

Report of the Senate-Administration Workgroup on Undergraduate Climate Change Education for All

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Workgroup Members:

- Jane Teranes, Teaching Professor, Scripps Institution of Oceanography, Co-Chair
- Jan Kleissl, Professor, Mechanical and Aerospace Engineering, Co-Chair
- K. Wayne Yang, Provost, Muir College, Co-Chair
- Fonna Forman, Professor, Political Science; Chair, Committee on Campus Climate Change
- Sarah Gille, Chair, Scripps Institution of Oceanography Department
- Michelle Griffith, Campus Wide Senator, Associated Students
- David Holway, Professor, Ecology, Behavior and Evolution
- Jake Lacy, Dean of Academic Advising, Warren College
- John Moore, Dean, Division of Undergraduate Education
- Steven Parish, Professor, Anthropology
- Tricia Taylor-Oliveira, Director, Academic Internship Program, Teaching + Learning Commons
- Dan Vitkus, Professor, Literature and Member, Undergraduate Council

Table of Contents

Report of the Senate-Administration Workgroup on Undergraduate Climate Change Education for All	1
1. Background	3
2. Rationale	4
3. Recommendations	4
<i>A. Student Experience</i>	6
<i>B. Curriculum</i>	9
<i>C. Program Home</i>	12
4. Dedication	12
5. Feedback and committee responses	13
6. Ramping up the Requirement	13
Appendix A - Senate Regulation 600: Campuswide Graduation Requirements	15
Appendix B - Existing Courses that Address Climate Change	16
Appendix C - Program Home Evolution for the DEI Requirement.....	23
Appendix D - Proposed Bylaw XXX - Jane Teranes Climate Change Education Requirement Committee	24

1. Background

In 2019, UC San Diego Chancellor Pradeep Khosla, along with UC President Janet Napolitano and the chancellors of each UC campus, joined over 7,000 colleges and universities around the world to sign a climate emergency declaration letter.¹ This declaration calls for “increasing the delivery of environmental and sustainability education across curricula, campus and community outreach programmes.”

Also in 2019, a UC San Diego Climate Crisis Task Force was formed and advanced the call for Climate Education for All. The report generated by this task force proposed 35 concrete actions that the campus should take to drastically cut emissions, including advancing research and teaching on climate change. The formation of a standing senate committee, the Committee on Campus Climate Change (CCCC), was one of the actions proposed by the Task Force, and is the first of its kind for the entire UC system. CCCC reviewed the task force report and unanimously agreed to adopt the 35 concrete actions as its starting point.

In Spring 2021, after a town-hall meeting that summoned UC San Diego’s seven college provosts and climate education advocates from across the campus, the Committee on Campus Climate Change (CCCC) drafted a resolution proposing that the university require climate change education for all undergraduate students at UC San Diego. Senate Council and the Undergraduate Council discussed the resolution and both committees endorsed the idea of climate change education for undergraduate students. It was recommended that a Senate-Administration workgroup be formed as a next step to further explore possible models and make recommendations on the specifics of a climate change requirement.

The charge of the Senate-Administration Workgroup was as follows:

- Develop a proposal for a Bachelor’s degree requirement for all undergraduate students to complete coursework in climate change and consider whether there are means to promote climate change awareness and action among students, in addition to, or even instead of, a proposed course requirement.
- Evaluate three models suggested by CCCC to determine if any of these models can be scaled up for all undergraduate students to satisfy a climate change education requirement and consider if there are alternative models for designing a climate change education requirement.
 - A. Courses on climate change that fulfill existing college general education requirements and electives;
 - B. Discipline-specific courses on climate change that can be applied towards major or minor requirements;
 - C. Existing courses in which faculty develop new lectures, assignments, or examples to infuse topics of climate change into their syllabi.

¹ <https://www.universityofcalifornia.edu/news/university-california-declares-climate-emergency>

- Present the workgroup’s recommended model for a climate change education requirement and include specifics on the steps required to operationalize the proposed requirement. This includes:
 - Addressing whether any changes are needed to Senate Regulations specifying undergraduate degree requirements (SD 600 – 635);
 - Clarifying who would be responsible for determining which specific courses satisfy the requirement and for certifying that each student applying for graduation has satisfied it;
 - Assessing potential impacts on students’ time to degree – with special attention toward impacts on historically marginalized student populations.

2. Rationale

The vision of the Committee on Campus Climate Change (CCCC) is to position UC San Diego as a living laboratory for *scalable* climate solutions. This entails educating a generation of young people who understand not only the scientific and technological dimensions of the climate crisis, but also the social, cultural, economic, and political dimensions, as well as the inequitable burdens faced by vulnerable populations across the world. This educational mandate aligns with a growing demand by undergraduates for climate-related courses and content. The CCCC endorsed and built on the 2019 report by the Climate Crisis Task Force that states: “UCSD has a moral and practical obligation to teach tens of thousands of students about the climate crisis. This requirement will prepare students to think critically about what, for many, will be the biggest problem of their lives; to help them be part of collective action on genuine emissions reductions; and to provide them with relevant skills for a workplace that is going to be increasingly affected by climate concerns.”

