

February 28, 2022

Subject: Charge for Senate-Administration Workgroup on Undergraduate Climate Change Education for All

Background

In Spring 2021, the San Diego Divisional Senate's 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.

In the background materials that CCCC provided with the proposed resolution, three course typologies were presented as possible models for requiring courses that cover climate change:

- 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, assignment or examples to infuse topics of climate change into their syllabi.

Charge

The charge of the Senate-Administration Workgroup is 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 the 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.
- 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.

Timeline

The Workgroup will meet March - August 2022, with a report to be submitted to Senate Chair Javidi and EVC Simmons by August 31, 2022.

Composition

Jane Teranes, Teaching Professor, Scripps Institution of Oceanography, Co-Chair

Wayne Yang, Provost, Muir College, Co-Chair

Fonna Forman, Professor, Political Science and Chair, Committee on Campus Climate Change

Sarah Gille, Chair, Scripps Institution of Oceanography Department

Michelle Griffith, First Year Senator, Associated Students

David Holway, Professor, Ecology, Behavior and Evolution

Jan Kleissl, Professor, Mechanical and Aerospace Engineering

Jake Lacy, Dean of Academic Advising, Warren College
John Moore, Dean, Division of Undergraduate Education
Steven Parish, Professor, Anthropology
Tricia Taylor-Oliveira, Director of the Academic Internship Program, Teaching + Learning Commons
Dan Vitkus, Professor, Literature and Member, Undergraduate Council

The Workgroup may call upon administrators and faculty with specialized expertise as consultants.

Senate Staff Support: Ashley Hill, Associate Director

Attachment

- May 4, 2021 Committee on Campus Climate Change Proposal

May 4, 2021

STEVEN CONSTABLE, CHAIR
Academic Senate, San Diego Division

SUBJECT: Climate Education for All - Committee on Campus Climate Change (CCCC) Proposal

The CCCC is submitting the resolution below for consideration by the UCSD Academic Senate:

We urge the campus to require climate change education for all undergraduate students at UCSD.

The Committee on Campus Climate Change (CCCC) hosted a brainstorming session yesterday, with Senate and Campus undergraduate educational policy leaders, and leaders of climate change education on the campus, including six College Provosts. There was overwhelming support among this group for a resolution that the campus require climate change education for all undergraduate students at UC San Diego. I am sending you, with this cover letter, the background materials, agenda and attendees from the brainstorming session. The CCCC requests that this proposal be placed on Senate Council's May agenda. If approved by the council, I will introduce the resolution and Fonna Forman will present it.

Sincerely,



V. Ramanathan, Chair
Committee on Campus Climate Change

cc: T. Javidi
F. Forman

COMMITTEE FOR CAMPUS CLIMATE CHANGE (CCCC)
ACADEMIC SENATE: SAN DIEGO DIVISION, 0002
UCSD, LA JOLLA, CA 92093-0002

CLIMATE CHANGE EDUCATION FOR ALL AT UCSD

Brainstorming Session, May 3, 2021, 1-3pm

AGENDA

1-2pm Opening Presentations

1. Opening and Introduction: V. Ramanathan (UCSD; SIO)

How can UCSD achieve climate change education for all?

2. Committee's vision, approach, resolution: Fonna Forman (UCSD; Political Science)

3. Educational Policy / Curriculum landscape (Campus and Senate perspectives)

5 minutes each:

John Moore
Dean, Undergraduate Education

Geoffrey Cook (SIO)
Chair, Educational Policy, Academic Senate

Jane Teranes
Chair, Undergraduate Committee, Academic Senate
Director, Climate Change minor

4. Curricular Practices and Aspirations: College perspectives

All attending Provosts: 3-4 minutes each:

Revelle
Provost Paul Yu

Muir
Provost K. Wayne Yang

ERC
Provost Ivan Evans

Sixth

Provost Lakshmi Chilukuri

Seventh
Provost Kate Antonovics

Warren
Provost Marisa Abrajano (between 2:30-3 only)

