

REPORT OF THE WSCUC TEAM

For Reaffirmation of Accreditation

To California Institute of Technology

October 13-16, 2020

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The team evaluated the institution under the 2013 Standards of Accreditation and prepared this report containing its collective evaluation for consideration and action by the institution and by the WASC Senior College and University Commission (WSCUC). The formal action concerning the institution's status is taken by the Commission and is described in a letter from the Commission to the institution. This report and the Commission letter are made available to the public by publication on the WSCUC website.

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SECTION I – OVERVIEW AND CONTEXT

A. Description of Institution and Accreditation History

California Institute of Technology began its existence as Throop Institute in 1891, and formally changed its name to the California Institute of Technology (“Caltech”) in 1920. Today, Caltech is a world-renowned science and engineering institution whose mission is to “expand human knowledge and benefit society through research integrated with education. We investigate the most challenging, fundamental problems in science and technology in a singularly collegial, interdisciplinary atmosphere, while educating outstanding students to become creative members of society.”

Caltech is an independent, private institution with a deep commitment to providing an extraordinary educational experience for its students. The contributions of Caltech's faculty and alumni have earned national and international recognition, including 41 Nobel Prizes, 58 National Medal of Science recipients, 13 National Medal of Technology and Innovation recipients, and 130 members of National Academies. Caltech also manages the Jet Propulsion Laboratory (JPL) for NASA; owns and operates large-scale research facilities such as the Seismological Laboratory and a global network of astronomical observatories, including the Palomar and W. M. Keck Observatories; and co-founded and co-manages the Laser Interferometer Gravitational-Wave Observatory (LIGO).

In 2019, Caltech maintained a 3 to 1 student-to-faculty ratio, with 300 professorial faculty members offering a rigorous curriculum and access to varied learning opportunities and hands-on research to 938 undergraduates, 1,299 graduate students and approximately 600 postdoctoral scholars.

Caltech's accreditation history goes back to 1952, and it has been accredited continuously since then. Most recently, accreditation was again affirmed for Caltech in 2010 by WSCUC with recommendations that focused on the Core Curriculum, undergraduate research, and the assessment of student learning. The Institute completed a mid-cycle review in 2015. In 2017, Caltech was approved to participate in the newly adopted Thematic Pathway for Reaffirmation (TPR) process and chose to focus on two themes: the Core Curriculum, and academic and co-curricular support structures.

In preparing for reaffirmation, Caltech attended to both the Core Curriculum and academic and co-curricular support structures and continued to work on its commitment to assessment and learning outcomes and undergraduate research in response to previous WSCUC recommendations. Caltech's institutional report (IR) provided a comprehensive look at the Institute and its practices and presented its responses to the 2010 accreditation recommendations.

Additionally, in the institution-specific theme section, Caltech included a section outlining its response to the novel coronavirus (COVID-19) and ensuing global pandemic (IR, page 51). Briefly, Caltech moved classes online in March of 2020, and all undergraduates who were able to return home did so. They have outlined how academic and support structures have remained operational and have contributed to adapting the Caltech experience into a remote one. Faculty have received training on teaching their courses remotely, and the curriculum was translated to remote learning quickly and without major incident. Undergraduate research has continued, with many faculty re-imagining projects so that students could have a remote research experience during the summer of 2020. Assessment of these and other efforts suggests that Caltech is well positioned to understand what has gone well during the pandemic and to incorporate these lessons to improve in less challenging times. The coordinated efforts of the

staff, students, postdocs, faculty and administrators have all been essential in managing Caltech's successful COVID-19 response.

B. Description of Team's Review Process

The team reviewed the institutional report and supporting documents and developed a set of questions for the Accreditation Visit (AV). The team was interested in understanding:

- The extent to which Caltech values diversity and inclusion in the curriculum and co-curriculum and how the Institute is encouraging students to engage with diverse ways of thinking and knowing, especially given Caltech's clearly stated scientific worldview.
- How the Core Curriculum has continued to evolve and change in response to the changing needs of the student body and faculty, including how the assessment of student learning in the Core has led to insights with respect to pedagogy, learning technology and student learning.
- How the academic and co-curricular support structures have developed over time, the extent to which they are aligned and integrated into the student experience, and how their assessment data is used in decision-making and planning for the future.

During the team conference call in September 2020, team members divided responsibilities for the writing and areas to investigate, enabling members to explore questions, pursue lines of inquiry and draft preliminary documents to guide the visit. The team discussed the preliminary schedule, and agreed that the AV would have meetings where the team would remain together, but that the team also would split up for some meetings to allow for more focused conversation or follow-up.

By virtue of Caltech's relatively small size, the team was able to engage many faculty, administrators and staff in the remote AV. The team had ample time to meet with a broad cross-section of community members that included senior administrators, division chairs, faculty, staff, and students. Meetings with key campus constituencies included: academic leadership, student affairs leadership, Academic and Co-curricular Working Group (ACWG), Core Curriculum Working Group (CCWG), Core Curriculum Steering Committee, the faculty board and the president's inclusion and diversity committee. The team also met with members of the board of trustees. More focused sessions explored the use of assessment data to guide student learning and program review, especially within the Core Curriculum; progress on issues of diversity, inclusion and equity; academic and co-curricular support for students; and use of evidence to guide decision-making across all levels of the Institute. The impact of COVID-19 was integrated into many sessions, and a session was dedicated to the institutional response.

C. Institution's Reaccreditation Report and Update: Quality and Rigor of the Report and Supporting Evidence

Caltech's institutional report was clearly written and organized around the four components delineated in the Thematic Pathway for Review (1, 2, 8, and 9) by WSCUC. The institution specific themes of the Core Curriculum and academic and co-curricular support structures were selected to allow Caltech to reflect upon the substantial changes implemented since 2010, and to use the knowledge gained to "demonstrate our strong and ongoing dedication to continuing and enhancing the extraordinary education that is the hallmark of the Caltech experience" (IR, page 2). In that regard, Caltech's report is an excellent example of identifying areas of study that align with the WSCUC standards to demonstrate educational improvement.

While the report provided the foundation for the remote AV, the interviews and discussions provided the necessary information and context to answer questions and shape the team's findings.

The team found that the supporting documents were well-developed. Moreover, these documents provided thorough evidence to support the claims made in the report. Caltech addressed the issues and concerns raised by the Commission through an institutional culture that grasped and demonstrated the importance of reaffirmation. The team found that Caltech's description of the development of its process was accurate and included broad participation from campus stakeholders under the leadership of the president, Caltech's Accreditation Steering Committee, and Accreditation Liaison Officer (ALO). Faculty and administrators devoted their time, expertise and experience to assure the process was thorough and reflective. The president assumed his role as Caltech's chief executive officer, the provost as the leader of the academic program and the ALO as the individual responsible for mapping Caltech's own policies and procedures to the accreditation process.

SECTION II – EVALUATION OF INSTITUTIONAL ESSAYS

A. Component 1: Response to previous Commission actions

In its July 2010 letter, the Commission identified the following areas for continued attention at Caltech:

1. Core Curriculum
2. Undergraduate Research
3. Assessment of Student Learning

The team found that Caltech’s Core Curriculum has undergone considerable evaluation and revision. In 2014, the Core was revised to reduce the number of requirements. These revisions also provided students with more interaction with faculty, increased opportunities to conduct research, and promoted greater flexibility in course schedules. Other changes included the implementation of shadow grades (in which grades in pass/no credit courses are privately shared with students but don’t appear on their transcripts) and enhanced writing instruction. Since then, learning outcomes for the Core have been updated, divided into components, discussed and endorsed by the campus community and made widely available on the Caltech website. This ensures that Caltech’s educational objectives are not just widely recognized across the institution, but functioning as a shared set of principles that guide students and faculty and inform the public. Caltech has also integrated research and independent study activities into the Core through a “menu” requirement, freshman seminars and one-unit courses designed to introduce students to a field of study. There have been consequential technological and pedagogical advancements in Core as well, including expanding peer tutoring, adding resources to the Writing Center and increasing access to the Freshman Summer Research Institute. Finally, the team notes that Caltech appropriately plans to continue its discussions about how to provide

students with as much flexibility in the Core while simultaneously providing the content that ensures students will achieve the stated learning outcomes.

