

Office of the President

TO THE MEMBERS OF THE ACADEMIC AND STUDENT AFFAIRS COMMITTEE:

DISCUSSION ITEM

For Meeting of May 23, 2018

INSTRUCTIONAL INNOVATION AND DIGITAL ACADEMIC PROGRAMMING AT THE UNIVERSITY OF CALIFORNIA

EXECUTIVE SUMMARY

As digital technologies and tools become increasingly central to the way students communicate and live, the University of California has developed and expanded use of these technologies as powerful new vehicles for teaching and learning. UC campuses offer an ever-expanding catalog of online courses and innovative instructional programs, increasing learning opportunities for our undergraduate, graduate, and professional students. Online courses are developed and taught by UC faculty at campuses across the system and count for UC credit based on departmental and programmatic requirements. Building on and expanding these campus efforts, UC's Innovative Learning Technology Initiative (ILTI) supports and promotes the development of quality online and hybrid undergraduate courses. These courses, available for credit during the academic year without additional fees, provide UC undergraduates increased access to needed courses to support timely degree completion. An automated, centralized enrollment system, including a catalog of online courses available across UC campuses, allows UC students to easily search for and seamlessly enroll in these courses, leveraging the knowledge, expertise, and availability of courses at all nine undergraduate campuses.

This presentation will describe the work and progress UC undergraduate campuses have made over the past five years with online and hybrid learning given their own investments in instructional innovation as well as the facilitative efforts of ILTI and includes information from UC faculty about their experiences and perspectives on developing and teaching online courses.

BACKGROUND

As a leading research and teaching institution, UC has been actively engaged in providing online and digital learning opportunities for matriculated, Summer Session, and University Extension students for decades. In the last five years, UC campuses have steadily increased their interest in and enthusiasm for developing and offering online and hybrid courses.

UC campuses have developed more than 470 credit-bearing online courses available across the system to UC undergraduates during the academic year, and in summer 2018, UC will offer 189 courses online, some of which are credit-bearing. Eighteen fully online advanced degree

programs are available, and several other proposals for online graduate degree programs are currently under review. Another 3,500 online, not-for-credit courses are offered to non-matriculated students through UC Extension.

Campuses play the essential and primary role in UC's vision for online education, as opposed to third-party or auxiliary enterprises. UC faculty, administrators, and staff develop and implement new programs and tools that enhance teaching and learning, helping to fulfill their mission to provide outstanding learning opportunities to all UC students.

Online Academic Year Courses

Over the past five years, each and every UC campus has steadily increased its catalog of online courses at the undergraduate and graduate level. (See Table 1a.) In 2015, UC had 120 online undergraduate courses offered during the academic year and approximately 60 graduate-level courses. Today, there are more than 470 approved fully online undergraduate courses and 242 fully online graduate courses, representing a 26 percent overall increase in the UC online catalog.

Table 1a: Approved Fully Online Courses at UC (All)

UC Campus	Undergraduate (UG)	Graduate	Total Fully Online Courses
UCB	30	77	107
UCD	24	3	27
UCI	249	5	254
UCLA	75	85	160
UCM	10	0	10
UCR	26	36	62
UCSD	4	0	4
UCSB	22	0	22
UCSC	30	0	30
UCSF	0	36	36
TOTALS	470	242	712

Source: UC Offices of the Registrars April 2018

Table 1b displays the fully online course information by campus, and percentage of campus undergraduate courses developed by ILTI. This number ranges from 0 percent of courses at UCSF (a graduate campus) to 100 percent of the courses at UC Berkeley, UC Merced, UC Riverside, and UC San Diego. Note that the ILTI total *excludes* hybrid courses and courses awarded funding, currently in development, but not yet offered.