2-3pm Open Discussion: Craig Callender (UCSD; Philosophy)

-Accelerate / Mandate; Going Big / Going Small: Challenges and Opportunities

-Timeframe

-Lessons Learned

3-3:30pm Committee Deliberations (Closed session):

Meeting Attendees

John Moore
Dean, Undergraduate Education

Jane Teranes
Chair, Undergraduate Committee, Academic Senate
Director, Climate Change minor

Geoffrey Cook
Chair, Educational Policy, Academic Senate

Ben Bergen
UPP Committee

Thad Kousser
Council of Chairs, co-convenor (YES)

Provosts:

Revelle
Paul Yu

Muir
K. Wayne Yang

Warren
Marisa Abrajano

ERC
Ivan Evans

Sixth
Lakshmi Chilukuri

Seventh
Kate Antonovics

Marshall
Leslie Carver (regrets)

Committee on Campus Climate Change

V. Ramanathan, Chair (UCSD; SIO)

Adam Aron (UCSD; Psychology)

Craig Callender (UCSD; Philosophy)

Fonna Forman (UCSD; Political Science)

Eric Halgren (UCSD; SOM / Radiology)

Lynne Talley (UCSD; SIO)

Caitlan Frederick (UCSD; Undergraduate Student Representative)

Darlene Salmon (UCSD; Academic Senate)

COMMITTEE ON CAMPUS CLIMATE CHANGE (CCCC)

Education for All at UCSD: Brainstorming Meeting

May 3, 2021

The CCCC formed a sub-committee consisting of Fonna Forman (Chair), Craig Callender, Lynn Talley and Adam Aron, to socialize a CCCC resolution called *Climate Education for All at UC San Diego* with various members of the campus community and to organize the session.

The resolution states: ***We urge the campus to require climate change education for all undergraduate students at UCSD.***

The CCCC conducted a brainstorming session on May 3, to provide opportunity for Campus and Senate leaders in educational policy, and campus climate change educators, to consider the resolution. The discussions were overwhelmingly supportive of the resolution, and focused mainly on implementation. Excellent insights were gathered.

In addition to CCCC members, meeting attendees were:

Campus / Senate Leadership: John Moore Dean, Undergraduate Education Jane Teranes Chair, Undergraduate Committee, Academic Senate Director, Climate Change minor Geoffrey Cook Chair, Educational Policy, Academic Senate Ben Bergen UPP Committee Thad Kousser Council of Chairs, co-convenor (YES)	Provosts: Revelle College Provost Paul Yu Muir College Provost K. Wayne Yang Warren College Provost Marisa Abrajano Eleanor Roosevelt College Provost Ivan Evans Sixth College Provost Lakshmi Chilukuri Seventh College Provost Kate Antonovics
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Below is a memo with background materials that we circulated to attendees of the brainstorm session.

Background Document and Draft Resolution

The Committee on Campus Climate Change (CCCC) is a new Academic Senate standing committee that confers with and advises the Senate and administration on matters pertaining

to campus decarbonization, climate change impacts and mitigation, climate change in educational programs, and climate change research. It studies and collects data on the climate change impacts of campus activities and develops recommendations for short-term, medium-term, and long-term changes to campus policy and behavior.

In inaugural year, 2021-22, the CCC has prioritized two agendas: 1) Zero Emissions; and 2) Societal Transformation. 1) Zero Emissions campus and 2) Societal Transformation. Zero Emissions has two sub-topics: transforming UCSD into a i) Fossil Fuel-Free campus; and with ii) Zero Food Waste. Societal Transformation is focused i) on developing a campus-wide education program; and ii) recommending a set of ethical practices.

This brainstorm session is focused on 2.i above, advancing campus-wide Climate education for undergraduate students at UCSD. We have invited colleagues involved in campus educational policy, all college provosts, as well as faculty currently leading climate education initiatives to discuss the challenges and opportunities of accelerating / incentivizing / mandating Climate Education for All at UCSD, students, faculty and staff.