In order to achieve these goals, the CCCC endorsed a climate change education requirement for all undergraduate students at UC San Diego, structured similarly to the Diversity, Equity, and Inclusion (DEI) Requirement.

3. Recommendations

The workgroup envisions a climate change requirement focused on broad institutional thinking and experimentation, across a range of disciplines, toward climate mitigation, adaptation, and justice. Educators are encouraged to pursue an interdisciplinary approach to climate change, so that students are empowered to think within and outside of their areas of specialization and therefore to understand the complex nature of the problem and of its potential solutions (scientific, technological, cultural, psychological, political, and economic). We acknowledge the strengths of the DEI Requirement model and understand the challenges of building a program that moves beyond being a burdensome box-checking exercise to an illuminative experience for students. The recommendation of the workgroup is that the climate change requirement be an undergraduate campuswide requirement (see *Appendix A*).

The Working Group evaluated the three models suggested by CCCC by discussing literature on climate change curriculum, surveying department and program chairs about existing courses, engaging the college provosts on both existing and possible future general education courses that address climate change topics, examining the impact of different models of requirements on student time-to-degree, debating how faculty participation would be incentivized or discouraged by different curricular requirements, and envisioning the kind of interdisciplinary training needed to fundamentally address the social, economic, political, cultural, and scientific roots of the climate crisis. The recommendations are a blend of the three models rooted in a similar structure to the DEI requirement, plus suggestions for extending climate change education beyond the formal requirement itself.

The literature on climate change education in leading universities reveals that “it is easy for a student to graduate with a bachelor's degree without being exposed to climate science or related climate-change topics through core curriculum requirements.”² Compared to other universities, UC San Diego students are more likely to be exposed to climate change curriculum because of our leadership in the foundational scientific research on climate, the multifaceted [Bending the Curve](#) education project, new educational initiatives such as the [Climate Change and Human Solutions Major](#) and the [Climate Change Studies Minor](#). Nonetheless, consistent with the literature, it is still more likely than not that an undergraduate student at UC San Diego will graduate without exposure to climate change curriculum. Indeed, a 2020 publication by UC San Diego *Bending the Curve* states this clearly: “The many talented and devoted faculty teaching [climate change] courses... are another strength that UCSD has to offer... [However] the main concern is that these climate change education courses do not reach the majority of the student body.”³

Model A: Courses on climate change that fulfill existing college general education requirements and electives.

The Working Group engaged the college provosts in assessing the prevalence of such coursework. Although courses have been created based on pedagogical interests of the faculty, such as in Warren and Muir Colleges' academic programs, these topics are not permanently infused into the college programs (with the exception of the new Seventh College's Synthesis Program). We agreed that increasing the availability of courses would be critical in the initial implementation of a requirement. The provosts and college program directors agreed to increase the number of college courses with climate change topics in the initial years of the requirement, allowing departments and programs some time to propose and then offer additional courses to fulfill the requirement. These recommendations are discussed in *Section A, “Student Experience”*, in terms of staging and scaling the requirement.

² Hess, David J., and Collins, Brandi M. "Climate change and higher education: Assessing factors that affect curriculum requirements." *Journal of Cleaner Production* 170 (2018): 1547.

³ Al-Ateeq, M., Michels, V., Zell, C., & Zwicker, L. (2020). UCSD Undergraduate Climate Education. *UC Office of the President: Bending the Curve*. p. 4. Retrieved from <https://escholarship.org/uc/item/61s0763n>

Model B: Discipline-specific courses on climate change that can be applied towards major or minor requirements.

The Working Group recommended a twofold approach to addressing climate change where *faculty* develop coursework within majors/minors, and where faculty offer their students an interdisciplinary pedagogy that addresses the political, economic, and cultural changes necessary to implement solutions to the climate crisis. This approach is detailed in the *Section B, "Curriculum"*, in terms of curricular content, i.e., the standards that a proposed course must meet to fulfill the requirement.

Model C. Existing courses in which faculty develop new lectures, assignments, or examples to infuse topics of climate change into their syllabi.

The Working Group surveyed departments and programs to assess what UC San Diego's existing or forecasted course offerings are that address climate change. This inventory of courses (which is fairly representative, if not comprehensive) is included as *Appendix B*. This inventory reveals that UC San Diego already has a significant number of courses that likely could fulfill this requirement, and others that, with some adjustment, could fulfill the requirement. There are large differences in the number of courses offered by major/minor. There is, nonetheless, a need to create more courses (thus our engagement with the Colleges about staging/scaling) both overall among the colleges' General Education options and within majors or minors. This inventory is qualitatively summarized in *Section B, "Curriculum"*, under "*Current Course Offerings*." Moreover, *Bending The Curve*TM is an open-source, Massive Open Online Course (MOOC) developed by UC San Diego faculty which any student can already take. *Bending The Curve* provides students with fundamental literacy about climate change as well as the tools to develop climate change solutions across different disciplines.