With respect to undergraduate research, the team noted that the percentage of Caltech students participating in a Summer Undergraduate Research Fellowship (SURF) program remains high, while the reduction of courses per quarter has created time for students to not simply participate in research but to engage deeply with it. This allows students the intellectual and mental space to more clearly see the relationships between their coursework and their development as scholars and professionals in their fields. Caltech has expanded the number of undergraduate research opportunities available to students. The Office of Student and Faculty Programs works with students to facilitate matches with potential mentors. Student and Faculty Programs also developed a set of shared rubrics for assessing the undergraduate research experience, and Seminar Day gives students the opportunity to present their work and receive feedback.

The team found that there has been notable faculty involvement in the assessment of student learning. Taken together, the Center for Teaching, Learning and Outreach (CLTO) and Office of Institutional Research (OIR) provide the institutional backbone for assessment. These offices work alongside faculty to affirm Caltech's student learning outcomes; to ensure that the standards of performance associated with them are clear at the course, program and institutional level; and to confirm that assessment results are used to inform improvements at all levels of the Institute. With few exceptions, student learning outcomes are included in course syllabi and on division websites, making it clear what outcomes are associated with each option. Data related to student outcomes is routinely collected, analyzed and interpreted to facilitate and support institutional decision-making not only in academic units, but across the entire campus. The

team's overall judgement of Caltech's assessment efforts is that there is ample evidence that it understands the role of assessment in the life of a learning institution and has developed an appreciation of a strategic, systematic, and sustained approach to educational effectiveness. The team concluded that Caltech has significantly strengthened its assessment of student learning and engagement.

B. Component 2: Compliance: Review under WSCUC Standards and Compliance with Federal Requirements; Inventory of Educational Effectiveness Indicators

The compliance review has two sections. In the first section, Caltech documented its compliance with federal requirements. More thorough treatment can be found in the appendices of this report.

The team found that Caltech's Inventory of Educational Effectiveness Indicators (IEEI), which was submitted along with the institutional report, provides a comprehensive picture of Caltech's quality assurance in both academic and nonacademic areas. It aligns with the narrative in the institutional report and clearly articulates both strengths and areas for improvement.

The second section of the compliance review is a self-review organized around the 39 Criteria for Review (CFR) distributed across WSCUC's four Standards of Accreditation. The team found that Caltech engaged in the process in such a way as to foster self-reflection. The compliance review did not identify any areas that warrant further attention or consideration.

Standard 1: Defining Institutional Purposes and Ensuring Educational Objectives

Institutional Purposes. Caltech's mission statement is distinctive and well-defined – to conduct research and education in science and technology with a particular emphasis on interdisciplinarity and collegiality (CFR 1.1). The teaching, research and support activities

discussed in the institutional report reflect consistent dedication to mission fulfillment. During the AV, faculty, students and staff alike expressed an abiding commitment to this intensive focus. Perhaps most notably, freshmen, only a few months into their Caltech careers, shared how they experience a seamless commitment to the pursuit of collaborative scientific study and discovery across undergraduates, graduate students, postdoctoral fellows and faculty.

The Core Curriculum serves as the foundation of Caltech's rigorous educational objectives. Robust undergraduate research opportunities, available to all undergraduates and expertly overseen by the Student Faculty Program Office, complement curricular programs by engaging students alongside faculty in leading-edge STEM discovery and innovation. The institutional report appendices provide extensive evidence of direct and indirect learning outcomes assessment processes for mission critical curricular and co-curricular programs. Curriculum mapping narratives demonstrate rigorous faculty engagement in Core assessment practices, and Core assessment data is regularly disaggregated by gender, race/ethnicity and other demographic characteristics. Graduation rates are impressive, consistently above 90% (CFR 1.2).

Integrity and Transparency. Documentation revealed ready access to policies on academic freedom and grievance processes (CFR 1.3). The Caltech catalog clearly presents policies regarding student conduct, human subjects research, disability, financial matters, degree requirements academic credits and grading (CFRs 1.6, 1.7). The AV confirmed that students have a strong awareness of institutional policies and understand their importance to the integrity of their learning and academic work. Several students commented on the strong community investment in the Honor Code. In addition to formal grievance procedures, students and faculty

cited the value of the biannual Student Faculty Conference to discuss areas in need of improvement in the student experience.

The AV also revealed that the faculty governance process is thriving and contributes importantly to both faculty autonomy from external influence and faculty input on important matters of institutional governance. While Caltech receives substantial financial support from government and private sources, there is no evidence of external interference in its academic or administrative functions (CFR 1.5). Both the institutional report and AV interactions demonstrated the Caltech's honest and transparent engagement with the accreditation process (CFR 1.8). Indeed, in an exemplary spirit of self-reflection and transparency, the institutional report was thorough, forthright and illuminating in its treatment of institutional strengths, challenges and areas where additional inquiry is needed.

The Caltech Statement of Community articulates the Caltech's core commitment to diversity, equity and inclusion (DEI) (CFR 1.4). It is framed as a "living document" that will continue to grow and evolve in step with the changes in the community. The AV provided strong evidence that Caltech has indeed taken recent steps to evolve and expand its activities in support of DEI and is planning additional steps to become an increasingly diverse, inclusive and equitable community.

Given Caltech's relatively small size and its focus on science and engineering, it is not surprising that numbers of students and faculty of color are small; for example, the 2019 Black or African American population includes 16 undergraduates (1.7%), 8 graduate students (.6%), and 5 tenure/tenure track faculty (1.6%). The proportion of female graduate students has remained stable at around 30% since 2010. Given Caltech's location in one of the most diverse states in the country, student and faculty diversity is clearly a crucial issue for Caltech.

Underrepresented minority (URM) six-year graduation rates have typically lagged non-URM over the past 10 years by at least 10 percent, although in 2019 the gap was closed to 4%. Recent survey results reveal that undergraduate women, comprising 45% of the population, report significantly greater drops in self-confidence after completing the Core than men notwithstanding the fact that these same women outperform men academically. The team observed multiple discussions about continuing to improve recruitment, retention, climate and learning outcomes of historically underserved populations, and the institutional commitment to addressing these challenges is strong and widespread. The team recommends continued compelling action in these areas.

There are many excellent efforts under way to address DEI at Caltech. The team heard repeatedly about the transformational work of the Caltech Center for Inclusion and Diversity (CCID) since its advent, often working in collaboration with the Equity and Title IX office. Students, faculty and staff applaud the CCID's workshops, mentoring programs and trainings as important learning experiences and contributions to belonging and community at Caltech. Many other campus initiatives seek to partner with and build upon the work of the CCID, Equity and Title IX and academic and support structures. In a July 6, 2020 email to the Caltech community, the president articulated a suite of steps Caltech will undertake to advance DEI, notably expanding support for research opportunities for historically marginalized students and developing a campus climate survey. The President's Diversity Council, an exceptionally dedicated and motivated group, shared multiple examples of localized recruitment and climate improvement efforts in divisions and departments. Members emphasized that the current mode of decentralization in DEI efforts has led to substantial experimentation and that ideas for improvements abound. However, they also noted that decentralization is not conducive to

sharing of learnings and best practices. There was also a pervasive sense that despite the current energy for change, Caltech is behind the curve and needs to bring more cross-campus coordination, resources and assessment to bear to achieve the desired progress.

The team concurs and recommends that efforts to advance DEI for all populations intensify and place particular emphasis on integrating efforts across campus and creating a sustainable, properly resourced infrastructure. To date, the CCID, often in collaboration with the CLTO, has successfully served as a both a gravitational center for programs and a collaborative partner for divisions' localized efforts. The team recommends building on these successes to create a whole for Caltech's DEI efforts that is greater than the sum of its parts.

The team's finding, which is subject to Commission review, is that Caltech has demonstrated sufficient evidence of compliance with this WSCUC Standard. Final determination of compliance with the Standards rests with the Commission.