Vision:

We unanimously endorse and adapt the [2019 declaration](#) signed by the UCSD Chancellor, chancellors of the other 9 campuses and the UC President calling for a “drastic societal shift to combat the growing threat [of climate change].” Our overall vision as a committee is to position UCSD in the state and the nation as a living laboratory for *scalable* climate solutions. We note the emphasis on *scalable*, by which we mean that the solutions that we design, in this case for campus climate education, can be extrapolated to the rest of the UC at the minimum, and beyond. This scalable goal has been the trademark of UCSDs efforts at climate solutions.

UCSD’s History of Climate Education for All:

The campus has made great strides in recent years developing and advancing climate change education.

Bending the Curve: In 2015, under the leadership of two UCSD faculty who are also CCCC members, 50 researchers across the UC came together in an initiative called *Bending the Curve* [to propose scalable solutions](#) to climate change, work that influenced California lawmakers, and produced an online [climate solutions education platform](#) that is now taught at UCSD and across the UC campuses (also in North Carolina, Sweden and Taiwan), as well as a MOOC based in UCSD Extension, and an open-access [electronic textbook](#).

The *Bending the Curve* platform emphasizes *solutions thinking and design* across six integrated clusters - science and technology, economics, governance, ecosystem management and social behavior. To mobilize commitment, students cannot be passive recipients of information about climate change, but must be active, creative, speculative participants in solutions thinking and design. Through project based work, students are inspired to think and design transversally across these clusters.

The course is a hybrid, or flipped, format. Students view pre-recorded video modules independently, and class-time is dedicated to structured discussion and project-based team work. The video modules have been recorded by climate change experts from across the UC and beyond, produced and assembled into a digital archive by the Innovative Learning Technology Initiative (ILTI) at UCOP. The open-access textbook is authored by a sub-group of the original 50. In Spring 2020 UCSD piloted an online version of the course (the timing with COVID-19 purely coincidental), and many UC campuses are now teaching it.

The course is designed to be highly adaptable, and customizable to any discipline, department or college wishing to offer it. It was designed so that anyone can teach it. Additionally, individual modules can be adopted by instructors wishing to embed interdisciplinary climate content into existing or new syllabi. There are currently 26 video modules in the digital archive, far too many for a single course. The archive is growing, to enable the development of multiple course sequences, and deep-dive courses. Efforts are underway at UCSD, UCB and UCM to develop 15-20 new modules to radically expand existing content on climate justice, social movements, and resilience and adaptation, including modules on racial justice, indigenous knowledges, natural climate solutions and community engagement.

UCSD's Climate Evolving Education Ecology: In recent years UCSD has accelerated undergraduate opportunities across the campus to study the climate crisis through both disciplinary and interdisciplinary lenses. The *Understanding and Protecting the Planet* initiative has funded the design and teaching of some of these courses, and maintains a [website](#) that attempts to document the growing list of relevant majors and courses across the campus.

UCSD has a Minor in *Climate Change Studies*, based in SIO; and a Major / Minor in *Climate Change and Human Solutions*, based in the Department of Anthropology. The School of Public Health offers a B.S. in Public Health with a Concentration in Climate and Environmental Sciences.

UCSD's Colleges have made great strides, introducing climate change to large cohorts of undergraduates. For example, the **Warren College Writing Program** has focused in recent years on climate ethics and climate communication (WCWP 10A, 10B). **Eleanor Roosevelt College's Making of the Modern World** sequence has been updated and recalibrated, and now includes substantial climate change content in MMW 5 and MMW 6. The **Muir College Writing Program** investigates issues of racism, ableism, sexism, and exclusionism, in a variety of contexts, including environmental justice, and provides a variety of awards and programs for students committed to environmental justice; The **Marshall College DOC** program incorporates examples of climate change and environmental justice in its analysis of cultural hierarchies (DOC 3); and the Marshall Writing Program incorporates climate change topics into writing assignments (MCWP 40, 50). In Spring 2021 the **Sixth College CAT** program dedicated three tracks of CAT3 to climate change content, and has committed to embedding climate change content into CAT writing and practica courses. The new Seventh College Synthesis Program is dedicated to critical communication, writing, and project-based research on the climate crisis and interrelated challenges such as food security, migration and racial justice.

