide direction for its development.
- Create a "one-stop shopping" for basic descriptive data.
- Move the data warehouse and three information technology staff FTE from IRDS to IT.
- Focus IRDS on development of campus key performance indicators (KPI) and predictive analytics.

In response to these recommendations, IRDS is engaged in improving access to data for end-users via its full commitment to the planning, development, and implementation of the Project ENABLE/Campus BI [165] project. Starting in the spring of 2017, the office implemented a work tracking system to better prioritize assignments and work with key stakeholders to plan longer-term research projects. IRDS has launched multiple projects focused on improving the usability of work products (e.g. Tableau, TM1, non-technical research summary briefs, etc.) in an effort to better communicate their research findings. The office continues to work on predictive analytics with two models underway, one for use in the admissions cycle and another focused on enrollment and student success.

[81] Assumed the role in March 2017.

6.6 CONCLUSIONS

As this essay demonstrates, UC Merced has in place a robust, comprehensive framework for quality assurance and continuous improvement that extends to all aspects of campus function. It is grounded in a set of campus-wide principles [69] and stewarded by a broadly representative senate-administrative committee in PROC. It involves increasingly effective academic and administrative annual assessment and periodic review processes. The data reporting structures to support this work also continue to strengthen. The recent hiring of a new directors in IRDS and the Office of Information Technology Data Services, together with Project Enable, will significantly advance our capacity in this regard. Further, our quality assurance system is the subject of systematic continuous improvement itself, enabling us to routinely examine and advance the extent to which our practices and processes support institutional goals and priorities.

Throughout this essay, we described improvements we have already made to these processes. Looking forward, there are a number of areas for continued development as the campus adds approximately 100 new faculty, 125 new staff, and several thousand students, and as we transition to academic departmental structures and reorganize staff support as an outcome of work force planning. It will be important for the campus, under PROC's guidance, to continue to assess and strengthen the integration of annual assessment into institutional planning processes and culture. From an institutional perspective that means acculturating new faculty and staff to our processes and practices of goal-oriented, data-informed decision making, and connecting these processes to redesigned planning processes, such as the anticipated annual process for integrative space, workforce and budget planning [8]. From an academic perspective, this will advance UC Merced's long term goal of making the findings of program-level learning outcomes assessment an indispensable line of evidence in regular program-level planning and decision making.

Relatedly, and building from existing capacity and interest [154] and existing efforts [155], PROC will want to consider how to best support annual administrative assessment to help units, their clients, and the campus more broadly realize its benefits, including in terms of the increased efficacy of the periodic review process that comes from providing units and external review teams with evidence of unit performance. Finally, PROC will also want to renew efforts to extend the benefits of individual program and unit annual and periodic assessment activities to the campus as whole by identifying, disseminating, and facilitating actions in response to, trends that emerge from the aggregate consideration of assessment findings. This includes student learning needs in relation to, for example, campus aspirations for student achievement (e.g. the Hallmarks) and the WSCUC Core Competencies. Our academic and administrative assessment policies[82] specifically call for reporting these types of trends, and the analytic support afforded by a full time Program Review Manager, and the adoption of GPS will make it possible. These are important next steps, and we have in place the organizational infrastructure, experience, expertise and commitment to ensure these plans are realized.

[82] See Section 11, p. 20 of the Undergraduate Program Review Policies and Procedures [62].

ESSAY 7 – SUSTAINABILITY: FINANCIAL VIABILITY; PREPARING FOR THE CHANGING HIGHER EDUCATION ENVIRONMENT (CFRS 3.4, 3.7, 4.1, 4.3-4.7)

UC Merced's overarching approach to its long-term financial viability is founded on continuing its collaboration with the University of California Office of the President, strategic resource decision making connected to its teaching, research and public service mission, and modern processes to enable informed decision making in the face of new challenges or opportunities.

1. The current financial position of the campus reflects a commitment by the State of California and the University of California to increase access to the UC system for eligible state students and to support a rapidly growing region. The combination of a Memorandum of Understanding (MOU) [104] between the campus and the University of California Office of the President as well as the maturation of UC Merced's budget and capital development process is designed to put the campus on a firm, predictable footing.