We have assembled our recommendations into three sections below: (A) Student Experience, (B) Curriculum, and (C) Program Home.

A. Student Experience

The Working Group acknowledges that students are driving the demand for the University of California to address climate change through the advocacy of campus organizations such as Green New Deal or CALPIRG, the voices of students enrolled in *Bending the Curve* and courses in climate change studies, and the reports from Associate Students. In terms of student experience, the Working Group's recommendations were designed to ensure that a requirement does not increase time-to-degree, and that courses are widely available as both general electives and within academic majors.

The proposed Climate Change Education Requirement (CCER) is styled after the Diversity, Equity, and Inclusion (DEI) requirement in that:

- the CCER does not increase the total number of courses required for graduation
- Faculty in academic departments/programs/areas will develop new and/or propose existing courses to fulfill the CCER
- In principle, a single course can fulfill the CCER while also fulfilling other GE, Major or Minor requirements, including the DEI.

The rationale for these similarities is based on best practices learned from the DEI requirement. That is, a DEI-style CCER minimizes potential impacts on students' time to degree by maximizing the opportunities towards fulfilling the requirement without increasing the total number of courses required for graduation.

Some important differences between the DEI requirement and the proposed CCER are as follows:

- Transfer students are exempt from the proposed CCER. With DEI, the effective date of the requirement was delayed two years to allow students at community colleges to plan accordingly and be aware of the requirement. The proposed 5-year assessment (below) would provide a mechanism for the Academic Senate to extend the requirement to include transfer students.
- The proposed CCER will be assessed every 5 years, and the Faculty Senate will vote to continue, discontinue, or amend the CCER based on the assessment. This approach allows for iterative redesign based on data about how the CCER impacts the student experience, and on the pedagogical gaps/needs in the CCER offerings in three course typologies described by the CCCC (above, in *Rationale*). Indeed, the Senate could decide new course typologies are needed, or that additional requirements should be added or relaxed. The assessment even allows for the possibility that the CCER could be discontinued, should the Senate decide that it is no longer necessary or that the mandate has been fulfilled.

These similarities and differences with the DEI fulfill the mandate of the CCCC to provide the steps required to operationalize the proposed requirement, with special attention toward impacts on historically marginalized student populations.

Transfer students exempt. The rationale for exempting transfer students is also based on experience with the DEI requirement. Many transfer students do not currently receive credit for the DEI for courses taken in their previous institutions, even if the courses have identical titles and content that would likely count for the requirement. Several thousand transfer students matriculate each year from over one hundred different colleges; assessing each transfer student's individual transcript and submitted syllabi is not feasible. The exemption is also necessary because of the current context involving the reform and streamlining of transfer credit articulation: California is working to align the transfer requirements (Cal-GETC) across the UC and CSU systems to provide greater clarity and simplicity for community college students to apply the appropriate coursework toward transfer. In exempting transfer students from the CCER, this proposal avoids adding noise in the form of a unique UC San Diego requirement to a statewide system in need of clarity. In principle, if in the future, the UC and CSUs collectively adopt a CCER, then any transferable coursework would be articulated as part of the transfer process.

Staging. Beyond the basic aspects of the proposed CCER, this proposal attempts to address the staging and scaling of the requirement. The Working Group discussed at length whether to pursue a simple one-size-fits all requirement, such as a form of the *Bending the Curve*

curriculum. While the Working Group agrees that fundamental teachings about the crisis of climate change ought to count for the CCER, we felt the long term pedagogical goal is twofold: first, that faculty develop innovative upper-division coursework that deeply engages with the climate crisis and its potential solutions AND second, that faculty offer their students an interdisciplinary pedagogy that inculcates an understanding of the big picture (including an awareness of the political, economic, and cultural changes that will be necessary in order to implement those solutions). Therefore, the proposed CCER is intended to be permissive enough, initially, that the campus may quickly generate enough courses for students to fulfill the requirement in the initial rollout. The intention is that courses will continue to be added that balance disciplinary depth with interdisciplinary capaciousness. The proposed 5-year review cycle is intended to assess progress towards this twofold goal.

To assess the initial challenges in the staging period of the CCER, we have surveyed departments and programs to provide data to the Academic Senate on the existing courses that address climate change (see *Appendix B*). The actual courses would have to be submitted (and possibly revised) for approval, and the inventory is likely incomplete. However, the inventory offers a snapshot of what is currently available.

Moreover, the eight undergraduate Colleges have agreed to maximize their course offerings on climate change education within the required college programs for the first three years of the CCER. Given that each college has different pedagogical mandates for their programs, not every college course will fulfill the CCER. Nonetheless, this commitment by the Colleges will help launch the CCER by providing opportunities in the staging period of the requirement.