There are disciplinary undergraduate courses across the campus devoted wholly to climate-related themes, or that embed climate themes within them - in SIO, the Natural Sciences, Social Sciences, Arts

& Humanities, Engineering, Medicine and Public Health. While the UPP website shows a couple dozen courses across the campus, they are not always regularly offered, or scaled to a large undergraduate population.

Opportunities for community-based, experiential undergraduate education about climate change, climate justice and participatory climate action include the Public Service Minor at Marshall College, the Urban Studies and Planning Major and Minor, the Global Health Major and Minor, the Global TIES program at JSOE, and the UCSD Community Stations, among others.

Climate Crisis Task Force report: The call to accelerate climate education for all at UCSD was advanced in a [report](#) by a Senate-endorsed *Climate Crisis Task Force* formed in 2019 (and led by one member of CCCC), which proposed 35 concrete actions that the campus can and should take to drastically cut its emissions, and advance research and teaching on climate change. The formation of this senate committee, 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 adapt the 35 concrete actions as its starting point. Our proposal here for a *Climate Education for All* agenda at UCSD is aligned with the *Climate Crisis Task Force* report. We endorse its claims that:

UCSD has a moral and practical obligation to teach tens of thousands of students about the climate crisis. This 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...

Objective of this Brainstorming session

To develop an Academic Senate resolution called *Climate Education for All at UCSD*. Towards this goal, the CCCC is holding a brainstorming session on May 3 with selected members of the UCSD campus community, including campus and Senate colleagues engaged in undergraduate educational policy, the college Provosts, and representatives from the Teaching and Learning Commons, UCSD's *Understanding and Protecting the Planet* initiative and Council of Chairs. We will be seeking advice from the invitees.

A Draft Resolution

After the brainstorming session, we intend to submit a resolution to the Senate council, along the lines shown below. Please note that the committee has not yet voted, and the final language could be very different, based on the input and feedback we receive at the brainstorming session. We include this here to give the invitees an idea of where the committee is heading:

*We urge the campus to require climate change education for **all undergraduate students at UCSD.***

Commentary on Draft Resolution

We adopt the perspective of the *Climate Crisis Task Force* that a General Education Requirement akin to the DEI requirement would be the preferred pathway, but acknowledge that this will likely encounter resistance among campus stakeholders, for potentially lengthening time-to-degree, and becoming a burdensome box-ticking exercise for students rather than an empowering experience.

Following the Task Force report, we propose a “creative” approach, and advocate scaling-up **three undergraduate course typologies at UCSD**. (*The full text of the Task Force report’s recommendations on Teaching is attached as Appendix a, and our proposals below correlate numerically with it.*)

A: Interdisciplinary courses on the climate crisis, by integrating existing courses into elective and general requirements (19), by rewarding faculty for designing and teaching such courses (20), and by removing barriers to co-teaching with faculty across disciplines (21). Low-hanging fruit includes rapidly scaling and increasing undergraduate accessibility to the *Bending the Curve* platform which, as a modular digital archive, can be adapted and inflected toward instructor / department preferences. In short: anyone can teach it.

B disciplinary courses focused on climate change, by rewarding faculty for designing and teaching such courses (22).

C: existing courses in which faculty infuse climate change examples into the material, by providing workshops and training for faculty, perhaps through the Teaching and Learning Commons (23).

It will be essential that campus incentivizes and rewards the design and teaching of all course typologies above. Faculty should be encouraged to innovate. *Bending the Curve* can serve as a back-up for those who wish to adopt it as is, adapt it. Instructors wishing to integrate interdisciplinary content, to supplement / expand one’s teaching range, can adopt components of the existing *Bending the Curve* digital archive into their syllabi.