2. To fulfill UC Merced's goals for student success, the decision-making framework for UC Merced's resources has been structured to advance academic, student achievement and administrative goals developed through a campus-wide vision summit in 2016 through which a vision and change alignment map [5] were developed. A critical outcome of the effort is this framework for evaluating resource allocations among competing priorities.

3. The campus has also considered its best approach for adapting to state, national, and global trends in higher education. A new budget model is being developed as part of UC Merced's integrated planning process to incentivize actions to achieve its academic mission while being flexible to capture emerging opportunities. This approach enables UC Merced to evaluate and adjust to future changes that may affect the institution.

7.1 FINANCIAL POSITION

In its July 5, 2011 letter (p.2) granting Initial Accreditation, the Commission concluded that campus leadership has worked very effectively with the University of California Office of the President (UCOP) to develop a multi-year financial plan MOU [168] that supports the continued development of the campus. The Commission recognized the campus would need to balance enrollment targets, new construction, new academic programs, and to hire against fiscal constraints for the foreseeable future. The Commission also noted that creativity, flexibility, and careful planning at all levels, as well as a formal network among various planning efforts, would be needed to ensure orderly, sustainable growth.

In light of these needs, the Commission asked that our Interim Report include an update on the status of the MOU with the Office of the President, current and projected enrollments, and a description of the impact of the passage of Proposition 30 on the university's finances. We were also asked to provide a link to publicly available budgetary information about UC Merced, and to address the campus's financial sustainability in either narrative format and/or projected budgets.

In its July 17, 2014 letter, the Interim Report Committee noted that "Under difficult financial conditions during the shift to state disinvestment in public education, UC Merced has made remarkable progress. The MOU with the UC Office of the President ensures continued special funding of Merced through 2020. UC Merced's Capital Plan recognized the need to pursue alternative methods to deliver capital projects and the panel was impressed by how UC Merced has approaches its growth plans – with analysis and careful

consideration of funding options to maximize use of limited resources." Our financial position continues to strengthen from its inception as demonstrated by the growth in net assets [169] over the last five years.

Since 2014, the campus has continued to make progress toward the establishment of practices that simultaneously utilize information about its current financial position and long-range financial planning forecasts to align campus resources toward its long-term vision. At UC Merced, we are proud of the investments we make in our sustainable culture, from the way we invest in our physical facilities to our educational programs and research. Our vision [5] includes being sustainable by design. In doing so, we can continue our leadership, from an academic and operating perspective, as a living laboratory for sustainable environmental systems. In this and in so many other areas, we will always strive for academic distinction and enduring quality in our teaching, research, and public service from our location in California's rapidly growing, ethnically diverse San Joaquin Valley.

To be sustainable, our institution must be financially viable over the long term. We must build flexibility into our planning and operating systems in a manner that enables us to continue to respond to the changing higher education environment. There are five ways in which the campus is establishing a framework for long-term financial viability:

1. A financial MOU [104] with the Office of the President through 2020.
2. Completion of the second phase of the physical development of the UC Merced campus through the 2020 Project [3].
3. Long-range financial analysis [163] that assisted the campus in developing the finance plan for the 2020 Project and can help guide year-to-year campus financial planning and decision making.
4. Initiatives to update campus budget practices from those utilized at the founding of the campus to reflect a more mature higher education institution.
5. Consideration of long-term budget models that empower campus leaders to achieve goals and objectives that move us closer toward our vision and maintain institutional flexibility to adapt to the changing higher education environment.

7.2 FINANCIAL MOU WITH THE OFFICE OF THE PRESIDENT THROUGH 2020

A memorandum of understanding (Original MOU, [168]) with the Office of the President was enacted in July 2010, during a time of significant fiscal stress within the State of California. At the time the Original MOU was signed, appropriations from the State of California general fund to the University of California had fallen from $3.26 billion in FY 2007-08 to $2.59 billion in FY 2009-10, a $666 million reduction in only two years.[83] The civilian unemployment rate had climbed from 5.7% in July 2007 to a staggering 12.7% in July 2010.[84] In the face of a sobering fiscal backdrop, the Office of the President committed to ensuring appropriations to UC Merced sufficient for it to continue to grow enrollment at an average rate of 600 students per year and to achieve financial sustainability.