Table 1b: Approved Fully Online Courses at UC (Undergraduate Only)

UC Campus	ILTI *	Campus, Other than ILTI	Total UG Online Courses	ILTI % of UG Total
UCB	30	0	30	100%
UCD	24	0	24	100%
UCI	52	197	249	21%
UCLA	37	38	75	49%
UCM	10	0	10	100%
UCR	26	0	26	100%
UCSD	4	0	4	100%
UCSB	13	9	22	59%
UCSC	24	6	30	80%
UCSF	0	0	0	0%
TOTALS	220	250	470	47%

* *Excludes ILTI hybrid courses and those currently under development.*

Source: UC Offices of the Registrars April 2018

Table 2 below provides information on the relationship between campus undergraduate online courses and undergraduate enrollment in those courses. The percentages range from 1.3 percent at UC San Diego to 23.1 percent at UC Irvine, with an average of seven percent of undergraduates enrolled in an online course during academic year 2016-17. Not captured in this data set is the percentage of undergraduates enrolled in hybrid or flipped courses, that is, courses where some (but not all) portions of the course are delivered online. Campuses vary in their capacity to identify hybrid courses – at some campuses, hybrid courses carry a specific code to indicate the course is a hybrid, while at other campuses, the only indication of the course's primary delivery approach is in the campus schedule of classes.

Table 2: Undergraduate Enrollment in Online Courses in 2016-17 Academic Year

UC Campus	Number of UG	Number of UG Taking 1 or More Online Courses in Academic Year	% of UG Population
UCB	28,547	2,912	10%
UCD	29,379	1,312	5%
UCI	27,786	6,426	23%
UCLA	30,873	1,544	5%
UCM	6,815	136	2%
UCR	21,409	1,866	9%
UCSD	28,200	368	1%
UCSB	21,754	863	4%
UCSC	17,052	341	2%
TOTALS	211,815	15,768	*
AVERAGE %			7%

Sources: UCOP IRAP & UC Offices of the Registrars April 2018

Innovative Learning Technology Initiative (ILTI)

To accelerate and complement what UC campuses are doing in the undergraduate instructional program, for the past five years UC committed \$10 million per year from earmarked State funding through an initiative sponsored by Governor Brown to expand online and digital learning opportunities across UC.

With leadership from the Executive Vice President and Provost at UC's Office of the President and the systemwide Academic Senate, ILTI focuses its efforts around four interconnected elements comprising a cohesive approach to expanding online learning opportunities:

1. Courses, Course Components, and Online Learning Tools

Innovative courses, course components, and online learning tools employing sound pedagogy are central to ILTI and its mission to offer UC undergraduates expanded learning opportunities. Working closely with UC faculty, ILTI employs sound pedagogical strategies and instructional design principles to create and offer UC-quality undergraduate fully online and hybrid courses. ILTI uses a portion of the \$10 million annual allocation to:

- Increase the ILTI catalog through a combined strategy of a competitive Request for Proposals (RFP) and targeted efforts to add high-enrollment and high-need fully online courses open for cross-campus enrollment and make the online components of hybrid courses available to UC faculty and students;

- Provide awards to support innovative learning applications or tools that meet instructional goals and that enhance student engagement with the content, with each other, and/or with the faculty or Teaching Assistants (TAs); provide access to the tools to UC faculty and existing online courses across the campuses;
- Provide funds for faculty release time and/or other staff and technical resources needed to produce an outstanding course learning experience, aligned with faculty, department, and campus pedagogical standards and expectations; and
- Provide instructional design expertise to support and facilitate faculty creation of online and hybrid courses employing sound pedagogical strategies and knowledge of how students learn.

Through its RFP process, ILTI has supported the development of undergraduate minor course sequences and systemwide collaborations on significant subjects such as global health and climate change. In the future ILTI could possibly support faculty in academic departments in expansion of their online portfolios to offer, where appropriate, online and hybrid undergraduate degree programs that meet the quality standards of the Academic Senate. Decisions regarding online degrees are determined by the Academic Senate. ILTI will serve a role in supporting the development of these new opportunities. ILTI has been approached by several campuses to explore the creation of online graduate and professional level courses, course sequences, degrees, and certificate programs.