Scaling the requirement and creating communities of practice. In terms of scaling the requirement, the DEI requirement also provides some useful insights. Through grants, incentives, and teaching symposia, the DEI helped create communities of practice among faculty interested in developing their courses in alignment with the spirit of the DEI requirement (communities of practice⁴ are similar to a loosely organized committee or a working group). Similarly, the long-term goal of integrating CCER upper-division courses into most majors would best be achieved by intentionally creating a Climate Change Education community of practice. Support for such a community of practice is proposed in *Section C: Program Home*. Effective scaling would have the most profound pedagogical impact on the student experience, consistent with UC San Diego's mission as a top educational and research institution.

On March 1, 2023, working group members Michelle Griffith (Campus Wide Senator, Associated Students) and K. Wayne Yang (Provost, Muir College, Co-Chair of working group) presented key pieces of proposed CCER to the UC San Diego Associated Students Senate Assembly. Senator Griffith prepared the presentation, took comments and questions, and conducted a straw poll of all present to gauge support for the proposal. Comments from senators and officers included:

⁴ " A Community of Practice (CoP) is a group of people who share a common concern, a set of problems, or an interest in a topic and who come together to fulfill both individual and group goals." (<https://www.communityofpractice.ca/background/what-is-a-community-of-practice/>)

- “This is long overdue.”
- It would be great to have a course on the history of UC San Diego climate change efforts, specifically a critical history that includes an examination of what UCSD has done/not done.
- It is good that the colleges are involved so that students of all colleges have the opportunity to complete the requirement when it is first offered. (This was a clarifying question that turned into a comment).

The straw vote recorded unanimous support, none opposed, no abstentions. The poll included AS senators and officers as well as of the public audience in attendance (which was unusually large). The VP of Academic Affairs Rhianen Callahan offered to take the full proposal (once it is made public) to their UC-wide AS Academic Affairs meeting in hopes that a CCER will spread to the other UC campuses.

B. Curriculum

I. Curriculum Content:

The committee classified CCER content into four categories:

1. **Scientific Underpinnings:** Does the course provide students with a scientific foundation to understand the mechanisms responsible for climate change and the scope of projected climate change, including knowledge of the magnitude of the impact of human-caused climate change on the planet, the biosphere, OR society?
2. **Humanistic and Social Dimensions:** Does the course provide knowledge of the historical, cultural, OR social causes of climate change, OR its basis in human values, and provide an understanding of the human costs, consequences, and disproportionate impacts of climate change? Does it offer context for understanding how addressing the climate crisis requires social, political, OR economic transitions and transformations? Does it engage health, equity, and climate justice issues?
3. **Climate Solutions:** Does the course provide knowledge of both scientific and non-technical solutions to the crisis? Does the course consider social, cultural, OR political adaptations to climate change? Do the solutions discussed include a holistic assessment of political, social, economic, behavioral, OR technological approaches? Does the course consider the needs and/or concerns of those experiencing the impact of climate change? Does it put solutions in the context of the scientific underpinnings and/or humanistic OR social dimensions of climate change?
4. **Project-based Learning:** Do students have opportunities to gain experience or work on a project that is related to climate change content? Examples could include a project-based writing assignment, case study, presentation, business plan, community-based project, research experiments, artistic projects, interviews and oral histories, podcasts, design projects, or others.

Within each component an “OR” is used. For example, scientific underpinnings could be met with content from atmospheric chemistry, ocean physics, or anthropological science.

II. Curriculum Amount

A minimum of 30% of the course content should be focused on understanding and addressing climate change and its impacts. The number 30% corresponds to 3 weeks of a 4-unit course that should be dedicated to climate change in the form of lectures, reading, project-based learning activities, and/or case studies. (For 2-unit courses, the requirement would be 60%.) Assignments and grades must also reference climate change content with at least 20% of the grade determined by it. The number 30% was identified by the committee because it allows the instructor to maintain a significant portion of other materials that may be non-negotiable content in existing courses. 30% therefore allows more courses to qualify. The 30% threshold should be reevaluated in a few years.

III. Curriculum Content Integration

The committee examined different options for combining the content in these categories and voted on the options in a multiple choice - multiple answer format on January 23, 2023.

Option 1 (supported by 67% of the committee): The 30% climate change content should be from at least two of the four components; each of the two components should cover the equivalent of at least a one-hour lecture.

Option 2 (supported by 22% of the committee): The 30% climate change content should contain content from all four components. Proponents of option 2 argued that, in reality, any technical solution is intertwined with socio-political, economic, and public policy aspects of the solution. Students will benefit by undertaking a broad, interdisciplinary approach. If they learn about only two of the components, their learning experience will be limited to specialized study, and they will miss the bigger picture. While an understanding of potential technical solutions can provide a convenient launching point for a broader engagement with component 2, students also need to consider how changes in our political, social, economic, and cultural status quo must take place if those technologies are to be implemented. Courses that do not meet all four components could add missing content by integrating one or more out-of-discipline lectures into the course using materials from the Bending the Curve collection of lectures.