Standard 2: Achieving Educational Objectives through Core Functions

Teaching and Learning. A Caltech education is defined by a rigorous curriculum, close collaboration between students and faculty, and small class sizes. Students can choose from 28 options (majors), spread across six academic divisions. Caltech students must complete 486 units to earn the Bachelor's of Science Degree. Students typically take 36 or more units a term, and over 4 years complete a breadth of courses across disciplines. The Core Curriculum ensures Caltech's program not only builds students' expertise within a discipline and its research, but ensures considerable depth and exposure to basic science, humanities, math, and social science overall. The Core Curriculum also emphasizes how the interdisciplinary nature of contemporary research, business, and society require the ability to make connections across disciplines. Students complete coursework in mathematics (36 units), physics (36 units) Chemistry (15 unit

class plus 6 unit lab), biology (9 units), a “menu” class (9 units), an additional introductory lab (6 units), scientific writing (3 units), humanities (36 units), social sciences (36 units), and 36 additional units in either humanities or social sciences, and physical education (9 units) (CFR 2.1).

Caltech has a curriculum map for the Core Curriculum which illustrates the progression through the Core, indicating specific courses that contribute to the development of each learning outcome in an introductory or advanced way. Curriculum maps for courses in the Core facilitate the revisions of both content and delivery of the Core, and offer opportunities to integrate outcomes across disciplinary boundaries, particularly between Humanities and Social Sciences and STEM courses. Finally, the curriculum maps heighten the ability of faculty to “speak in one voice” about the nature of the Caltech experience.

Syllabi clearly delineate the learning outcomes and the interdependent nature of the Core and options, and while Caltech does not use this language in their assessment vocabulary, this allows for the introduction, reinforcement and application of fundamental concepts and academic competencies in Core and in their option. Additionally, Caltech has clearly defined levels of achievement for graduates and undergraduate degrees, and monitors the achievement of core competencies through its Consortium on Financing Higher Education (COFHE) surveys (CFRs 2.2-2.6).

The quality of the degree is reflected in the curriculum, pedagogy and ongoing development of students through academic and co-curricular involvement. Research, academic support, residential experiences and social activities augment academics to create a truly remarkable sense of community (CFR 2.6).

Caltech has devoted considerable attention to the development of a systematic assessment program. Learning outcomes are addressed in each Core course, and the extent to which students are achieving those outcomes is evaluated by faculty through the annotation of student work (CFR 2.7). Caltech has clearly increased its understanding of where outcomes are met and where student learning could be improved, and its ability to express how learning outcomes are translated beyond graduation. Moreover, the practice of annotating student work has helped faculty articulate and attempt new ways of engaging students with an eye towards improving student learning.

The visiting committee program is designed to provide periodic, independent and authoritative evaluations of the six academic divisions. Prior to the visit the president issues a charge that seeks guidance, recommendations, and opinions on specific questions and issues, and typically covers the division's current activities and programs –both in research and teaching; the quality and effectiveness of its education program; and the division's strategic plan for the future. The visiting committees, composed of members of the board of trustees and leading academics, assess the division's research and teaching programs to affirm their strengths and to identify any weaknesses and opportunities. Visiting committees are also called upon for counsel and advice in the period between formal meetings. It is also common practice for committee members to visit on their own to give lectures or to meet with students, staff, and members of the faculty (CFR 2.7). Caltech uses modes of assessment which it finds useful and meaningful, but due to the qualitative nature of much of its work, it has yet to communicate the impact of its assessment work with those outside the institution, including the public (CFRs 2.6, 2.7).

Scholarship and Creative Activity. Consistent with its mission, Caltech maintains that research and publication are a large part of the work “not only because of the importance of

contributing to the advancement of science and thus to the intellectual and material welfare of mankind, but also because without research the educational work of a higher institution of learning lacks vitality and fails to develop originality and creativeness in its students” (Faculty Handbook, p 7). The assumption at Caltech is that faculty will spend an entire professional lifetime engaged in outstanding research and national leadership in significant areas of scholarly study, and will contribute substantially to the education of Caltech students. Evaluation of faculty members rests with the division chair, the tenured faculty of the division, the Institute Academic Council (the IACC, consisting of the president, provost, and six division chairs) and the board of trustees. The division chair monitors the development and progress of candidates and is responsible for keeping the candidate informed as to whether satisfactory progress toward tenure (typically granted in year seven) is being made.

The promotion of a faculty member is initiated through a recommendation from the appropriate Division Chair to the IACC. After careful consideration, which for senior faculty usually includes external letters of recommendation, the provost will make a formal recommendation to the president. Appointments and promotions acceptable to the president are then reported to the board of trustees or its executive committee. (CFR 2.9).

Caltech’s Center for Teaching Learning and Outreach (CLTO) is responsible for several initiatives that recognize and promote linkages between scholarship, teaching and assessment. The Caltech Innovation in Education Fund is designed to support Caltech faculty developing new courses, implementing innovative and evidence-based teaching methods, upgrading educational facilities, or pursuing other new academic activities. The CLTO also hosts TeachWeek, a campus-wide celebration of teaching and learning that features events and discussions with Caltech faculty, students and guest presenters. Additionally, there are also a

variety of awards that recognize excellence in teaching for faculty, instructors, mentor and teaching assistants. (CFRs 2.9, 3.2, 3.3)

Student Learning and Success. Caltech has been working steadfastly on issues that inform student learning and success around its use of assessment data. A 3 to 1 student-to-faculty ratio mean that faculty work closely with students, providing an opportunity for two-way conversations about student achievement that focus on student needs and motivation, rather than competition. The annotation of student work in the Core provides a documented occasion for faculty from different disciplines to come together to examine student work in detail and write large without the weight of grading. Faculty describe the impact of this project as giving them the opportunity to hear from one another about the extent to which outcomes are being met, to clarify their expectations for students and to think together about creative and innovative next steps. The annotation of student work provides ample evidence that learning outcomes are being met, and that they are living and useful tools at Caltech. Students confirmed they take pride in their learning not only within their discipline, but that they value and are proficient across many scientific disciplines. Consortium on Financing Higher Education (COFHE) surveys complement the annotation of student work, providing indirect evidence from students that they are meeting core competencies.

In co-curricular areas, the administrators, staff and students work together to support students. Members of Caltech's CARE team are provided training and are well-qualified for their roles. In the case of students, they too are ably supported in their peer leadership roles (CFRs 1.2, 2.10, 2.13).

The support structure surveys show a collective and well-organized effort, within the co-curriculum and divisions, to provide a variety of support structures that are designed to facilitate

the successful completion of a Caltech degree. Surveys and focus group data demonstrate Caltech's commitment to improvement with respect to the cultivation of formal and informal networks of advising and mentoring. Each division offers different programs that are specific to the nature of the disciplines and the needs of their students. The divisions share a set of values and academic divisions coordinate the advising and mentoring of their students. A Student Success Initiative has begun to examine the issue of student advising, and the team would like to emphasize the importance of prioritizing this work, including adding a specific focus on advising beyond the first year. At the graduate level, particular and consistent attention is also needed to respond to graduate student advising needs (CFR 2.12).

The team's finding, which is subject to Commission review, is that Caltech has demonstrated sufficient evidence of compliance with this WSCUC Standard. Final determination of compliance with the Standards rests with the Commission.

Standard 3: Developing and Applying Resources and Organizational Structures to Ensure Quality and Sustainability

Faculty and Staff. The institution employs world-class faculty and staff who are extremely passionate about, committed to, and engaged in the health and future of its endeavors. As reported in the Faculty Handbook, faculty are regularly evaluated and reviewed. In addition, the institution has made significant advancements and investments in providing faculty development activities through the CCID, CLTO and Office of Institutional Research. The employee handbook provides detailed information about working at Caltech and HR policies and practices. The team recommends Caltech accelerate its work in the area of equity, diversity and inclusion related to faculty and staff with a focus on increasing representation of historically marginalized groups, understanding and advancing a supportive and welcoming climate, and

developing a comprehensive infrastructure supported by appropriate resources that will lead to sustainable, long term, and meaningful change (CFRs 3.1-3.3).

Fiscal, Physical, and Information Resources. Caltech is financially stable and has unqualified independent financial audits and resources sufficient to ensure long-term viability. Resource planning includes realistic budgeting, enrollment management, and integration with other institutional planning (CFRs 3.4, 3.5). In terms of the pandemic, like every other academic institution, Caltech faces financial challenges due to the pandemic. However, the team is confident, given its financial resources and the quality of the leadership of the Institute, that it will meet these challenges without compromising its core mission.

Faculty are supported in the use of technology for instruction and have access to the fiscal, physical information and technology resources to create leading edge research and scholarship.