2. Department and Campus Support for ILTI Courses

Courses open for cross-campus enrollment, that is, to students across the UC system, require instructional support to ensure a quality learning experience. ILTI provides funding for TAs and faculty support to serve the cross-campus students who enroll. Additionally, ILTI has provided funding for campus infrastructure improvements – such as video production studios and faculty technology support centers – as well as resources needed to support faculty as they develop and offer online and hybrid courses.

3. Cross-Campus Facilitation

In collaboration with all ten campuses (including UCSF), ILTI has led the development of a central enrollment system that automatically communicates with campus systems to build a catalog of online courses open to enrollment to UC undergraduate students each academic term. ILTI's website acts as a portal to search for courses and view faculty-created videos about the courses and other course information. The website also provides the gateway for students to enroll in the course. Enrollments are sent to students' home campuses where they are reviewed and, if approved, sent back to the campus hosting the course. At the end of the term, final grades are automatically exchanged through the central system to the home campus.

UC-wide course approvals, indicating the kind of academic credit each UC campus will give for a specific online course, are part of the central searchable database of course information. ILTI

leads the promotion and expansion of course credit approvals across UC campuses. It will continue to build on this process for broader implementation and acceptance across campuses and departments, so that courses offered at one UC could provide more than unit credit at other UCs, and help satisfy degree requirements. In addition, ILTI is working to develop a searchable digital asset repository for the course components developed by faculty for hybrid courses. These assets will be made available to all UC faculty and students.

Further, based on a broad vision for UC online education, ILTI is beginning exploration of a “clearinghouse” concept for all online learning opportunities, information, and resources across the UC. Initially, the endeavor will focus on undergraduate online learning, and will consider what users will want to do and what they may need as they search across UC for opportunities to learn online. ILTI will also explore other funding sources to create a more expansive, comprehensive “clearinghouse” of all online opportunities across UC, including summer and extension courses.

4. Evaluation and Accountability

Evaluation and accountability continue as an integral part of ILTI’s work. Information is collected from various sources, including campus enrollment records of students in ILTI courses, faculty developing and/or teaching ILTI courses, TAs, and student work.

Students, TAs, Graduate Student Researchers (GSRs), and faculty are regularly surveyed regarding their experiences in ILTI-funded courses. Enrollment data are collected for ILTI courses. Financial information regarding ILTI funded projects is collected on a six-month basis, with results provided regularly to the ILTI Steering Committee and broader audiences. UC continues to perform well in making all types of courses (online and hybrid) available to undergraduates to support timely graduation. For undergraduates, UC’s graduation rates are comparatively high and its time to degree comparatively low when measured against other public universities, state and nationwide, with membership in the Association of American Universities. UC anticipates that ILTI will help ensure that students have increased access to needed courses. These courses will provide undergraduates who enter as freshmen additional opportunities to complete a bachelor’s degree in four years (or less), and students who enter as transfers to complete their degrees in two years.

As a research institution and one that prides itself on its faculty teaching, ILTI is exploring the efficacy of online education. Currently, ILTI is not directly funding this research, but its evaluation and accountability data may be useful to faculty and other audiences. Many ILTI faculty have investigated, independently, the impact of their online and hybrid courses from a variety of perspectives. Some of this research has focused on video viewing behaviors and its relationship to learning, overall performance in the course, as well as grades from courses in online courses compared with the face-to-face version of the same course.

Table 3 provides a summary of ILTI’s accomplishments over the past five years, from 2013 thru 2018. More detailed information on these accomplishments follows Table 3.