Option 3 (supported by 78% of the committee): In the long term, the university will pursue a vision in line with greater interdisciplinarity for this requirement (Option 2), but initially go with Option 1, working toward Option 2 and then reevaluating in 5 years at the time of assessment.

In summary, Option 3 has the greatest support among the committee.

IV. Time to Degree

To not burden transfer students who already often take much longer than the designated 2 years to graduate, at least initially transfer students will be exempt from the climate change education requirement (CCER). The exemption for transfer students will be reevaluated after operating the program for 5 years.

The CCER should not add to the time-to-degree for the vast majority of students, including engineering majors.

The undergraduate colleges have agreed to qualify at least one existing course within each of their required programs, which would be offered for at least the initial 2 years that the CCER policy is in place. Currently, courses in the Seventh College Synthesis program already likely fulfill the requirement. Sixth College currently offers one course on climate change for several hundred students in the required Culture, Art, Technology sequence. Muir College Writing Program has a curriculum on climate change that all first years were required to take in 2018-2019 and would be able to offer a similar curriculum to help with staging of the requirement. Similarly, Warren College Writing Program has offered courses on climate change in the past and could reinstate them. The Writing Program Directors of Making the Modern World, Dimensions of Culture, and Humanities are confident that they could integrate the 30% threshold described in the proposed CCER for the remaining colleges (Roosevelt, Marshall, and Revelle, respectively). Eighth College will likely be able to follow suit. Moreover, Colleges will ensure that CCER courses will be incorporated wherever possible into approved General Elective breadth requirements. To satisfy the CCER, students then have options of fulfilling within the college writing program, a General Elective course, a course in their major/minor, or any other course at their leisure.

To reiterate, the undergraduate Colleges have committed to offer these courses in their programs to help with the staging of the CCER, allowing time for faculty in departments and programs to create and propose courses. As part of the 5-year assessment, data about the role of colleges will be examined, alongside any modifications to the requirement to increase from 2 to 4 instead of the curricular elements (i.e., Scientific Underpinnings, Humanistic and Social Dimensions, Climate Solutions, Project-based Learning) as discussed above in *III. Curriculum Content Integration*.

V. Current Course Offerings

A request for information was sent to 55 departments and programs to provide courses that contain climate change content. Using the responses and input from committee members a list of 125 courses was compiled. Whether these courses meet the “2 out of 4” and 30% requirement has yet to be established, but based on preliminary information provided by instructors and department / program chairs, 8 courses address all 4 components, an additional 19 courses address 3 components, and an additional 27 courses address at least 2 components. Therefore, the committee is hopeful that around 50 courses already meet the current requirement of option 1 in the above. Anthropology (26), SIO / CCS (23), and USP (10) provide the most relevant courses. All other departments or programs have fewer than 4 courses. There are only 7 relevant courses across all of engineering: these courses are only from two departments (MAE and ECE), are only technical electives, and most of these courses currently only satisfy one component. Therefore, engineering students will initially have to rely on college courses or breadth requirements in their general electives to satisfy the CCER.

C. Program Home

I. Program Home Functions

As is the case with the DEI requirement, a climate change education requirement will require an administrative structure. At a minimum, there needs to be a process for curating the lists of courses that satisfy the requirement, vetting proposals for additions to the list, and interfacing with the Registrar. A more extensive administrative unit might provide leadership in climate change education, create a community of practice, establish assessment protocols, and provide climate change education programming. The desired functions of a program home are:

- Creating a community of practice (such as the one established in relation to the DEI Program)
 - Development opportunity and community for faculty
 - Supporting faculty who are creating courses and adding course content
- Administration of incentives
 - Administer grants, focus on interdisciplinary proposals
- Assessment
 - A 5-year clause to assess the requirement
 - Vetting courses

II. Program Home Options

See *Appendix C* for program home history and experiences with the DEI requirement. We propose that the CCER be initially managed by a standing committee (either an administrative or a Senate committee, see *Appendix D*), while a proposal for a Climate Change Program is developed. The committee could develop a rubric and a set of questions similar to the DEI course proposal to solicit and approve course proposals.

A proposal for a Climate Change Program should outline the functions of the program and identify an academic unit as its home (the current workgroup believes that it would be premature to identify a specific home at this point). A program would build a community of practice, set assessment metrics, and help faculty in course development.

As is the case with the DEI Program, a Climate Change Program would signal the importance of the requirement and ensure that it continues to meet its goals.