The MOU helped ensure consistent growth of core funds for UC Merced during the period of significant financial distress. Core funds provide funding for core mission and support activities, including faculty salaries and benefits, academic and administrative support, student services, operation and maintenance of physical plant, and student financial aid. The State of California provides appropriations to the University of California, which are allocated to each campus through the Office of the President. Tuition

[83] State of California. Edmund G. Brown Jr. Governor, State of California. Governor's Budget Summary 2014-15. Page 35. http://www.ebudget.ca.gov/2014-15/pdf/BudgetSummary/FullBudgetSummary.pdf.
[84] State of California. Employment Development Department. Labor Market Information Division. Industry Employment and Labor Force. March 2012 Benchmark. http://www.calmis.ca.gov/file/indhist/cal$hws.xls.

and fees generated by each campus also support each campus's budget.

Chancellor Dorothy Leland became UC Merced's third chancellor in 2011, and she immediately recognized the important role that the UC Board of Regents played to support its youngest campus. Addressing the board of regents early in her tenure, she said, "Even as it faced daunting fiscal hurdles, the UC refused to abandon one of the most impoverished regions of the state and, indeed, of the entire nation. You continued to recognize the enormous benefits to individuals, families, communities and the state in providing a UC quality education to deserving and underserved students, many of whom are first-generation minority students from financially stressed families. And you understood the significant future impacts of our research enterprise on the economic prosperity of our region and state."

In order to address the near-term financial support that the campus would require to continue to grow, Chancellor Leland signed a second memorandum of understanding (Successor MOU; [104]) with the Office of the President in early 2014 to ensure sustainability.

The Successor MOU recognized that UC Merced must meet three challenges:

- To mature as a research university in the same intellectual class as the other UC campuses, which will require focused attention and investment in graduate programs and the research enterprise.
- To continue to play an important role in fulfilling the UC's Master Plan commitment to find a place for every eligible student.
- To preserve the unique academic and cultural character of a campus intentionally placed in California's San Joaquin Valley.

The Successor MOU was structured to help UC Merced address these challenges as it continued to increase enrollment to approximately 10,000 students by 2020. To accomplish this goal, funding was provided to support enrollment growth, to fund new ladder-rank facility hires, and to support the physical development of the campus through the 2020 Project.

7.3 COMPLETION OF THE SECOND PHASE OF THE PHYSICAL DEVELOPMENT OF THE CAMPUS

The 2020 Project [3] includes 1.2 million gross square feet of critically needed academic and student life facilities. This will roughly double the physical capacity of the campus and will provide a way for UC Merced to address existing academic and student life needs and enable enrollment growth. Construction of the $1.3 billion dollar project began in October 2016 and will be complete by fall 2020.

The project delivery strategy incorporates global best practices that are rapidly being incorporated into procurement processes in the United States. It combines the proven method of design-build delivery of facilities with long-term operations and maintenance obligations that create the incentive to deliver high-quality facilities designed with lifecycle operating and maintenance costs in mind. The availability payment concession contract that was approved by the board of regents provides for elements of the design, construction, financing, operations, and maintenance. This methodology is noteworthy for its ability to deliver facilities faster, to provide budgetary certainty over multiple decades, and to minimize the financial burden typically created by deferred maintenance.

Within the budget constraints established by the regents, the contracting methodology enabled the campus to build what it could afford to maintain because the facilities will be designed and constructed with a preventative capital maintenance program built into the contract – in a manner designed to ensure that facilities achieve performance standards over the life of the contract.

The project will be the first in the UC system to use a single private development team for a multi-year, multi-building project of this scope. The project is also the first availability payment concession contract in the higher education market in the United States, and it is the largest social infrastructure public-private partnership completed in the United States. The physical growth of the campus will enable UC Merced not only to reach the targeted enrollment of 10,000 but also to be in a position of financial sustainability, as the current financial model reflects.

7.4 LONG-RANGE FINANCIAL ANALYSIS TO GUIDE FINANCIAL PLANNING AND DECISION MAKING

The campus developed a pro forma financial analysis [163] that incorporates assumptions about the financial resources and expenditures of the campus over time, including both operating and capital components. The campus utilized this model to develop the finance plan for the 2020 Project and publicly presented it to the board of regents throughout the project development process. These discussions include a presentation [170] and memorandum [171] in July 2015, a campus overview [172] to the Board of Regents Finance Committee, and final approval of the 2020 Project [173] in July 2016.