The Colleges are already active in varying degrees, integrating climate change content and assignments into their diverse writing programs, ensuring that UCSD undergraduate students will be exposed to some climate change content through diverse college curricula. We are eager to hear from the Provosts what more can be done at the College level, to either mandate or accelerate opportunities for climate change education.

Additionally, we recognize the value of **experiential learning** opportunities that supplement traditional-classroom learning. Majors, minors, and the Colleges should consider ways to orient existing “practica”, “field-research” and “internship” requirements to community-based work on climate change, climate justice, climate education and climate adaptation.

We also endorse the Task Force’s recommendations that: CAP and departmental faculty evaluation should acknowledge efforts to teach climate change (24); College and department reviews should include climate change teaching in learning outcomes (25); Graduate students should be incentivized to teach climate-related topics (26); and the campus should fast-track climate crisis faculty hiring, to naturally increase the number of courses being taught across the campus.

Additionally, we envision in the near future assembling a resolution that mandates biannual education on the climate crisis for **all graduate students, postdoctoral students, faculty and staff**. We envision a 2-4 hour program, drawing from existing *Bending the Curve* and other climate education materials

Appendix A. Teaching section, Climate Crisis Task Force Report

UCSD has a moral and practical obligation to teach tens of thousands of students about the climate crisis. This 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: from healthcare, to engineering, to insurance.

In our view, teaching about the climate crisis is not the same as teaching about the physical basis of climate change. While teaching the former (the climate crisis) must encompass the latter (the physical basis of climate change) it must also cover: a) psycho-socio-political topics, for example the more than 40 year history of how the fossil fuel industry has systematically distorted the science, misled the public and influenced the political system; and, for example, a sober analysis of how emissions have radically escalated under the current political-economic systems of the US and other major countries; and b) the topic of climate justice – i.e. the recognition that the people who did the least to incur our planetary predicament (the poor, the vulnerable, those in the global South, and the young) are going to incur the worst consequences⁵⁶; and how societal solutions to the climate crisis must be just.

While many departments at UCSD have faculty who are doing outstanding teaching on climate topics, and while UCSD is especially well-positioned to lead in interdisciplinary education on the climate crisis, teaching efforts should be quickly scaled up to reach thousands of students. Here we organize our summary and recommendations into three categories. Category 1 concerns interdisciplinary courses that run the full gamut of topics under the climate crisis; Category 2 concerns within-discipline teaching focused on climate change; Category 3 concerns the typical classes taught at UCSD, but in which faculty infuse climate change examples into the material.

Category 1: Courses that cover climate change as an interdisciplinary topic

These courses cover the basic understanding of the climate system, how it is changing, the impacts of climate change, aspects of communicating the climate crisis, the socio-political basis of the crisis and economic, social and technological solutions. The main such interdisciplinary course at present is SIO109/POL117 (Bending the Curve: Climate Solutions). This could be taught more frequently.

19. Increase the frequency of existing interdisciplinary courses on the climate crisis. Departments and colleges should integrate these courses into existing elective and general requirements.

20. Encourage and reward the development of new interdisciplinary courses on the climate crisis. The development of new interdisciplinary courses should be encouraged. Interdisciplinarity is one of the hallmark characteristics of our university; one that has historically differentiated us from others. With its seminal contributions to climate science and its growing research activities across divisions, UCSD is well-placed to develop new interdisciplinary classes.

21. Reduce barriers to co-teaching climate crisis classes across disciplines. This would encourage more faculty to teach these classes, which includes content that is outside of their specific discipline and ensure that faculty can also learn more in the process.

Category 2: Courses that cover an aspect of climate change, or a perspective on climate change, from within a discipline.