Organizational Structures and Decision-Making Processes. Caltech is organized academically by divisions, representing six areas: biology and biological engineering; chemistry and chemical engineering; engineering and applied sciences; geological and planetary sciences; humanities and social sciences; and physics, mathematics and astronomy. The heads of the division are part of the academic leadership of the institution, and they meet regularly to coordinate academic policy and to plan major scholarly and educational initiatives. The team was impressed by the collaborative decision-making processes in place. While a number of people noted Caltech's decentralization, faculty also commented frequently how easy it was to work across traditional disciplinary boundaries. The team concluded that the institution's organizational structure and decision-making processes were strong and exhibited high engagement by stakeholders (CFRs 3.4-3.6).

The governing board consists of 42 trustees, 28 senior trustees, 20 life members, and one honorary life member. The board exercises appropriate oversight over the Institute, including hiring and evaluating the president (CFR 3.9). The team notes that the board has considerable expertise in finance, governance, business, research, technology, and scientific fields, but lacks members who are currently working in higher education. Members with expertise in higher education leadership can help a board understand an institution's educational offerings, academic infrastructure, faculty, learning outcomes, assessment, quality assurance systems, accreditation, and the changing environment within which a college or university operates. The team recommends that the Institute ensure that the board of trustees bylaws and practices are consistent with the WSCUC Governing Board Policy and Governing Board Policy Implementation Guide, which addresses such issues as expertise in higher education within board membership.

Caltech's faculty exercises effective academic leadership through the faculty board and faculty governance committees (CFR 3.8, 3.10). Members of the Faculty Board described their relationship with the administration as extremely collaborative, not adversarial and a true partnership in trying to improve teaching and scholarship. The Faculty Board reports being heavily involved in providing input into Caltech's response to the pandemic. Members of the reaccreditation team noted the absence of any complaints about the attentiveness of the administration to faculty concerns.

The team's finding, which is subject to Commission review, is that the institution has demonstrated sufficient evidence of compliance with this WSCUC Standard. Final determination of compliance with the Standards rests with the Commission.

Standard 4: Creating an Organization Committed to Quality Assurance, Institutional Learning, and Improvement.

Caltech's community of administrators, faculty, and staff work collaboratively to achieve the Institute's mission and promote a culture of assessment and continuous improvement in their educational and administrative operations. The inclusive process through which the campus completed the Compliance with Standards Worksheet (CWS) and Inventory of Educational Effectiveness Indicators (IEEI), and thoughtfully chose and addressed Caltech's institutional themes, demonstrates the community's collective commitment to excellence. The CWS and IEEI included contributions from and/or data regarding every stakeholder group (CFRs 4.1, 4.3, 4.7).

The team found the Institutional Research Office (IRO) and the CLTO in particular to have systematic and effective processes for collecting, analyzing, interpreting, and sharing data. Staff in these units support assessment that informs meaningful conversations and fortifies a culture of continuous improvement. Development and staffing of these complementary central units appears to have made a significant impact on the Institute's capacity for and regular attention to collection and analysis of the right data to support decisions, whether they be related to learning outcomes, academic and co-curricular support services, instructional innovation, student organizations, administrative operations, resource allocations, research, or auxiliary enterprises. Caltech's TPR report and supporting documents included ample evidence upon which to conclude that, in addition to being an educational organization, it is a learning organization (CFRs 4.2, 4.3, 4.4, 4.6).

IRO is currently an office comprised of a single individual, and while the office is managing to keep track of all of the aforementioned activities, the team noted relying on a single individual presents both a workflow challenge and the potential for burnout. The team urges

Caltech to think about ways to ensure that this important work is sustainable. For example, a centralized body for assessment rather than the current system of ad-hoc requests for engagement or support could help with prioritization of the many active projects. Such a body could also help determine which lines of inquiry within a project should be pursued first, and streamline the dissemination of information across the Institute. The IRO currently makes those decisions with input from the supervisor, but a shared vision across the administration could be helpful. As funding becomes available, IRO is clearly be an area where additional staff would be helpful, but given the current financial realities, the team advises Caltech to investigate structural adjustments in the interim.

Faculty have responsibility for and are appropriately involved in curriculum development, assessment, and refinement. Caltech's Curriculum Committee, Faculty Board, and Core Curriculum Steering Committee exemplify faculty members' commitment to quality assurance and innovation. These efforts are bolstered by the CTLO's advancement of evidence-based, inclusive practices to support effective pedagogy and innovative educational programs (CFR 4.4).

Visiting committees also provide Caltech with valuable, independent, authoritative feedback related to academic programs and units. Regularly on a five-year cycle, the degree programs in each academic division are reviewed on research and teaching, quality and efficacy of each program's curriculum and student outcomes, and the strength of its strategic plan. This process is aligned with Caltech's collaborative approach to evaluating areas of strength and areas that warrant attention (CFR 4.1).

Caltech's planning processes include data and reflection as the basis for setting and refining campus priorities and strategies. The Institute Academic Council (IACC) is composed of

the division chairs, provost, and president. Convening regularly, they set the Institute's intellectual agenda, which is directly connected to Caltech's mission, informed by the institution's principles and faculty, and ultimately set by the president and provost. Once set, the intellectual agenda is shared with faculty, trustees, and administrators who all have roles in realizing this component of the strategic plan (CFRs 4.6, 4.7).

The team's review of Caltech's institutional report, supporting documentation, and interviews with students, staff, faculty, and administrators confirmed the following: 1) all divisions participate every five years in comprehensive program reviews that involve internal and external peer reviewers; 2) the IRO and CTLO are high-functioning, high impact central support units; 3) the Faculty Board and division heads lead educational assessment and decision making; 4) program learning outcomes, institutional learning outcomes, Core Curriculum learning outcomes, and degree requirements are clearly outlined on all division websites; 5) the data and evidence used to determine whether graduates have achieved stated outcomes is consistent across the divisions; and 6) all divisions participate in Caltech's Student-Faculty Conference and use Teaching Quality Feedback Reports, research theses, and placement results to determine the extent to which graduates have achieved stated degree outcomes. (CFRs 4.1-4.7)

In conclusion, Caltech engages in sustained, evidence-based, and participatory self-reflection about how effectively it is accomplishing its purposes and achieving its educational objectives. Caltech considers the changing environment of higher education in envisioning its future. These activities inform both institutional planning and systematic evaluations of educational effectiveness. The results of institutional inquiry, research, and data collection are used to establish priorities, to plan, and to improve quality and effectiveness.

The team's finding, which is subject to Commission review, is that Caltech demonstrated sufficient evidence of compliance with this WSCUC Standard. Final determination of compliance with the Standards rests with the Commission.

C. Component 8: Institution Specific Themes

Core Curriculum. Caltech's size and sharp sense of mission give it a focus that is both an enormous strength, but also creates some challenges. At a time when many other institutions are suffering from curricular entropy, Caltech's focus has produced a Core Curriculum that creates not only a common body of knowledge for all Caltech undergraduates, it also creates a very strong common experience and culture. The Core binds students and faculty and even alumni together. Everyone understands what a Caltech education stands for. That said, this intense, common, highly prescribed educational experience often leaves little opportunity for students to explore within the curriculum. Students have relatively little flexibility given that many Core required subjects are offered only once a year. Moreover, given that the requirements of individual majors are equally demanding, students are often left with very few opportunities to take courses in subjects that might expose them to new and different ways of thinking or seeing the world. As the faculty consider revisions to the Core, the team strongly recommends consideration of offering some subjects more than once a year so that students are not forced into a very narrow intellectual path. The team also urges that any expansion of the Core (such as inclusion of a computer science requirement) not be accomplished at the expense of further reductions in student flexibility and choice.

Caltech's focus tends to attract students who, not surprisingly, elect to be at an institution where the emphasis is on science and technology. In this environment, elements of the Core that address the humanities and social sciences run the risk of being undervalued by students. In self-

assessment of their own mastery of material, students report far less progress on, for example, written and oral communication skills than quantitative reasoning skills. Precisely because of the focus of Caltech, the faculty and Institute leadership must constantly communicate the importance of the humanities and the social sciences in the education of future leaders in the fields of science, engineering and technology. The ability to clearly and sharply express ideas both in writing and orally, and to appreciate the context in which science and engineering operate have the capacity to greatly amplify the impact of even the very best science and engineering education. The team encourages the faculty to think hard about subtle signals that may unconsciously devalue the humanities and social sciences (HSS) or create incentives for students to defer satisfying HSS requirements until late in their Caltech education.