7.4.1 2014 MOU Assumptions in the Financial Model

The pro forma financial analysis [163] shows that the campus has structured its financial model based on the financial capacity envisioned by a 2014 MOU between the campus and the Office of the President. These assumptions include:

- An addition to the UC Merced base budget of $10,000 per new student, continued through the term of the successor MOU, based on an annual growth rate of 650 students.
- A one-time permanent addition of $5 million to the UC Merced budget base, with those funds to be used to partially fund start-up packages for the 18-25 new research-active faculty UC Merced expects to bring in per year through FY 2021-22. The model assumes that this increase takes effect starting in the FY 2015-16 budget.

At the time the MOU was executed, the scope and financial model for the 2020 Project remained unclear. The MOU indicated that, based on preliminary analysis, appropriations of State General Funds would be necessary to fund approximately 35-55% of project costs, with the understanding that State General Funds must be attributable to state-eligible projects. With this in mind, the campus financial model assumed that $40 million per year from the system-wide capital plan would be provided to finance the Project.[85]

7.4.2 Additional Assumptions and Implications of the Financial Model

Ten additional assumptions have been included in the campus financial model [163]. They include:

- Student Enrollments reflect the UC Merced long-range enrollment plan anchored in achieving 10,000 student enrollment by the year 2020.
- Core Funds Revenue assumes an allocation of State General Funds consistent with the current MOU, with growth of 4% in FY 2022-23 and thereafter. In addition, assumes gross resident tuition revenue (i.e. before financial aid set-asides) in an amount equivalent to 3% annual increases, either

[85] Current projections indicate that the total annualized cost of ownership will be approximately $103 million per year in 2016 dollars. The annual $40 million amount equates to 39% of project costs and would be attributable to state-eligible projects and/or operating costs.

from rate increases or from other University revenue augmentation, in FY 2017-18 and thereafter.

- Student Financial Aid: Return tuition revenues as aid to resident undergraduate, graduate and summer-session students in the amount of 33%, 50% and 25%, respectively.
- Pell Grants: Assumes receiving the same amount per undergraduate student as in FY 2014 and growth at the inflation rate after 2020.
- Faculty and Staff Resources: Assumes a long-term student-to-faculty ratio of 20.0 and a long-term staff-to-faculty ratio of approximately 2.4x. Includes wage-inflation growth.
- Instruction Costs: Scales with additional ladder-rank and lecturer hires to achieve target long-term ratio as described above. Includes wage inflation growth.
- Academic and Institutional Support: Scales with staff hires to achieve target long-term ratio as described previously. Includes inflation growth.
- Grants and Research: Scales with ladder-rank faculty hires and includes inflation growth.
- Auxiliary Revenue and Expense: Assumes new facilities operate at a similar operating margin to existing facilities and fee growth at the rate of inflation.
- Inflation: Assumes annual inflation rate of 3%.

The financing of the 2020 Project will create a fixed obligation of the campus and the system to pay for the facilities. As such, to the extent that financial assumptions are not met and a significant financial stress case materializes, the negative impact would be felt in one of three ways: (1) the campus would need to tap its reserves; (2) programs would need to be cut; or (3) the campus would need to seek alternative sources of funding. The campus recognizes there are untapped revenue-generation initiatives and has committed to exploring those opportunities to contribute to its long-range viability.

A long-term financial planning model, however, should empower the campus to plan for the expansion or contraction of financial resources and to manage its impact. In a centralized allocation-based budget methodology, significant impacts to financial resources become known on a year-by-year basis. The long-range financial model seeks to enable understanding about the long-run implications of non-discretionary events and discretionary decisions. As such, the long-range financial plan enables us to gauge what we can afford – beyond just the next fiscal year. This will enable strategic, rather than reactive, decision-making regarding academic planning and workforce investments, and the decisions about the amount of funds to appropriate in each budget year can be guided by the long-term goals.