22. Encourage faculty to develop new courses on climate change within their disciplinary perspective. For example, SIO25 (Climate Change and Society) mostly focuses on the physical basis of climate change and is taught by faculty at SIO; MAE119 (Introduction to renewable energy: solar and wind) is taught within engineering; and PSYC185 (Psychology of the Climate Crisis) is taught in Psychology. An attempt at a full listing is here⁵⁷, and includes classes in urban studies, economics, and anthropology, to name a few. Recent courses in this area (e.g. Climate Change Studies CCS102, CCS101, SIO190) were developed with funding from the Understanding and Protecting the Planet program⁵⁸.

Category 3: Teaching climate change across the curriculum (infusing climate into existing classes)

This approach puts the climate crisis *into* a class rather than making the class about the climate crisis. For example, a biology class, when teaching about plants, could cover bio-sequestration of carbon in topsoil; or a general sociology class could include an analysis of the climate movement. This approach takes advantage of existing courses and ensures that students hear climate change topics from different perspectives.

23. Offer training to help faculty infuse climate change content into existing courses. Workshops could be facilitated through the Teaching and Learning commons, in a collaboration that would support faculty in these efforts and improve the visibility and the outcomes of this project. Adequate support (funding) should be provided to faculty to participate in these workshops and to create and implement new curricula. Course content that is produced as part of these workshops can be highlighted on the developing climate curriculum website at UCSD, and on other UC-wide websites such as through the UC-CSU NXTerra⁵⁹.

Category 4: General recommendations, and other comments

24. Within the proposed new holistic teaching evaluations, the senate CAP instructions and department chairs should acknowledge faculty efforts to teach the climate crisis.

25. Acknowledge climate crisis teaching in regular department and college reviews and encourage climate crisis themes in stated learning outcomes.

26. Incentivize graduate student participation in climate crisis teaching. Interested and passionate graduate students should be able to engage with developing courses on topics related to the climate crisis and be given “extra credit” to incentivize participation, such as a certificate of accomplishment.

While we favor a General Education Requirement for undergraduates on par with the current DEI requirement, after consultation with stakeholders across campus, we do acknowledge practical impediments. This approach would likely lengthen time-to-degree, and also inculcate an undesirable check-box like approach to education. Instead, we endorse the above, creative, approaches.

Another idea is that approval could be given for some climate change classes under the Diversity, Equity and Inclusion requirement⁶⁰. These classes are structured around the experience of, for example, African Americans, Hispanics, Native Americans and others in the United States, and few faculty with expertise in climate science, or the sociology/economics/politics of climate issues, will be equipped to teach them, so this is an area where novel interdisciplinary course offerings that serve both societal goals could emerge.

Under Research, below, we recommend climate crisis hiring – this will naturally increase the number of classes taught, but will take many years to get in place.

⁴⁹ Thanks to Edward Hall and co-authors of the “Harvard University Response to the Climate Crisis” white paper for this suggestion:
<https://tinyurl.com/wcure4n>

⁵⁰ <https://regents.universityofcalifornia.edu/governance/policies/2309.html>

⁵¹ <https://www.universityofcalifornia.edu/news/university-california-declares-climate-emergency>

⁵² Public information request June 2020

⁵³ See page 12 https://www.ran.org/wp-content/uploads/2020/03/Banking_on_Climate_Change_2020_vF.pdf

⁵⁴ <https://ucsdgreennewdeal.net/wp-content/uploads/2020/02/Form-Letter-to-JPMorgan-Chase-Company.pdf>

⁵⁵ https://www.ran.org/wp-content/uploads/2020/03/Banking_on_Climate_Change_2020_vF.pdf

⁵⁶ http://www.columbia.edu/~jeh1/mailings/2018/20181206_Nutshell.pdf

⁵⁷ <https://climatecurriculum.ucsd.edu/demo-home/climate-change-coursework/>

⁵⁸ <https://scripps.ucsd.edu/research/upp>

⁵⁹ <https://www.nxterra.orfaleacenter.ucsb.edu/>

⁶⁰ <https://undergrad.ucsd.edu/programs/dei.html>

⁶¹ <https://www.sciencedirect.com/science/article/pii/S2214629619309119>