The institution has engaged in continuous, broad-based, and productive dialogue on the core curriculum. It has created an initial infrastructure (CTLO, IRO, Writing Center) for collecting direct and indirect learning assessment data that was widely cited in the team meetings as extremely effective in enhancing pedagogy and redesigning curriculum and has moved the Institute along the pathway to creating a culture of evidence-based assessment. The Inclusive Caltech Core efforts have translated into actionable changes in the classroom, for example, accessibility in terms of remote learning, noncognitive outcomes, assessing prior learning, recognizing deficit model, pre-course surveys, etc. The team recommends that Caltech continue progress in evaluating and improving the Core Curriculum. As faculty explore innovative ideas and consider changes to the Core that they place an emphasis on: 1) strategies to redeploy teaching resources in ways that will enhance student flexibility in navigating the curriculum and not further reduce it; 2) the value of HSS courses with respect to the development of core competencies like written and oral communication with a goal of achieving comparable levels of

reported achievement as in quantitative reasoning skills; 3) the preparation of students to be good citizens and leaders who are able to navigate moral and ethical issues and develop the empathy necessary to succeed in an increasingly complex world.

Academic and Co-Curricular Support. Caltech defined an ambitious project to fulfill its second thematic review: to assess the academic and co-curricular support structures that collectively strive to ensure students' success and to help them overcome personal and academic difficulties on the path to degree completion. In particular, this theme seeks to explore how Caltech's support structures have been responsive to changes in student populations in the 21st Century, including increasing mental health needs and the need for belonging for an increasingly diverse student population.

It is rare for an institution of higher education to undertake such a thorough and cross-cutting assessment of support structures, and the team found that the well-coordinated Student Support Working Group (SSWG), convened in 2018 and comprised of faculty and staff leaders, was key to the success of this unprecedented effort. The SSWG defines seven core objectives for support structures. These objectives establish an excellent foundation for support structure development and assessment across campus. Given the ambitiousness of the project, the team applauds the SSWG's decision to go deep in six support structures, rather than seek to study all in the first pass. The team encourages Caltech to ensure that the necessary resources and infrastructure are in place to sustain current assessment practices for these six academic and co-curricular support structures and to expand into the additional areas identified for the next phase.

The SSWG deployed a number of methods to collect and analyze data, including surveys on usage and satisfaction (internal and external such as COFHE and the National College Health Assessment (NCHA), student focus groups and detailed reporting from leaders of the individual

support structures. The team heard multiple times that the assessment process itself advanced cross-structure understanding and collaboration, and that this has already led to important program improvements and innovations.

Overall, the team found substantial evidence that over the past 10 years, Caltech has expanded and improved its academic and co-curricular support structures to the benefit of all Caltech community members. The overall picture resulting from this thematic assessment process is a support landscape that is well-utilized, responsive to evolving individual student needs and aligned with Caltech's mission and priorities. Of particular note, the creation of the CTLO, the Hixon Writing Center (HWC), and the Caltech Center for Inclusion and Diversity (CCID) have been transformative for students and faculty alike, bringing opportunities for deeper in engagement in teaching and learning, stronger support and community for historically underserved populations, and broader collaboration across academic and co-curricular components of the Caltech experience. The review illuminated many other specific strengths, as well as some areas for continued growth and attention, thanks to the rigorous and multifaceted assessment methods of the SSWG.

The team heard a lot about intensity and rigor of Caltech as both a strength and vulnerability. It was evident throughout the AV that the Wellness Center is viewed as a highly effective, easily accessible resource to bolster wellbeing in the face of this intensity. Students were quick to commend quality of mental health support and emphasized its importance in view of the high-stress academic life at Caltech. The "Student Wellness Services In-Depth Assessment" report reveals strong use of data from NCHA and other surveys to inform services and track trends in students' needs. There is also substantial evidence of effective outreach programs, such as collaborations with residential programs and suicide prevention training

programs. Finally, faculty, students and staff applaud Occupational Therapy as an important and effective addition to the portfolio of support services at Caltech.

Pre-matriculation undergraduate programs, including Freshman Summer Research Institute and Math 0, are thriving and widely viewed as essential support for students' transition into the rigorous Caltech freshman year. The programs have well-defined learning outcomes that include academic, research and student life components, comprising a whole student approach that aligns with best practices for supporting historically underserved and marginalized students' entry into higher education. Assessment results provided in the "In-Depth Assessment Report" demonstrate broad achievement of the short-term measurable outcomes and a solid plan for continued assessment of longer-range goals. During the AV, students and faculty spoke to the highly positive impacts of the program on students' transition to Caltech. The CCID and other oversight staff are to be commended for their excellent oversight of the program and commitment to ongoing enhancements and improvements.

Hixon Writing Center and Faculty Student Programs are also highly effective and valued programs across Caltech. The team heard particular praise for the Writing Center's work with STEM curricula and writing practices (including the recent addition of two STEM writing specialists), and for the integration of writing and communication learning into undergraduate research programs. Both offices have substantial assessment practices that continually inform delivery of programs and demonstrate strong student achievement of learning outcomes.

The CTLO has been transformative for teaching and learning at Caltech. Assessment reports reveal that CTLO's rates of reach and engagement with Caltech populations have been extraordinary given its relatively short history at the institution, now touching nearly 100% of faculty. CTLO's assessment methods are aligned with current literature and best practices on

teaching and learning. CTLO deploys assessment data to inform program design, including tailoring programs to the specific teaching and learning population and evolving programs with the changing teaching culture. Efforts are underway to permanently endow the CLTO, and the team both supports and encourages that work.

As documented elsewhere in this report, the contributions of the CCID are extensive and deep. The ongoing importance of this support structure cannot be overemphasized. Students the team spoke with indicated that CCID creates for them a place of belonging where they can bring their authentic identities and escape the subtle pressures felt in other Caltech settings to “conform to the majority culture.” Underrepresented minority students in particular spoke to the stresses linked to being “the only one” in their classes. Students view CCID as a place where their needs are addressed individually and in culturally relevant ways. Because numbers of URM students remain small at present, Caltech may need to look for additional ways to create belonging, such as leveraging alumni connections or increasing faculty engagement in CCID trainings on inclusive learning environments. While CCID will certainly continue to be a major contributor to this effort, it is important that the SSWG continues to pay particular attention to ways that support structures besides the CCID – and particularly those in academic divisions – contribute to the SSWG’s overarching objective for support structures to “cultivate an inclusive learning environment.” Drawing upon CCID expertise and successes to date, SSWG and other DEI institutional efforts should continue to pursue deeper integration of inclusion into student support to ensure advancement of this crucial objective.

Although academic advising and career education were not a focus of SSWG’s 2020 assessment efforts, these important support structures arose frequently in AV discussions and in survey data provided to the team. Undergraduates report bimodal experiences with academic

advising. Generally, students speak much more favorably about the quality of freshman advising than upper-class advising, although some observed that the quality of freshman advising is mixed depending on the level of individual faculty advisors' engagement and availability.

Both students and faculty observe that Caltech students rely substantially more on peers for guidance than faculty or staff. The COFHE 2019 Enrolled Student Survey indicates that this is true in comparison to peer institutions as well: 37.4% of Caltech students report that they do not seek help from advisors whereas the COHFE institutional average 21.8%. Caltech's 2020 Undergraduate Survey on Support Structures reveals that peers are the primary source of support for 80% of undergraduates. The institutional report rightfully characterizes this as "extreme" and potentially indicative of an "unmet need." While the team recognizes the value of peer advice, it is generally not appropriate for all areas of student need. The team agrees with Caltech's desire to explore how heavy reliance on peers may relate to perceptions (and realities) of faculty advising quality. This exploration should also help to determine where faculty advising improvements may be needed. To this end, the team encourages consideration of how to centralize best practices and advisor learning opportunities, particularly with regard to working with diverse students. Some Caltech members remarked that upper-class advising is stronger in the divisions that have dedicated professional staff for this purpose. This also merits deeper exploration. Finally, there was surprisingly little mention of the role of technology as a means of improving academic advising. Technology can be used to connect students to alumni who can provide welcome advice on careers. In addition, some schools are using AI to help identify pathways through the curriculum for students based upon their interests. We recommend exploration of these innovative uses of technology as Caltech assesses the spectrum of advising needs.