4. Dedication

In honor of the late Jane Teranes' contributions to climate change education at UC San Diego the committee would like to dedicate this requirement to Jane Teranes. Among many other contributions to climate change education, Jane Teranes worked with colleagues across campus to create a new Climate Change Studies minor in 2019. The minor represents the precursor of the present requirement as it was "designed to help students from any major develop knowledge of climate science, understand the human and social dimensions of climate impacts, and find opportunities to develop and implement solutions." Naturally, Jane was named the co-chair of the Climate Change Education Requirement committee upon its initiation. Jane

was the heart and soul of this committee, and her input was the seed for the final report presented here. The committee feels that it is appropriate to honor her legacy by naming the requirement the Jane Teranes Climate Change Education Requirement (JTCCER). Jane dedicated her life to climate change education at UC San Diego. This committee was inspired by what Jane would have wanted to see.

5. Feedback solicited and received on this proposal and committee responses

This section will be populated after the final report is submitted.

6. Ramping up the Requirement

- I. Senate announces JTCCER
By Spring 2023 Senate would approve and announce the (at that time to be unspecified) JTCCER to start with the Fall 2024 freshman admissions.
- II. Senate Standing Committee to Approve Courses
We suggest that by Fall 2023, the Senate create a standing JTCCER committee. This committee will solicit course proposals and approve courses during the 2023/2024 academic year.
- III. Course Development
We suggest that in Fall 2024, colleges plan to jump start the JTCCER with lower-division offerings. In parallel, but likely over a longer time horizon, additional courses will be developed to fulfill upper-division requirements within each major, as determined by individual programs, departments, and faculty. As these upper-division courses are developed, the JTCCER will be able to transition to courses that offer more depth of investigation in the majors (versus the broader lower-division content).
- IV. Resources Available for Departments and Programs
While initially there may be few financial resources to support course development and course modification, there are several other resources available for departments and programs to adapt to the JTCCER. There are many passionate educators on campus who would be willing to support guest lectures and/or point to existing JTCCER content. All members of this committee would be happy to consult further. A great resource is *Bending The Curve*^{TM5}, which is an open-source course that was co-developed by faculty at UCSD. *Bending The Curve* contains modules that are aligned with all the curriculum content listed in *Section 3.B.I*.

⁵ <https://bendingthecurve.ucsd.edu/>

V. Five-year Assessment

The committee feels that several recommendations should be reassessed in five years, especially: (i) The curriculum options in 3.B.III. (ii) The exclusion of transfer students from the requirement (iii) The program home. Note that the resources that come with a program home may be required to perform the assessment.

Appendix A - Senate Regulation 600: Campuswide Graduation Requirements

(A - G) [no changes]

H) Jane Teranes Climate Change Requirement

A knowledge of climate change is required of all candidates for a Bachelor's degree who begin their studies at UC San Diego in lower-division standing in Fall 2024 or thereafter.

- 1) This requirement shall be satisfied by passing, with a grade not lower than C- or P, a one-quarter course expressly approved by the Undergraduate Council for that purpose. A list of approved courses will be provided in the UC San Diego General Catalog.
- 2) This requirement is required of all candidates for a Bachelor's degree who begin their studies at UC San Diego as a first-year student. Transfer students are not required to satisfy this requirement.

(I - L) [current requirements H - K, renumbered to accommodate insertion of new requirement H]

Appendix B - Existing Courses that Address Climate Change

Department/ Program	Course	Course Title	Units	Maximum Enrollment*
Anthropology	ANAR 114	Environmental Hazards in Israel	4	20
	ANAR 115	Coastal Geomorphology and Environmental Change— Perspectives from Israel and the South-Eastern	4	20
	ANAR 116	Sea Level Change—The Israel Case in World Perspective	4	20
	ANAR 120	Documenting Climate Change: Past and Present	4	20
	ANAR 166	Introduction to Environmental Archaeology—Theory and Method of Socioecodynamics and Human Paleoecology	4	30
	ANAR 167	Geoarchaeology in Theory and Practice	6	10
	ANAR 186	The Human Era: The Archaeology of the Anthropocene	4	**
	ANBI 132	Conservation and the Human Predicament	4	20
	ANBI 174	Conservation and the Media: Film Lab	4	10
	ANSC 134	The Politics of Environmental Change	4	30
	ANSC 147	Global Health and the Environment	4	40
	ANSC 160	Nature, Culture, and Environmentalism	4	10
	ANSC 169	Culture and Environment: Research Seminar and Practicum	4	10
	ANSC 193GS	Human Rights and Environmental Justice	4	**
	ANTH 10	Climate Justice	4	200
	ANTH 104	Transforming the Global Environment	4	**
	ANTH 105	Climate Change, Race, and Inequality	4	40
	ANTH 106	Climate and Civilization	4	30

