

 UC Berkeley's
 Sustainability
Curriculum
 & the UN Sustainable
 Development Goals

2017-2020 UC Berkeley Course Mapping

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Executive Summary



Purpose and Goals

Following UC Berkeley's [reception of a Platinum Rating](#) in the Sustainability, Tracking, Assessment & Rating System, the UC Berkeley Office of Sustainability aimed to further explore UC Berkeley's role as an institute of higher education in promoting the United Nations Sustainable Development Goals (SDGs).

The 17 [Sustainable Development Goals](#) make up the 2030 Agenda for Sustainable Development, adopted by the United Nations in 2015. The goals serve as a broad framework for concurrent actions to be implemented by countries all around the world. This agreement by the United Nations signified an acknowledgement of how essential each of the 17 goals are in our rapidly changing world. Similarly, implementing the SDGs into higher education ensures that the leaders of the future are well-versed in creating strategies that will help us achieve a sustainable future for all.

This course list mapping is a second evaluation of the 2017-2020 UC Berkeley Course List in relation to the United Nations Sustainable Development Goals (SDGs). The last course list mapping, published in 2020, assessed the UC Berkeley courses in the 2015-2018 period. The evaluation was conducted by Office of Sustainability student fellows Mikayla Tran, Kung Chen, and Varsha Madapoosi. The complete earlier report can be found [here](#).

This assessment is an extension of [UC Berkeley's 2021 Sustainability Course Inventory](#), a result of UC Berkeley's 2021 submission to the [Sustainability Tracking, Assessment & Rating System v.2.2](#) (STARS). The Sustainability Course Inventory narrowed down the UC Berkeley full course list from 6854 courses to 3221 courses that have a sustainability connection. This report inspires to expand on the findings of over 3000 sustainability courses by mapping the list to the [United Nations Sustainable Development Goals](#) (SDGs). In the process of SDG-specific keyword sorting, the 3000 sustainability course list was narrowed down to 2079 courses, each identified by their applicable SDGs.

Goals:

- Identify the strengths and weaknesses of UC Berkeley sustainability curriculum in terms of UN SDG relevancy
- Research and raise awareness of the role that higher education universities should play in advancing the UN SDGs
- Provide students with access to a list of courses that address these global goals.

Figure 1. UN Sustainable Development Goals (UN SDGs)



Overview of Findings

The Office of Sustainability found that every UN SDG is covered by UC Berkeley’s curriculum with some being more represented than others. Figure 2 shows the number of courses for each SDG, divided among aggregate, primary, and related. Based on the data, UC Berkeley covers UN SDG 16 (Peace and Justice) thoroughly, with about 18.5% of the courses being primarily and secondarily related. The weakest UN SDG represented in UC Berkeley’s sustainability curriculum was SDG 1 (No Poverty), with only 1.4% of the courses being at all related. It is important to note that this data is based on the previously filtered STARS assessment and thus does not adequately represent UC Berkeley’s full curriculum. More information on the methodology is detailed in the following section.

Figure 2. Table breakdown of the number of courses for each SDG, divided among aggregate, primary, and related.

Total: 2079 UC Berkeley graduate and undergraduate courses, offered years 2017-2020

UN SDG #	All Courses		
	Agg. Course Count ¹	Primary SDG ²	Related SDGs ³
1 (No Poverty)	48	22	26
2 (Zero Hunger)	81	45	36
3 (Good Health and Wellbeing)	315	273	42
4 (Quality Education)	204	173	31
5 (Gender Equality)	206	133	73
6 (Clean Water and Sanitation)	106	36	70
7 (Affordable and Clean Energy)	120	85	35
8 (Decent Work and Economic Growth)	498	245	253
9 (Industry Innovation)	215	146	69
10 (Reduce Inequality)	90	56	34
11 (Sustainable Cities and Communities)	157	115	42
12 (Responsible Consumption and Production)	183	77	106
13 (Climate Action)	264	122	142
14 (Life Below Water)	116	58	58
15 (Life on Land)	135	96	39
16 (Peace, Justice, and Strong Institutions)	623	396	227

¹ Aggregate course count refers to the total, including primary and related SDGs

² Primary SDGs are the most applicable SDG related to the course

³ Related SDGs are touched on in the course, but not a central focus

Methodology



UC Berkeley's Inventory of Sustainability Courses

The Office of Sustainability used UC Berkeley's inventory of sustainability courses as the baseline of which courses to map by UN SDG. The courses on the sustainability course inventory are from 2017-2018, 2018-2019 and 2019-2020 school years.

UC Berkeley's sustainability course list was developed for the Sustainability, Tracking, Assessment & Rating System (STARS) in 2021. STARS is a transparent, self-reporting framework for colleges and universities to measure their sustainability performance. Hundreds of institutions use STARS criteria for tracking their sustainability efforts - UC Berkeley among them.