As regards graduate advising, students spoke to the need to improve faculty advising in the early years of students' Caltech graduate career, particularly in large lab groups. Students report having too little interaction with faculty in their first two years leading to too much independence and need for self-direction in areas where they feel they lack expertise and experience. While the sample size for this observation was small, if it proves to be generalizable, it would be of concern and warrant a change of graduate advising practices. Graduate students also expressed a desire for more support for exploration of career pathways outside academia and expanded career fair offerings outside "computer science and the typical Jet Propulsion Laboratory career paths." They also desire more opportunities to develop non-discipline-specific career skills like professional writing and speaking.

The team notes how this particular theme, more than any other part of the accreditation process, brought into relief the remarkable contributions of professional staff. Their contributions are critical to programmatic excellence at Caltech. They demonstrate expertise in their fields, an orientation toward bridging academic and co-curricular realms, and a shared commitment to collaborative program design and individualized support for students. The team also observed strong alignment and working relations across the Student Affairs organization, which reinforces the integrated approach to student care and support across the institution. The Care Team is recognized broadly for the way that it receives concerns from all across campus and provides both responsive and pro-active support for students in need. It is clear that staff play a crucial role in fostering positive experiences for both graduate and undergraduate students. The team encourages Caltech to continue to seek ways to celebrate and make visible staff contributions.

D. Component 9: Reflection and Plans for Improvement

Caltech enjoys a reputation as one of the premier academic institutions in the world. Following the visit, the team has a better appreciation of why this is so. Everyone at Caltech is committed to both excellence and rigor. This commitment is shared by students, faculty, staff, alumni, the administration and the board. Moreover, everyone has a shared sense of mission. While Caltech does not try to do everything, it is committed to pushing the boundaries of science and engineering scholarship and education as well as any institution in the world.

Like any great academic institution, the faculty at Caltech tend to define the place. They are all scholars of exceptional distinction and are routinely recognized with the most important awards in their fields. As a result, Caltech is a very faculty centric institution, something that is quite common among academic institutions of the first rank. But the downside of being very faculty centric is that staff have the potential to sometimes feel undervalued. The team notes that the professional staff are exceptionally distinguished in their own right. And in many of the team's meetings, faculty went out of their way to praise staff's efforts to facilitate remote teaching in the age of COVID or to otherwise respond to the demands of the moment. Students conveyed how important staff are to creating a supportive, welcoming community where students can share and develop their whole selves. The team encourages Caltech to find ways to routinely acknowledge and give voice to the work of the staff. In the end, they make it possible for the faculty to do their best work.

Caltech's size is routinely praised by all. Students, faculty and staff benefit from the intimacy of an organization where people really know their colleagues; where it is possible for students to know a very large proportion of their classmates; where the leadership of the Caltech and its divisions are literally visible to all (at least pre-COVID). Students give high praise to

faculty and staff for knowing them well enough so that they routinely come to their aid in times of personal crisis. But this same, highly valued intimacy also creates complexity in achieving a truly diverse campus where all feel as if they belong. With so few students (and a proportionately smaller faculty and staff) it is harder to create scale for traditionally underrepresented groups. Small numbers thus make it hard to create and sustain a sense of community for those who often feel different because of their race, religion, nationality, gender, sexual orientation or socio-economic status. The good news is that Caltech understands these challenges. The team was encouraged by the enthusiasm and energy displayed by the Caltech community and their embrace and response to these challenges.

The team closes this report where it started. Caltech is a remarkable place populated by remarkable people. The team was impressed by the creativity and the commitment of everyone affiliated with Caltech to tackle all of the challenges noted in this report. Moreover, the team is confident that the next accreditation team will have the opportunity to review and document even greater progress in creating an even more equitable, diverse, and excellent Caltech for the future.

SECTION III – FINDINGS, COMMENDATIONS, AND RECOMMENDATIONS

Commendations

The team affirms and applauds the approach that Caltech has taken in its thematic pathway for review. The work has been serious and systematic throughout. Caltech has consistently demonstrated its intention to work collegially and productively with WSCUC staff and the team as one of the first institutions to take part in this new pathway to reaffirmation. Most impressive to the team has been the clear sense of campus engagement with the TPR process that became stronger and more mature over the course of the review. The team is certain that Caltech has learned a great deal about itself, especially in the areas of the Core Curriculum, academic and co-curricular support structures, and the assessment of student learning. The administrative leadership of the Institute, the faculty, the staff, the students, and the board of trustees all were responsive to the team's inquiries. The team believes that all of this provides strong testimony to Caltech's commitment to institutional capacity and educational effectiveness of the highest order. In particular, the team commends Caltech for the following accomplishments:

1. Its approach to the reaffirmation process and Thematic Pathway for Reaffirmation with a spirit of inquiry and self-reflection, and a genuine interest in institutional improvement. Caltech produced a well-written, well-organized and well-documented report; responded thoughtfully and successfully to the issues identified in the last Commission letter; undertook carefully planned research investigations that led to meaningful program and co-curricular improvements; and generated widespread collaboration, engagement and support for the accreditation process.

2. The involvement of a well-functioning faculty board in facilitating active communication among administration and faculty, collaborative decision-making and a robust system of shared governance. The faculty board has engaged faculty in important decisions, not only with respect to the curriculum; it has also played a key role in helping to frame the Institute's COVID-19 response.
3. An unwavering commitment to excellence and rigor in both the educational and scholarly missions. Faculty spoke frequently about the ease of scholarly collaboration across traditional disciplinary boundaries notwithstanding the decentralized organizational structure of the Institute. Students spoke about a supportive and collaborative culture that emphasized collective achievement and de-emphasized competition. Many noted that COVID has brought the Institute even closer together to address the challenges posed by the pandemic.
4. The institutionalization of a number of key functions that advance evidence-driven approaches to Caltech's educational mission, including creation of the Hixon Writing Center; Center for Teaching, Learning and Outreach; Caltech Center for Inclusion and Diversity, and the Institutional Research Office. These units' positive impact is evident across the Institute. Faculty, staff and students alike applaud their collaborative approaches, influence on data-driven improvements, and key contributions in supporting the Institute's COVID pivot to remote learning.
5. The establishment of a data-rich, evidence-informed culture through widely available learning outcomes for the Core Curriculum, systematic surveys, annotation of student work, analyses and a commitment to using information to assess and improve the student experience and pedagogical practice. The team commends the assessment systems put

into place for academic and co-curricular support and the plans to continue these processes with additional support structures.

6. The commitment to providing the highest standards of individual care for students who encounter health, family or other personal challenges. Students spoke eloquently about the extraordinary outreach of the Institute to them in times of personal crisis.

Administrators, faculty and staff know students individually and with the assistance of the centralized CARE team, provide a range of coordinated support resources, from financial assistance to personal care, when students are in moments of greatest need.

Recommendations

The team recommends that Caltech:

1. Continue progress in evaluating and improving the Core Curriculum. As faculty explore innovative ideas and consider changes to the Core, place an emphasis on:

(CFRs 2.2a, 2.3, 2.4, 2.6, 4.4)

- a. strategies to redeploy teaching resources in ways that will enhance student flexibility in navigating the curriculum and not further reduce it;
- b. the value of humanities and social science courses with respect to the development of core competencies like written and oral communication with a goal of achieving comparable levels of reported achievement as in quantitative reasoning skills;
- c. the preparation of students to be good citizens and leaders who are able to navigate moral and ethical issues and develop the empathy necessary to succeed in an increasingly complex world.

2. Accelerate its work in the area of equity, diversity and inclusion with a focus on increasing representation of historically marginalized groups, understanding and advancing a supportive and welcoming climate, addressing disparities in a variety of outcomes and experiences, and developing a comprehensive infrastructure supported by appropriate resources that will lead to sustainable, long term, and meaningful change. (CFRs 1.1, 1.4, 2.10, 2.13, 3.2 and WSCUC Equity and Inclusion Policy)
3. Ensure that the Board of Trustees bylaws and practices are consistent with the WSCUC Governing Board Policy, which addresses such issues as expertise in higher education within board membership. (CFR 3.9 and WSCUC Governing Board Policy and WSCUC Governing Board Policy Implementation Guide)

APPENDICES

A. Federal Compliance Forms

1. Credit Hour and Program Length Review
2. Marketing and Recruitment Review
3. Student Complaints Review
4. Transfer Credit Review

FEDERAL COMPLIANCE FORMS

OVERVIEW

There are four forms that WSCUC uses to address institutional compliance with some of the federal regulations affecting institutions and accrediting agencies:

- 1 – Credit Hour and Program Length Review Form
- 2 – Marketing and Recruitment Review Form
- 3 – Student Complaints Form
- 4 – Transfer Credit Policy Form

During the Accreditation Visit, teams complete these four forms and add them as an appendix to the Team Report. Teams are not required to include a narrative about any of the matters in the team report but may include recommendations, as appropriate, in the Findings, Commendations, and Recommendations section of the team report.