	ANTH 107	Designing for Disasters, Emergencies, and Extreme Weather	4	**
	ANTH 108	Indigenous Peoples, Extractive Development, and Climate Change	4	30
	ANTH 109	Climate Change, Cultural Heritage, and Vulnerability	4	30
	ANTH 110	The Climate Change Seminar	4	20
	ANTH 111	Religion and Ecology: How Religion Matters in the Anthropocene	4	20
	ANTH 120	Climate Change in California: Problems and Solutions	4	**
	ANTH 128A	Climate Action Scholars: Community Engagement and Research	6	20
	ANTH 128B	Climate Action Scholars: Capstone Project	6	**
Biological Sciences	BIBC 140	Our Energy Future—Sustainable Energy Solutions	4	100
	BIEB 174	Ecosystems and Global Change	4	140
	BIEB 182	Biology of Global Change	4	190
	BILD 18	Human Impact on the Environment	4	30
Climate Change Studies	CCS 101	Carbon Neutrality Initiative at University of California	2	40
	CCS 102	Research Perspectives on Climate Change	2	30
	CCS 123	Policy and Politics of Climate Change	4	**
Chemistry	CHEM 171	Environmental Chemistry I	4	140
	CHEM 172	Environmental Chemistry II	4	80
	CHEM 173	Atmospheric Chemistry	4	90
	CHEM 145	Biofuels and Renewable Materials	4	15
Communications	COMM 171	Environmental Communication	4	60

	COMM 183	Global Economy and Consumer Culture	4	**
	COMM 184	Global Nature / Global Culture	4	**
Critical Gender Studies	CGS 110	Intersectional Struggles for Environmental Justice	4	**
Economics	ECON 100C	Microeconomics C	4	225
	ECON 131	Economics of the Environment	4	300
	ECON 132	Energy Economics	4	90
	ECON 144	Economics of Conservation	4	**
	ECON 145	Economics of Ocean Resources	4	250
Environmental Studies	ENVR 30	Environmental Issues: Natural Sciences	4	190
	ENVR 102	Indigenous Approaches to Climate Change	4	**
	ESYS 10	Introduction to Environmental Systems	4	58
	ESYS 101	Environmental Biology	4	150
	ESYS 102	The Solid and Fluid Earth	4	58
	ESYS 103	Environmental Challenges: Science and Solutions	4	143
Ethnic Studies	ETHN 103	Environmental Racism	4	**
	ETHN 103A	The United States and the Pacific World	4	**
	ETHN 113A	Decolonizing Geology	4	**
	ETHN 136	The Science and Critical Analysis of Environmental Justice	4	**
History	HILD 40	Anthropocene 1: The Neolithic	4	**
	HILD 41	Anthropocene 2: The First Global Era, 1400–1750	4	66

	HILD 42	Anthropocene 3: The Industrial Revolutions	4	**
	HILD 43	Anthropocene 4: The Great Acceleration, 1945–Present	4	**
	HISC 163	History, Science, and Politics of Climate Change	4	**
Jacobs School of Engineering	CSE 190	Environmental impact of modern computing	4	**
	ECE 128B	Power Grid Modernization	4	60
	ECE 128C	Power Grid Resiliency to Adverse Effects	4	30
	MAE 118	Introduction to Energy and Environment	4	70
	MAE 119	Introduction to Renewable Energy: Solar and Wind	4	120
	MAE 120	Introduction to Nuclear Energy	4	30
	MAE 122	Flow and Transport in the Environment	4	60
	MAE 125	Building Energy Efficiency	4	60
	SE 181	Introduction to Geotechnical Engineering	4	**
Literature	LTWL 165	Literature and the Environment	4	**
Muir College - MCWP	MCWP 40	Theme: Geographies of Environmental Racism	4	40
	MCWP 50	Theme: Health, Racism, and the Environment in the Time of Climate Change	4	650
	MCWP 50	Theme: Water and the West	4	60
	MCWP 50R	Theme: Climate Change Today	4	60
	MCWP 125R	Theme: Climate Change and Environmental Racism	4	40
Philosophy	PHIL 26	Science, Society, and Values	4	**
Physics	PHYS 12	Energy and the Environment	4	**

Political Science	POLI 162	Environmental Policy	4	20
	POLI 117	Bending the Curve: Climate Change Solutions	4	50
	POLI 117R	Bending the Curve: Climate Change Solutions	4	75
Psychology	PSYC 185	Psychology of Climate Crisis	4	225
Rady School of Management	MGT 166	Business Ethics and Corporate Responsibility	4	540
	MGT 167	Social Entrepreneurship	4	250
Scripps Institution of Oceanography	SIO 10	The Earth	4	300
	SIO 15	Natural Disasters	4	300
	SIO 20	The Atmosphere	4	140
	SIO 25	Climate Change and Society	4	130
	SIO 30	The Oceans	4	150
	SIO 35	Water	4	210
	SIO 40	Life and Climate on Earth	4	160
	SIO 108	Introduction to Paleoclimatology	4	30
	SIO 109	Bending the Curve: Climate Change Solutions	4	50
	SIO 109R	Bending the Curve: Climate Change Solutions	4	50
	SIO 115	Ice and the Climate System	4	40
	SIO 116	Climate Change & Global Health: Understanding the Mechanisms	4	30
	SIO 117	The Physical Basis of Global Warming	4	50
	SIO 118GS	Responding to Climate Change: Possible Solutions	4	**