The most current version of the model can be found here [163]. The financial forecast allows us to measure how we are contributing to the financial position of the campus. The current forecast [174] also shows how the campus position improves as we reach enrollment of 10,000 students.

In order to have a positive impact on campus decision making over the long run, the process for updating, enhancing, and learning from the long-range model will need to be blended into the campus budget and other processes. The long-range model will be aligned with the campus operating budget to inform future year projections. This information is being built into financial decision making by each unit so that any ongoing and future financial risk areas are identified immediately, and steps are identified to mitigate these risks. As an example, the long-range financial model is used for workforce planning decisions across campus, including enrollment impacts and faculty hiring to meet the campus vision.

7.5 STRATEGIC RESOURCE DECISION MAKING

Over the course of 2016, the campus developed metrics and milestones that would define a strategic approach for UC Merced. Out of that effort, five broad thematic "change pathways" [5] emerged to allow us to mature into an intimate, strategically-focused public research university. The five pathways are:

1. Support and hire the best faculty.
2. Recruit and support talented students.
3. Retain, attract and develop exceptional staff.
4. Refine and modernize our tools for assessing and measuring success and processes for improvement.
5. Successfully implement the 2020 expansion and a space planning process tied to our teaching, research and public service mission.

To evaluate competing priorities on an annual basis and for limited resources, a series of guidelines were then established. The net result is that projects or initiatives that positively impact student success, research excellence, academic distinction, and organizational stability become leading priorities. With this structure in place, UC Merced is equipped to identify, validate, and prioritize resource requests in light of their importance to the mission, rather than their urgency. Applying this framework to the ongoing campus expansion, for example, financial decision making prioritizes infrastructure that would use limited resources to establish learning environments that add value.

Examples in the near term include integrating flexible learning spaces and multi-purpose facilities as part of future capital facilities. Within those facilities, budgetary investments in infrastructure will be designed to facilitate and support core competencies in research areas, as defined by faculty. Also, these investments will support upgrades and standardization of the audio/visual tools that form the basis for enhanced teaching and learning.

A second example is applying a "cluster hiring" approach over upcoming years to advance academic prominence in key areas more rapidly. As applied to financial sustainability, this targeted recruiting approach maximizes the benefits realized from financial investment in startup packages that can be partially shared by more than one faculty member.

A final example is that budgetary resources have been dedicated to achieve better efficiency and to control costs over the long term. The campus has been engaged in a Workforce Planning Initiative over the last couple of years, and the addition of new staff to the campus will be shaped by the outcomes of this initiative. In AY 2016-17, all divisions submitted multi-year staff hiring plans. However, most of those plans failed to acknowledge fiscal reality. Therefore, another approach to the task was created. The chancellor launched another challenge to the campus leadership to provide an approach that would address the needs of the campus as a whole and remain within our fiscal constraints. In January of this year [7], three cross-divisional teams of administrators, faculty and staff were charged with making recommendations on how to assign new staff resources within the following priority areas:

1. Research Excellence and Academic Distinction, which includes services and support, professional development, as well as diversity and inclusion as related to research excellence and academic distinction.
2. Student Success, which includes services and support, professional development, as well as diversity and inclusion as related to student success.

3. Organizational Efficiencies and Sustainability, which includes services and support, professional development, as well as diversity and inclusion as related to organizational efficiencies and sustainability.

Each priority area was provided [6] with an estimated allocation for staff hires over a multiyear period, and each team was tasked with creating a staff hiring plan – within the limitations of those resources – that best responded to the critical priorities, needs, and goals of the priority area. By focusing resources on these three areas, UC Merced's staff hiring plan will reflect the importance of our academic mission, the academic success of our students, and support initiatives related to working more efficiently and generating additional revenue. The goal was that, by summer 2017, the chancellor would issue a Five-year Staff Hiring Allocation Plan, tied to UC Merced's strategic vision, that would be operationalized through a two-year budget appropriation beginning with the 2017-18 budget. In July 2017, the chancellor's update [7] on this process outlined both a set of hiring priorities for the next two years and a set of related recommendations for workforce restructuring.

Organizationally, this is defined by a consolidation of functions and by an expanded use of shared services. Tactics that the campus is applying include funding for discrete initiatives that place a greater reliance on technology to reduce workflows, campus-wide systems for grants to support faculty, and pooled administrative support to avoid duplication.