ILTI ACCOMPLISHMENTS

Table 3: ILTI 5-Year Accomplishments, 2013-18

Component	Description and Goals	Achievements	Funding (\$50M)
Courses & Course Components	<ul style="list-style-type: none"> Support the design and development of online and hybrid courses Support the development and deployment of interactive tools 	<ul style="list-style-type: none"> 260+ fully online and hybrid courses funded 2 interactive tools funded; became “Suite C” 	\$29M
Department & Campus Funding	<ul style="list-style-type: none"> Funding for TAs and instructor support for cross-campus students, and for campus infrastructure 	<ul style="list-style-type: none"> 500+ course offerings across 5 academic years* 100,000+ students enrolled in ILTI-supported courses Various campus online learning infrastructure projects funded 	\$9M
Cross Campus Facilitation	<ul style="list-style-type: none"> Deploy a cross-enrollment website Build Cross-Campus Enrollment System (CCES) in collaboration with campuses Increase course credit approvals across UC campuses for general education (GE), pre/major and equivalency credit 	<ul style="list-style-type: none"> Cross-Campus website launched 2013 Search application launched 2014 CCES project launched 2013; development to automate catalog, enrollment, and grades sharing (7 campuses live currently) 1,000+ course approvals across 193 courses 	\$9M
Evaluation and Accountability	<ul style="list-style-type: none"> Term-to-term surveys of students, TAs, and faculty Accountability data and campus funding reports collected on a six-month cycle 	<ul style="list-style-type: none"> 10,000 enrolled students surveyed; 4,000 responses received; overall positive ratings** TA and faculty surveys positive about experiences with ILTI courses Campus expenditures aggregated and detailed reporting in six-month cycles 	\$3M (includes ILTI administrative expenses for five years)

*Note 1: Data for AY 2013-14 does not include Fall Quarter/Semester 2013

**Note 2: Not all courses offered provide survey information

ILTI Courses, Offerings, and Enrollments

Courses

Through a combination of efforts (competitive RFP process and opening existing online courses to cross-campus enrollment), ILTI has a current catalog of more than 260 courses that continues to grow. Figure 1 displays the ILTI course catalog by campus. Note that these totals include hybrid courses – courses that have least one in-person element – as well as fully online courses. The distribution of courses by discipline – Arts & Humanities, Social Sciences, Science, Technology, Engineering and Mathematics (STEM) and interdisciplinary – is shown in Table 4.

Figure 1: ILTI Course Count by Campus (Online and Hybrid)