1 - CREDIT HOUR AND PROGRAM LENGTH REVIEW FORM

Under federal regulations, WSCUC is required to demonstrate that it monitors the institution's credit hour policy and processes as well as the lengths of its programs.

Credit Hour - §602.24(f)

The accrediting agency, as part of its review of an institution for renewal of accreditation, must conduct an effective review and evaluation of the reliability and accuracy of the institution's assignment of credit hours.

(1) The accrediting agency meets this requirement if-

(i) It reviews the institution's-

- (A) Policies and procedures for determining the credit hours, as defined in 34 CFR 600.2, that the institution awards for courses and programs; and
- (B) The application of the institution's policies and procedures to its programs and coursework;

and

(ii) Makes a reasonable determination of whether the institution's assignment of credit hours conforms to commonly accepted practice in higher education.

(2) In reviewing and evaluating an institution's policies and procedures for determining credit hour assignments, an accrediting agency may use sampling or other methods in the evaluation.

Credit hour is defined by the Department of Education as follows:

A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally established equivalency that reasonably approximates not less than—

(1) One hour of classroom or direct faculty instruction and a minimum of two hours of out of class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or ten to twelve weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time; or

(2) At least an equivalent amount of work as required in paragraph (1) of this definition for other academic activities as established by the institution including laboratory work, internships, practica, studio work, and other academic work leading to the award of credit hours.

See also WASC Senior College and University Commission's Credit Hour Policy.

Program Length - §602.16(a)(1)(viii)

Program length may be seen as one of several measures of quality and as a proxy measure for scope of the objectives of degrees or credentials offered. Traditionally offered degree programs are generally approximately 120 semester credit hours for a bachelor's degree, and 30 semester credit hours for a master's degree; there is greater variation at the doctoral level depending on the type of program. For programs offered in non-traditional formats, for which program length is not a relevant and/or reliable quality measure, reviewers should ensure that available information clearly defines desired program outcomes and graduation requirements, that institutions are ensuring that program outcomes are achieved, and that there is a reasonable correlation between the scope of these outcomes and requirements and those typically found in traditionally offered degrees or programs tied to program length.

CREDIT HOUR AND PROGRAM LENGTH REVIEW FORM

Material Reviewed	Questions/Comments (Please enter findings and recommendations in the Comments sections as appropriate.)
Policy on credit hour	Is this policy easily accessible? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
	Where is the policy located? The credit hour policy is described in the Caltech Catalog in Section 1: General Information (pp. 32) and in Section 5: Courses (pp. 447).
	Comments:
Process(es)/ periodic review of credit hour	Does the institution have a procedure for periodic review of credit hour assignments to ensure that they are accurate and reliable (for example, through program review, new course approval process, periodic audits)? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
	Does the institution adhere to this procedure? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
	Comments: The Curriculum Committee, Graduate Studies Committee, Core Curriculum Steering Committee and Faculty Board review and approve course credit hour assignments as new courses are created. Faculty members who wish to change the number of units assigned to an existing course must first coordinate their request with the Option administrator and obtain the approval from their Option and Division Chair. After this approval has been secured, faculty submit the request through CATALOGER, an online system used to process all curriculum change requests. Once submitted to CATALOGER, the unit change request is forwarded to the Curriculum Committee, Graduate Studies Committee, and/or the Core Curriculum Steering Committee for their review. If approved by the appropriate committee(s), the request is forwarded to the Faculty Board for final approval. This process is described on Caltech's Officers of the Faculty website (https://oof.caltech.edu/) and is accessible to members of the Caltech community. A copy of the "Curriculum/Catalog Change" webpage can be found here .
Schedule of on-ground courses showing when they meet	Does this schedule show that on-ground courses meet for the prescribed number of hours? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
	Comments: The course schedule is located on the Registrar's website (https://registrar.caltech.edu/schedules). Course schedules for current and prior terms are readily available at this URL.
Sample syllabi or equivalent for online and hybrid courses <i>Please review at least 1 - 2 from each degree level.</i>	How many syllabi were reviewed? 3
	What kind of courses (online or hybrid or both)? Lecture
	What degree level(s)? BS, MS, PhD
	What discipline(s)? Geology, Physics, Social and Decision Neuroscience
	Does this material show that students are doing the equivalent amount of work to the prescribed hours to warrant the credit awarded? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Comments:	
Sample syllabi or equivalent for other kinds of courses that do not meet for the prescribed hours (e.g.,	How many syllabi were reviewed? 3
	What kinds of courses? Labs and Independent Study
	What degree level(s)? BS, MS, PhD
	What discipline(s)? Mechanical and Civil Engineering, Aeronautics, Chemistry and Chemical Engineering

internships, labs, clinical, independent study, accelerated) Please review at least 1 - 2 from each degree level.	Does this material show that students are doing the equivalent amount of work to the prescribed hours to warrant the credit awarded? X YES <input type="checkbox"/> NO
	Comments:
Sample program information (catalog, website, or other program materials)	How many programs were reviewed? 8
	What kinds of programs were reviewed? STEM & non-STEM degree programs
	What degree level(s)? undergraduate and graduate (M.S. and Ph.D.)
	What discipline(s)? Bioengineering, Chemistry, History and Philosophy of Science, Computing and Mathematical Sciences, Social and Decision Neuroscience, Chemical Engineering, Information and Data Sciences, Mathematics
	Does this material show that the programs offered at the institution are of a generally acceptable length? X YES <input type="checkbox"/> NO
Comments: For undergraduate options, information on the number of units required to complete the bachelor's degree is available by Division and Option in the Caltech Catalog, Section 3: Information for Undergraduates . The degree requirements for each undergraduate option, including the number of units required, are also available on/accessible from each Academic Division's website: Biology and Biological Engineering ; Chemistry and Chemical Engineering ; Engineering and Applied Science ; Geological and Planetary Sciences ; Humanities and Social Sciences ; Physics , Mathematics , and Astronomy . Some Divisions list all undergraduate option requirements on their websites while others have opted to include links to the Section 3 of the Caltech Catalog. For the graduate options, information on the number of units required to the complete the graduate degree (i.e., M.S. or Ph.D.) is available by Division and Option in the Caltech Catalog, Section 4: Information for Graduate Students . Degree requirements for each graduate option are also available on each's Academic Division's website: Biology and Biological Engineering ; Chemistry and Chemical Engineering ; Engineering and Applied Science ; Geological and Planetary Sciences ; Humanities and Social Sciences ; and Physics , Mathematics , and Astronomy .	

Review Completed By: Tracy Molidor
Date: October 9, 2020

MARKETING AND RECRUITMENT REVIEW FORM

Under federal regulation*, WSCUC is required to demonstrate that it monitors the institution's recruiting and admissions practices.