7.6 PREPARING FOR THE FUTURE

The next five years and beyond will require making decisions in multiple areas by current and future leadership. As public higher education trends move towards decreasing public investment, rapid technological change, and increasing calls for demonstrating value or return on investment, UC Merced's goal is to ensure it has the tools and infrastructure so that future challenges can be quickly met and opportunities can be captured. A fact-based approach to issues such as academic outcomes and administrative choices – and their financial implications – provides the best potential to add rigor to our review processes and to ensure sufficient resources are held in reserve to weather negative external impacts that may emerge.

7.6.1 Initiatives to Update Campus Budget Practices

The campus was founded in 2005 with a centralized allocation-based budget model. With significant direction and investment by the University of California system, the model was appropriate for a newly-founded campus. Since that time, the University of California has taken steps to increase the flexibility of each campus to manage its own budget. In her remarks to the faculty at the start of the 2016-17 academic year, Chancellor Dorothy Leland noted that "we are moving through a necessary transition from a start-up campus to the beginning stages of maturity." An important component of this transition includes developing local budgetary practices to reflect a more mature higher education institution.

As described in the Budget for Current Operations [175], certain revenues were collected centrally by the UC Office of the President (UCOP) and redistributed across campuses to promote system-wide priorities. These revenues included State General Funds, tuition, indirect cost recovery of federal, state and private research contracts and grants, application fee revenue, and a share of patent revenue. Over time, the University's budget practices and authority have become more decentralized, and policies have changed so that more revenue has been retained by or returned to source campuses.

With regard to the allocation of State General Funds, the University of California examined the rationale for distributing State General Funds based upon a recommendation from the UC Commission on the Future in

November 2010. The University examined the rationale for distributing State General Funds and developed a strategy for readjusting those distributions to address disparities among campuses in funding per student. The outcome of this initiative led the University of California to distribute state funds on the basis of weighted per-student enrollment over a six-year period. Due to the unique needs of the Merced campus, however, permanent State General Funds allocated to the Merced campus through 2020 were determined outside this methodology, through the previously referenced MOU.

In FY 2011-12, the University also made comprehensive changes in the way funds flow within the University and in the way central administration and programs are funded. In an initiative called "Funding Streams," all campus-generated funds are now retained by or returned to the source campus, with minor exceptions. The Funding Streams Initiative addressed the distribution of revenues, except for State General Funds.

Individual campuses within the University of California now have much greater flexibility with regard to the management of local budgets. In fact, the most recent system-wide budget manual [176] indicates that the Funding Streams Initiative "reflects an activity-based allocation methodology for campus-generated funds, in which revenues associated with campus-based functions (instruction, research, etc.) are retained by the campus that incurred costs associated with those functions."

With greater flexibility at the local level, campuses must develop local budgetary practices that reflect the active management of their own institutions. In order to move in this direction, Chancellor Leland took two actions in the fall semester of the 2016-17 academic year:

1. Named the Chancellor's Cabinet as the campus Budget Advisory Committee to enhance campus-wide leadership dialogue about budget practices and priorities, and to receive budgetary advice from a diverse set of stakeholders.
2. The Budget Advisory Committee has established a budget engagement and listening tour that began in the 2016-2017 academic year and that continues into the 2017-2018 academic year. The main purpose of the engagement tour is to ensure alignment of the budget with the campus vision. Focus remains on sharing the current resources, needs, and future projections to create a roadmap for the future budget model that meets the needs of the campus and is aligned with both the financial sustainability plan and the long-range model.

7.6.2 Long-term Budget Models in the Changing Higher Education Environment

UC Merced is kicking off a campus-wide conversation that will lead to the implementation of new local policies and procedures that will provide a clear and replicable budget process for the campus to follow. A new budget model could help UC Merced to incentivize actions that achieve the academic goals of the institution and that enhance long-term financial sustainability. The initial discussions about the new budget model will focus on the development of a set of guiding principles for a revised budget model. As this initiative commences, the campus finance team will solicit input and participation from a broad range of campus stakeholders. Through collective participation and action, UC Merced expects to modernize its budgetary practices to ensure that we can effectively adapt to the changing higher education environment. For every goal described in this overview and captured by the budget model, the investment needed to implement it will be tied to our long-range financial plan in a manner that is financially feasible. Achieving these goals will position the campus for rapid academic distinction – reflecting the highest ideals of UC Merced.