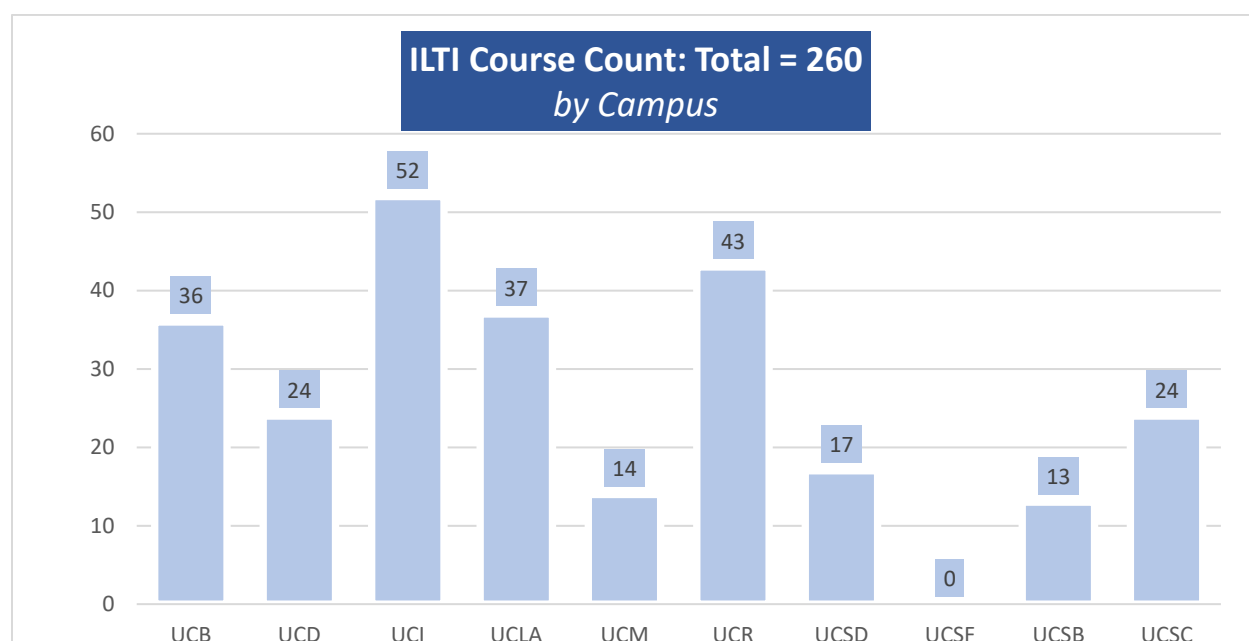


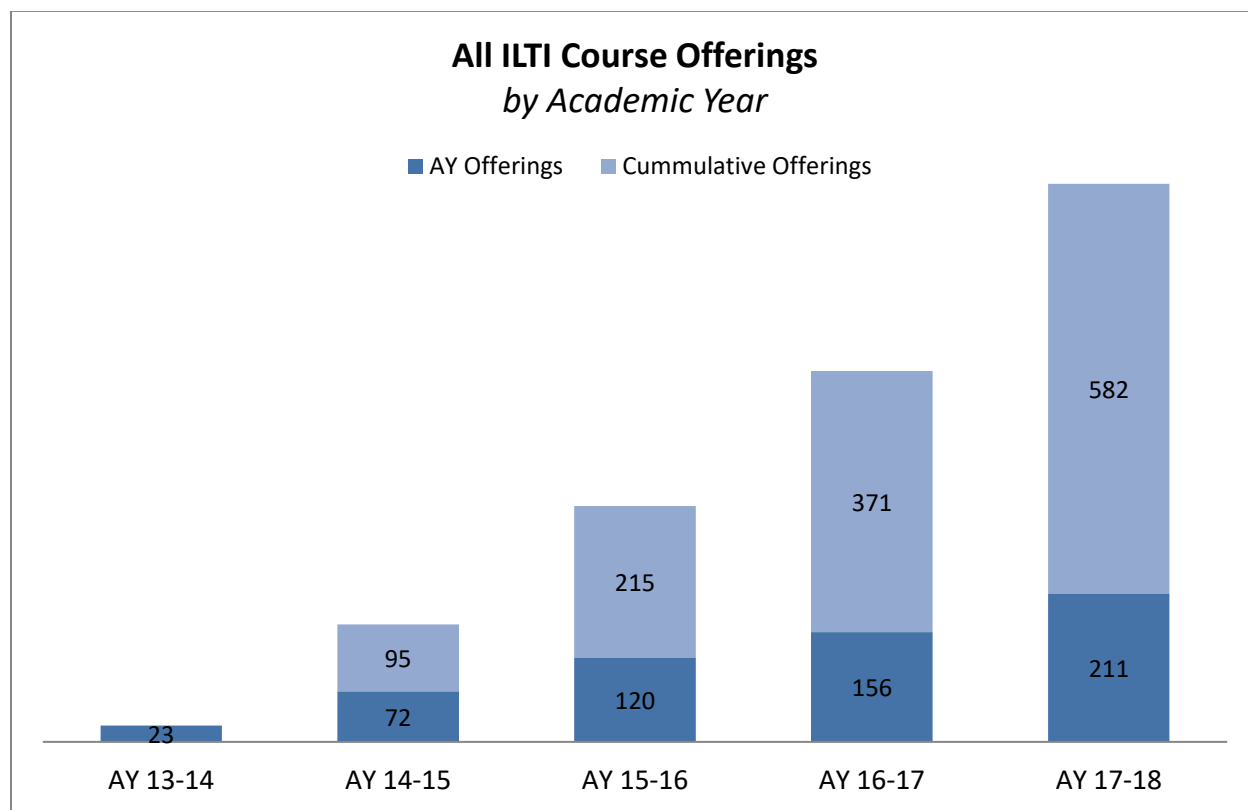
Table 4: ILTI Course Catalog - Count of Course Disciplines – Cumulative