	SIO 119	Physics and Chemistry of the Oceans	4	120
	SIO 134	Introduction to Biological Oceanography	4	120
	SIO 143	Ocean Acidification	4	30
	SIO164	Maritime Archeology	4	30
	SIO 173	Dynamics of the Atmosphere and Climate	4	30
	SIO 174	Chemistry of the Atmosphere and Oceans	4	20
Seventh College – Synthesis Program	SYN 1	Communicating for a Changing Planet	4	950
	SYN 2	Inquiring about a Changing Planet	4	300
	SYN 100	Engaging with a Changing Planet	4	470
Sixth College – CAT	CAT 1	Un/Natural Spaces: American Media and Histories of Environmental Representation	4	250
	CAT 3	Environmental Futures: Community-Engaged Learning	6	250
Sociology	SOCI 30	Science, Technology, and Society	4	80
	SOCI 120T	Sociology of Saving the Earth	4	**
	SOCI 149	Sociology of the Environment	4	**
Theatre and Dance	TTDM 5	Site Specific Dance and Performance	4	**
Urban Studies and Planning	USP 2	Urban World System	4	64
	USP 124	Land Use Planning	4	60
	USP 128A	USP 128A. Climate Action Scholars: Community Engagement and Research (6)	6	20
	USP 128B	USP 128B. Climate Action Scholars: Capstone Project (6)	6	20

	USP 169	Introduction to Green Building	4	20
	USP 170	Sustainable Planning	4	30
	USP 171	Sustainable Development	4	50
	USP 171GS	International Sustainable Development	4	**
	USP 180	Transportation Planning	4	25
	USP 183GS	International Urban Design Practicum	4	**
Visual Arts	VIS 157	Environmentalism in Arts and Media	4	20
	VIS 110G	The Natural and Altered Environment	4	20

* Estimated maximum enrollments as reported by faculty and departments who participated in generating this inventory of courses

** incomplete data available

Appendix C - Program Home Evolution for the DEI Requirement

The evolution of the DEI requirement might inform UC San Diego's approach to the administration of the climate change requirement. The following paragraphs outline how this has unfolded.

For almost ten years, the DEI requirement was managed by an administrative standing committee. This committee was charged with reviewing course proposals and assessing existing courses. The committee had representation from the Division of Undergraduate Education (the dean and a college provost), students, and several faculty nominated by the Committee on Committees. The committee met quarterly to evaluate proposals for prospective DEI courses. However, it lacked the bandwidth to assess existing courses, to re-vet courses, or to assess the program. The Division of Undergraduate Education scheduled the annual DEI awards ceremony.

From February 2019 through Winter quarter 2020, a Senate-administration workgroup examined aspects of the DEI requirement and made recommendations that there should be a way to create a more robust administrative structure. The report led to two developments.

First, the Academic Senate asked that the standing committee be made a Senate committee, with a close relationship to the Undergraduate Council. This change occurred two years ago. The transition has worked fairly well, but there are some challenges. As an administrative committee, membership turned over slowly and required that faculty members have DEI teaching experience, allowing the committee to retain significant subject matter expertise. The Senate committee, paneled by Committee on Committees, without a DEI teaching requirement, has had less expertise.

The report also gave birth to a new workgroup that created a proposal for a DEI Program, with the goal of creating a community of scholars and DEI educators. The program, housed in the Institute of Arts & Humanities, is to be charged with assessment and other administrative functions (although the vetting of proposals remains with the Senate committee, the committee and the program will collaborate closely). The Senate approved the program proposal in 2022; a search for an inaugural director is currently underway.

Appendix D - Proposed Bylaw XXX - Jane Teranes Climate Change Education Requirement Committee

- A) This committee shall consist of five ordinary members of the Division. It shall also have two undergraduate student representatives, who shall not have the right to vote. The chair of the committee may invite the Dean of Undergraduate Education, a representative from the Committee on Campus Climate Change, and a College Provost, who shall be selected by the Council of Provosts, to serve as consultants to the committee, without the right to vote. The chair of the committee shall also serve as a member of the Undergraduate Council. *[see Bylaw 210]*
- B) Duties:
- 1) This committee shall make recommendations to the Undergraduate Council on proposed new undergraduate courses and existing undergraduate courses that may be used for the purpose of fulfilling the Climate Change Requirement. *[see SD 600.H]*
 - 2) This committee shall make recommendations to the Undergraduate Council on the criteria that courses are expected to meet to be used for the purpose of fulfilling the Climate Change Requirement.
 - 3) This committee will report to Undergraduate Council the number of courses submitted but not recommended for approval and the rationale.