ESSAY 8 – REFLECTIONS AND PLANS FOR IMPROVEMENT

In the previous essays, we have shown that, since UC Merced opened a little more than a decade ago, there has been a consistent push to grow and mature into a university dedicated to excellence through its exceptional teaching and research. Although still young, UC Merced has achieved more in this short time than many originally conceived. Here, we briefly review the findings of each essay in turn:

Essay 1 introduces the unique student population and area that UC Merced serves as well as the core vision for UC Merced's future as a top-ranked research university focused on conservation and innovation.

Essay 2 describes UC Merced's substantial compliance with WSCUC Standards, and the needs we identified as well as the subsequent progress we have made since completing an initial draft of the Review Under the WSCUC Standards in 2015. Through the lens of the Inventory of Educational Effectiveness Indicators, we confirm that every degree program has in place a quality-assurance system for assessing, tracking, and improving the learning of our students.

Essay 3 discusses the meaning of both undergraduate and graduate degrees awarded at UC Merced, where there is a particular emphasis on introducing students to curriculum and co-curriculum that impart the value of being educated at a modern research university – to students and future employers alike. This essay also speaks to our hope to graduate more undergraduate students interested in careers in academia, and it reveals our desire to develop graduate programs that are supportive of the intended outcomes of students' degrees.

Essay 4 describes how we document that students acquire knowledge and intellectual skills appropriate to the level of degree they will earn. Evidence presented indicates that our undergraduate and graduate students generally meet faculty-established standards for student learning, and evidence also indicates that faculty are regularly identifying pedagogical and curricular changes intended to strengthen student learning over time. In addition, the essay provides an emerging institutional-level look at undergraduate achievement of the WSCUC Core Competencies and the steps we might take to respond to these findings.

Essay 5 offers our definition of student success and explains the various curricular and co-curricular programs that UC Merced has implemented to help students build the skills necessary to complete their coursework and to help students succeed during their time at the university and after graduation. Measures of student success are also considered, with evidence suggesting that our undergraduates continue to succeed at rates exceeding what demographics predict and that our graduate degree completion rates are consistent with national norms.

Essay 6 examines UC Merced's processes for the annual and periodic review of programs and units, and how these reviews contribute to planning and decision making at the university. After close analysis, we find that we have in place a robust, comprehensive framework for quality assurance and continuous improvement that extends to all aspects of campus function.

Essay 7 describes the framework for long-term financial viability that the campus is developing and reviews campus financial models and projections, paying special attention to the considerations that the university must make while trying to grow in a rapidly changing higher education

environment. Evidence presented illustrates that the campus has moved in the direction of achieving its vision in spite of the difficult financial circumstances since its opening.

While these essays share the details of progress UC Merced has made and the work that is still to be done, we think that the achievements of UC Merced can be best summed up with three statements:

First, UC Merced is young and still in transition but has accomplished a remarkable amount in a short period during difficult financial circumstances. UC Merced began with a small undergraduate student population that considered UC Merced to be their "second choice" university. However, UC Merced is now becoming a top choice among prospective, and current, undergraduate and graduate students who are seeking a UC-quality education taught by faculty and lecturers dedicated to the high-quality training of students. Moreover, UC Merced's enrollment has increased dramatically since 2005, as there are now over 6,800 undergraduates and 520 Ph.D. students. In addition, UC Merced has grown to 230 faculty and 150 lecturers who teach students enrolled in 22 undergraduate majors, 23 undergraduate minors, and 12[86] graduate programs. This growth has all been accomplished during a time when the economy suffered a depression, putting unanticipated pressure on a newly established university, those who work here, and the students who have come to obtain an education.