Discipline	Number of Courses	%
Arts & Humanities	69	27%
Social Sciences	91	35%
STEM	98	38%
Interdisciplinary	2	1%
Grand Total	260	100%

As the ILTI course catalog has grown, so too have the number of offerings each year. Some (but not all) courses are offered more than once during the academic year, representing an advantage to students who need to take courses as a pre-requisite to other courses. Rather than having to take a course during summer session or wait until the next academic year, multiple offerings of a course allow students to get courses when they need them and graduate on time.

Figure 2 provides information on the cumulative ILTI course offerings, beginning Winter Quarter/Spring Semester 2014 through Spring Quarter 2018.

Figure 2: All ILTI Course Offerings



Online Courses Systemwide: Cross-Campus Enrollment System (CCES)

In November 2013, ILTI launched a cross-campus enrollment website, the first step in enabling UC undergraduates to search for and enroll in online course offered at other UC campuses. Prior to the cross-campus enrollment platform, the process for UC undergraduates to take courses at other UC campuses was labor-intensive and challenging. The process involved searching for courses in each of the nine undergraduate campus course catalogs, filling out print forms, and securing manual course approvals at two campuses – a very time-consuming process.

Table 5 displays total enrollments (including host and cross-campus students) from Winter Quarter/Spring Semester 2014 through Winter Quarter/Spring Semester 2018. More than 100,000 students have enrolled in courses supported by ILTI funding.

Table 5: ILTI Enrollments Academic Year 2013 - 2018

UC Campus	ILTI Enrollments*
UCB	10,028
UCD	4,895
UCI	44,430
UCLA	9,720
UCM	1,497
UCR	11,346
UCSD	13,133
UCSB	1,270
UCSC	11,978
UCSF	0
Total	108,297

**2013-2018 data. 2018 enrollments are estimated.*

The CCES automates the process for enrolling in courses, securing home campus approval from Academic Advisors and Registrars, sending enrollments to campuses hosting the courses, and returning grades through the system to the student's home campus. As of April 2018, seven of the ten campuses were live on the system. Two campuses will complete their efforts by Fall 2018, with the last campus coming online in Fall 2019.

What They Say: Students and Faculty Perspectives

At the conclusion of each term, all undergraduates (campus-based and cross-campus students) enrolled in ILTI online courses complete electronic surveys about their experiences in and impressions of the courses. Results from the student surveys indicate that students take online and hybrid courses for their: 1) flexibility; 2) availability; and 3) pacing. Survey results thus far indicate that ILTI courses provide increased access to needed courses, convenience, a compelling way to learn and engage with course material, and, in some cases, increased opportunities to engage in discussion and collaboration with faculty, TAs, and classmates. Importantly, more than 85 percent of respondents indicate they would recommend the online course they completed to a friend. Selected student survey responses include:

"I'm excited and happy that this pioneer program was introduced so students like me can further their education. I like how UC recognizes that students learn in different ways. It also makes me feel as if the UCs are unified as one, and I find it great that I can take classes from UC Irvine, etc. even though I don't attend." (Sophomore, UCSC)

“Spanish 3 is a requirement at UCLA, however it is only offered every day of the week. Because I have an internship two full days (Tuesday and Friday, 9 – 5), I couldn’t attend class every day. The online course, offered at UCD, was a perfect solution.”
(Senior, UCLA)

“I’m a 4th year in political science [at Riverside], graduating this year and attending grad school in DC in the fall – I thought this course focused on an interesting topic that’s important to be able to talk about in depth. [T]aking a class online gave me the flexibility to squeeze in a couple graduation requirements that I’d otherwise be scrambling to take in either spring or the summer sessions.” (Senior, UCR)

Faculty and instructors teaching ILTI courses are surveyed annually regarding their impressions and experiences teaching online courses and online components of hybrid courses. Faculty teaching ILTI courses report a positive impact on their pedagogical and assessment strategies when developing and teaching online and hybrid courses. Additionally, faculty value improving their technical skills, discovering innovative ways to engage students and assess their learning and progress.