Material Reviewed	Questions and Comments: Please enter findings and recommendations in the comment section of this table as appropriate.
**Federal regulations	<p>Does the institution follow federal regulations on recruiting students? X YES <input type="checkbox"/> NO</p> <p>Comments: Caltech follows all federal regulations outlined in the Higher Education Act, including those pertaining to the recruitment of students. The following Institute policies and administrative guidelines are also relevant to the recruitment of students and are adhered to by all Institute personnel:</p> <ul style="list-style-type: none"> - Caltech Code of Conduct: https://asic.caltech.edu/documents/13117/2016_Caltech_Ethical_Conduct_short_co_v4_FINAL.pdf - Caltech Conflicts of Interest Policy: http://hr.caltech.edu/documents/2922/caltech_institute_policy-conflicts_of_interest.pdf - Caltech Anti-Kickback Guidelines: http://hr.caltech.edu/documents/2908/Anti-Kickback_Admin_Guideline_Final_2018.pdf - Caltech Staff Personnel Memoranda on Graduate Teaching Assistants, Graduate Research Assistants, and Undergraduate Teaching Assistants: http://hr.caltech.edu/documents/2700/pm10-4.pdf - Caltech Staff Personnel Memoranda on the Tuition Exemption Program for Children of Employees: http://hr.caltech.edu/documents/2680/pm15-18.pdf - The Federal Higher Education Act: https://www2.ed.gov/policy/highered/leg/edpicks.jhtml <p>Caltech's Audit Services and Institute Compliance (ASIC) office proactively partners with management, faculty, and staff to ensure that they comply with the applicable laws, regulations, and internal procedures. The Caltech Whistleblower Policy ensures that any employee that reports violations or potential violations of law or other serious breaches of conduct can do so without fear of retaliation. As a member of the National Association for College Admission Counseling, Caltech admissions staff adhere to NACAC's code of ethics and professional practices.</p>
Degree completion and cost	<p>Does the institution provide information about the typical length of time to degree? X YES <input type="checkbox"/> NO</p> <p>Does the institution provide information about the overall cost of the degree? X YES <input type="checkbox"/> NO</p> <p>Comments: Caltech's Cost of Attendance are available on the Institute's Financial Aid Office website and the Undergraduate Admissions website for undergraduates and on the Graduate Studies Office website for graduate students. Current year information on the undergraduate expenses (Section 3, pp. 201-202) and graduate student expenses (Section 4, pp. 341-342) are also included in the Caltech Catalog. The Financial Aid Office also links to the graduate degree program cost of attendance. Information on the average cumulative student loan debt of Caltech's undergraduate is available on the Financial Aid Office Loan Disclosure webpage. Information about the time to degree is available on the website of the Institutional Research Office.</p>
Careers and employment	<p>Does the institution provide information about the kinds of jobs for which its graduates are qualified, as applicable? X YES <input type="checkbox"/> NO</p> <p>Does the institution provide information about the employment of its graduates, as applicable? X YES <input type="checkbox"/> NO</p>

	<p>Comments: Career information and examples of alumni employment are provided on several Caltech websites (e.g., Career Development Center, undergraduate admissions, Office of Graduate Studies, individual degree program pages). One such example is the ‘Life After Caltech’ webpage, which also includes data on the post-Caltech plans of graduates. Opportunities and options for graduate education, internships, and residencies, as applicable, also are discussed in well-placed and readily-intuitive locations of the Institute’s website.</p>
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*§602.16(a)(1)(vii)

**Section 487 (a)(20) of the Higher Education Act (HEA) prohibits Title IV eligible institutions from providing incentive compensation to employees or third party entities for their success in securing student enrollments. Incentive compensation includes commissions, bonus payments, merit salary adjustments, and promotion decisions based solely on success in enrolling students. These regulations do not apply to the recruitment of international students residing in foreign countries who are not eligible to receive Federal financial aid.

Review Completed By: Tracy Molitor

Date: October 9, 2020

STUDENT COMPLAINTS REVIEW FORM

Under federal regulation*, WSCUC is required to demonstrate that it monitors the institution's student complaints policies, procedures, and records.

Material Reviewed	Questions/Comments (Please enter findings and recommendations in the comment section of this column as appropriate.)
Policy on student complaints	Does the institution have a policy or formal procedure for student complaints? X YES <input type="checkbox"/> NO
	If so, Is the policy or procedure easily accessible? Where? A general description of the student problem resolution process is described in the Caltech Catalog Section 1: General Information the Student Problem Resolution Process is available on the Student Affairs website. The ADA Complaints Policy also is easily accessible via the Caltech Accessibility Services for Students webpage, and the Sexual Harassment Policy is available on the Title IX at Caltech webpage.
	Comments: The team thought it was helpful that the Institute's student complaints, or problem resolution, policy also includes detail regarding a student's option to contact WASC if the issue of complaint is related to academic quality or accreditation standards.
	Does the institution have a procedure for addressing student complaints? X YES <input type="checkbox"/> NO If so, please describe briefly: Caltech has multiple processes in place to address student complaints. Depending on the nature of the complaint, students may try to resolve their issue informally. If these informal routes do not resolve the student's complaint, the deans will determine whether it is necessary to initiate the formal student problem-resolution process . Disputes over grades are outlined in the Caltech Catalog, Certain types of complaints fall under the jurisdiction of Caltech's Honor Code or policies related to nondiscrimination, unlawful harassment, or sex- and gender-based misconduct. Procedures for Complaints of Sex- and Gender-Based Misconduct under Title IX; Procedures for Complaints of Unlawful Discrimination, Harassment, and Retaliation). The ADA/Section 504 Grievance Procedure outlines the processes that govern student complaints about disability discrimination and other disability-related issues, and involves the ADA Coordinators in Caltech Accessibility Services for Students.
	If so, does the institution adhere to this procedure? X YES <input type="checkbox"/> NO
	Comments:
Records	Does the institution maintain records of student complaints? <input type="checkbox"/> YES <input type="checkbox"/> NO If so, where? Recordkeeping practices vary based on the nature of the student complaint and the level to which the matter escalates. Correspondence regarding these issues are maintained by staff and administrators in the Undergraduate Deans' Office or the Graduate Studies Office. Title IX-related complaints are addressed by Caltech's Title IX and Equity Office, and formal records are maintained for a minimum of seven years. Student complaints involving faculty are maintained by the Provost's Office.
	Does the institution have an effective way of tracking and monitoring student complaints over time? X YES <input type="checkbox"/> NO

	<p>If so, please describe briefly: Campus offices within the Student Affairs Division (e.g., Undergraduate Deans Office, Title IX, Center for Inclusion and Diversity, etc.) use the Advocate database for case management efforts and recordkeeping for student concerns. The database allows for tracking and monitoring of student concerns and complaints over time. The Faculty Board reviews the data annually.</p>
	<p>Comments:</p>

*§602-16(1)(1)(ix)

See also WASC Senior College and University Commission’s Complaints and Third Party Comment Policy.

Review Completed By: Tracy Molidor

Date: October 9, 2020

TRANSFER CREDIT POLICY REVIEW FORM

Under federal regulations*, WSCUC is required to demonstrate that it monitors the institution's recruiting and admissions practices accordingly.

Material Reviewed	Questions/Comments (Please enter findings and recommendations in the comment section of this column as appropriate.)
Transfer Credit Policy(s)	Does the institution have a policy or formal procedure for receiving transfer credit? X YES <input type="checkbox"/> NO
	Is the policy publicly available? X YES <input type="checkbox"/> NO If so, where?
	Policies on transfer credit for entering transfer undergraduate students (i.e., those who enter Caltech to earn a B.S. after having matriculated at any college, university, or the equivalent in a program leading to any degree) are detailed on the Transfer Admissions website and in the Caltech Catalog in Section 3: Information for Undergraduates (See Admission to upper classes by transfer , p. 180). Transfer Credit policies for continuing undergraduates in 2020-21 are available on the on the Registrar's website. Policies on transfer credit for graduate students are discussed in the Caltech Catalog Section 4: Information for Graduate Students . These policies typically pertain to Special Students visiting Caltech who wish to transfer units back to their home institutions. Permanent Caltech graduate students are typically unable to receive transfer credit applicable to their degree without approval from the Graduate Dean, Division administrators, option representative and faculty advisor.
	Does the policy(s) include a statement of the criteria established by the institution regarding the transfer of credit earned at another institution of higher education? X YES <input type="checkbox"/> NO
	Comments: Within the general information section of the catalog, transfer credit is mentioned only within the context of Special Status students. It would be helpful to have a very brief, even one sentence, subsection of the <i>Information for Graduate Students for Transfer Credit</i> . That section could simply state that transfer credit policies vary among divisions and refer readers to the appropriate sections for those divisions and/or degrees.

*§602.24(e): Transfer of credit policies. The accrediting agency must confirm, as part of its review for renewal of accreditation, that the institution has transfer of credit policies that--

- (1) Are publicly disclosed in accordance with 668.43(a)(11); and
- (2) Include a statement of the criteria established by the institution regarding the transfer of credit earned at another institution of higher education.

See also WASC Senior College and University Commission's Transfer of Credit Policy.
Review Completed By: Tracy Molitor
Date: 10/14/20