Second, we know that we have a significant amount of work still to do. In particular, we realize that we still need to bring our General Education plan to fruition, and we need to create regularized planning processes so that, as UC Merced continues to grow beyond the 2020 Project, we will be able to match resources to programs. Addressing these, in turn, our revisions to the current General Education program are connected to clear goals and expectations, all of which revolve around the integration, updating, and continual assessment of GE learning outcomes. As for the need for ways to keep up with the rapid growth of UC Merced, it is imperative that we continue to monitor what resources are designated to which programs university-wide. Further, we need to implement a strategic plan, aligned with UC Merced's vision, to be able to continue to provide adequate resources to programs as student enrollments and faculty and staff numbers grow over time.

Finally, still we are proud of the fact that we are a unique institution with a unique vision. We are a UC-caliber research university that serves an historically underrepresented student population in an underserved community. With 71% of the undergraduate student population being first-generation college students and with 78% of the population being from minority backgrounds (over 50% Hispanic), UC Merced has the highest percentage of first-generation students and is the most diverse campus in the University of California system. This is accompanied by an unusually high proportion of the student population pursuing degrees in STEM fields. With the unique student population that UC Merced serves, it is of utmost importance to state clearly that our growth and future planning always proceed with that as a core value. We believe that UC Merced serves the new majority of students and represents the future of research universities – with a diverse student population and a focus on innovative scholarship. We intend to continue to develop programs and to engage with research and teaching in a way that keeps true to that identity.

[86] There will be 14 in fall 2017, when Public Health and Economics are implemented. This includes the IIGP with its remaining emphases.

APPENDIX – LIST OF ACRONYMS

- AAC&U – Association of American Colleges and Universities
- ACT – Administrative Coordination Team
- APSG – Policy Study Group
- ASSHE STARS – Association for the Advancement of Sustainability in Higher Education's Sustainability Tracking, Assessment & Rating System
- ASUCM – Associated Students of the University of California, Merced
- BEST – Biological Engineering and Small Scale Technologies
- BOARS – Board of Admissions and Relations with Schools
- CAPRA – Committee on Academic Planning and Resource Allocation
- CAPS – Counseling and Psychological Services
- CCGA – Coordinating Committee on Graduate Affairs
- CETL – Center for Engaged Teaching and Learning
- CFR – Criteria for Review
- CLO – Course Learning Outcome
- CWGA – Campus Working Group on Assessment
- DARTS – Degree Attainment for Returning and Transfer Students
- DGC – Data Governance Council
- DOSC – Data Operations Stewardship Council
- FAO – Faculty Assessment Organizer
- FTE – Full-Time Equivalent
- GASP – Global Arts Studies Program
- GE – General Education
- GEARS – Graduate Enrichment and Advancement Resources and Services
- GESC – General Education Subcommittee
- GPS – Guide for Program Stewardship
- GROW – Graduate Student Orientation Week
- GSA – Graduate Student Association
- H.E.R.O.E.S. – Health Promotions
- IEEI – Inventory of Educational Effectiveness Indicators
- IH – Interdisciplinary Humanities
- IIGP – Interim Individual Graduate Program
- IMTPC – International Mentoring Training Program Certification
- IPEDS – Integrated Postsecondary Education Data System
- IRDS – Institutional Research and Decision Support
- KPI – Key Performance Indicator
- LRF – Ladder Rank Faculty
- LS(P)OE – Lecturer with (Potential) Security of Employment
- MOU – Memorandum of Understanding
- NSF – National Science Foundation
- NSSE – National Survey of Student Engagement
- OPRAAS – Office of Periodic Review, Assessment, and Accreditation Support
- OSL – Office of Student Life
- PLO – Program Learning Outcome
- PROC – Periodic Review Oversight Committee

- RUWS – Review Under the WSCUC Standards
- SACA – Senate-Administration Council on Assessment
- SACAP – Senate-Administration Council on Assessment and Planning
- SDSU – San Diego State University
- SLO – Student Learning Outcome
- SMP – Success Mentor Program
- SNS – School of Natural Sciences
- SoE – School of Engineering
- SSHA – School of Social Sciences, Humanities, and Arts
- UCOP – University of California Office of the President
- UCUES – University of California Undergraduate Experience Survey
- UGC – Undergraduate Council
- UROC – Undergraduate Research Opportunities Center
- UTSA – The University of Texas, San Antonio
- WSCUC – WASC Senior College and University Commission
- YLP – Yosemite Leadership Program