Student performance in online and hybrid courses was reported as comparable to (and in some cases better than) performance in face-to-face courses. Selected faculty comments regarding teaching experiences in online and hybrid courses include:

“Online course forced me to plan better and consider learning outcomes more substantially.”

“Compared to past teaching work, this course had significantly increased organization and communication w/ students about what needs to be studied; what has been posted on the website; and I provided more extensive feedback on quiz questions and group projects, more extensive analysis of general performance.”

“Vastly improved my teaching overall, including my face-to-face instruction.”

Instructional Innovations

In addition to online courses, UC campuses leverage innovative instructional technologies to enhance instruction and promote student success. UC faculty continue to develop and refine high-quality hybrid courses using multimedia resources, videos, podcasts, e-books and other technology-based tools to enrich students’ learning experiences. UC follows best instructional practices to embed innovative technologies into course design and focuses on creating online and face-to-face learning experiences that encourage collaboration and maximize faculty-student and peer-to-peer interactions. Increasingly, courses on UC campuses utilize a flipped model of instruction, where lectures and other traditional classroom content are provided online, and classroom time is dedicated to group discussions, problem-solving activities, and other experiential exercises.

Moving Forward

Delivering outstanding education to engage and inspire across the academic spectrum requires a long-range, multi-faceted strategy, one in which technology plays an integral role. Important elements in a systemwide digital strategy might include:

1. Online Program Development and Implementation

- Expand online course and program development and implementation for undergraduate majors and minors, and for masters, doctoral, professional certificates, and degree programs across the system;
- Refine and enhance cross-campus enrollment policies to provide students with greater access to cross-campus offerings; and
- Expand undergraduate online course credit approvals for GE, pre-major, major and course equivalencies across UC campuses to support successful and timely undergraduate degree completion.

2. Innovation and Continuous Improvement

- Maintain and enhance UC's academic learning technology to align with the changing higher education landscape; explore, adopt, and develop new applications and systems to enhance pedagogy and support the student learning experience;
- Foster technology collaborations across the campuses that help pilot efforts expand towards deeper and potentially cost-saving implementations across the UC system;
- Implement central enrollment and data exchange across all campuses and UC undergraduate, graduate, and professional programs;
- Led by faculty and faculty support teams, develop and leverage centralized repositories to build and support a community of practice across the system to share learning content and data, best practices, and other key information regarding online learning;
- Continue to build cross-campus collaborations, where faculty with complementary areas of knowledge and expertise develop and offer courses;
- Enhance innovation creativity in course offering approaches, to allow more UC undergraduates to participate in courses offered by other UC campuses; and
- Explore the TA/Graduate Student Researcher (GSR) shared-resource pool, which would allow qualified TAs and GSRs at one campus to support online course offerings at other UC campuses.

3. Research and Analysis

- Support research and data-driven approaches to analyzing pedagogy, learning outcomes, and the student experience; widely share UC's progress in the online and hybrid learning environments, providing real-time, usable information to better equip UC to pursue and lead a continuous improvement model for online learning; and

- Develop and maintain an instructional design discipline, founded in educational research and pedagogical theory, that embraces best practices in teaching and learning online.

Key to Acronyms

CCES	Cross Campus Enrollment System
GSR	Graduate Student Researcher
ILTI	Innovative Learning Technology Initiative
RFP	Request for Proposals
STEM	Science, Technology, Engineering, and Mathematics
TA	Teaching Assistant