UC Berkeley's 2021 inventory of sustainability courses (3221 courses total) is split into two lists based on the categories STARS uses for defining sustainability courses: sustainability-focused and sustainability-inclusive. These definitions are taken directly from the [UC Berkeley Sustainability Course Offerings Spreadsheet](#), and are definitions created by the STARS rating program.

1) **Sustainability-focused:** *a course that views topics through the lens of sustainability. The course title or description does not have to use the term "sustainability" to count as sustainability-focused if the primary and explicit focus of the course is on the interdependence of ecological and social/economic systems or a major sustainability challenge.*

On the inventory of sustainability courses, there were a total of 1319 courses that fit the criteria for being sustainability-focused. From those 1319 courses, 781 were undergraduate courses, while 538 were graduate courses.

2) **Sustainability-inclusive:** *a course that devotes at least one unit or section to a sustainability topic or has direct applications in sustainability fields.*

On the inventory of sustainability courses, there were a total of 1902 courses that fit the criteria for being sustainability-inclusive. From those 1902 courses, 1151 were undergraduate courses, while 751 were graduate courses.

Figure 3. Table breakdown of sustainability-focused and sustainability-inclusive courses.

	Undergraduate Courses	Graduate Courses	Total Courses
Sustainability-focused	781	538	1319
Sustainability-inclusive	1151	751	1902

Identifying Keywords

The keyword list is identical to the keywords used in the previous SDG course assessment, allowing us to analyze courses using the same criteria and identify trends. The UC Berkeley student team at the time drew from [research conducted at the University of Toronto](#), utilizing the keywords from their inventory mapping. The UC Berkeley student team also developed additional keywords to refine the search, which can be found in the original 2020 report.

The UN SDG Goal 17, Partnerships for the Goals, was excluded because it does not address a new perspective of sustainability, making the goal poorly-fitted for our purposes.

Figure 4. Table showing the keywords used to map the course curriculum by UN SDGs.

Total: 94 Keywords

Goal	SDG	Keywords ¹
1	No Poverty	poverty, income distribution, wealth distribution, socioeconomic
2	Zero Hunger	agriculture, food, nutrition, hunger
3	Good Health and Well Being	health, well being, mortality, death, disease
4	Quality Education	educat*, inclusive, equitable, school
5	Gender Equality	gender, women, equality, girl, queer, female, femin-(ine, ism)
6	Clean Water and Sanitation	water, sanitation, wastewater, drought, rivers, aquifers, wetlands, oceans, marine, hydro-(logy), groundwater
7	Affordable and Clean Energy	energy, renewable, wind, solar, geothermal, hydroelectricity, energy efficiency, electricity
8	Decent Work and Economic Growth	employment, economic growth, sustainable development, labor, worker, wage, GDP, economic
9	Industry Innovation	infrastructure, innovation, industr*, buildings
10	Reduce Inequality	trade, inequality, financial market (0), tax*
11	Sustainable Cities and Communities	cities*, urban, resilien*, rural
12	Responsible Consumption and Production	consum*, production, waste, natural
13	Climate Action	climate, greenhouse gas, environment, global warming, weather, water, natural resource
14	Climate Action	ocean, marine, water, pollut*, conserv*, fish, sea
15	Life on Land	forest, biodiversity, ecology, pollut*, conserv*, land use
16	Peace, Justice, and Strong Institutions	institution, justice, governance, peace, rights, policy, development

¹ An asterisk next to an abbreviated word is syntax for the search engines used to search all variants of that abbreviation. For example, searching pollut* returns pollution, polluter, pollutants, polluted, and polluter.

From UC Berkeley’s 2021 inventory of sustainability courses, the Office of Sustainability found that 115 different academic departments offered sustainability courses that met the STARS criteria, ranging from Public Health to Law to Physics. After completing a keyword search within the sustainability course inventory, the course list narrowed from 3221 courses to 2079 courses from the SDG mapping.

After identifying relevant courses based on the keyword search, each course description was then reviewed and mapped according to its relevance to the UN SDGs. For standardization and guidance, the team used the UN’s online descriptions of SDGs as the basis for course alignment and categorization.

Using Google Sheets, courses were mapped by at least one primary SDG (marked ‘xp’) and potentially several secondary/related SDGs (marked ‘x’). Data collection consisted of adding up the number of courses mapped to each SDG under a ‘primary’ or ‘related’ basis.

Notice on Methodology

This assessment of UC Berkeley’s curriculum relevance according to the UN Sustainable Development Goals is not fully comprehensive.

First, the foundation of this project was based on the Office of Sustainability’s previous inventory of UC Berkeley sustainability courses, which used STARS criteria to identify sustainability-focused and sustainability-related courses. The UN SDGs do not operate on the same criteria, and there are expected discrepancies between the two lists in terms of what is considered “sustainable.”

For example, UN SDG 5 on gender equality may show up much more frequently in a different assessment of UC Berkeley’s full course inventory. The STARS sustainability criteria may not have fully accounted for all courses that advance the mission of gender equality; thus, these courses were not included in the sustainability course inventory and not mapped according to the UN SDGs in this specific project.

Findings

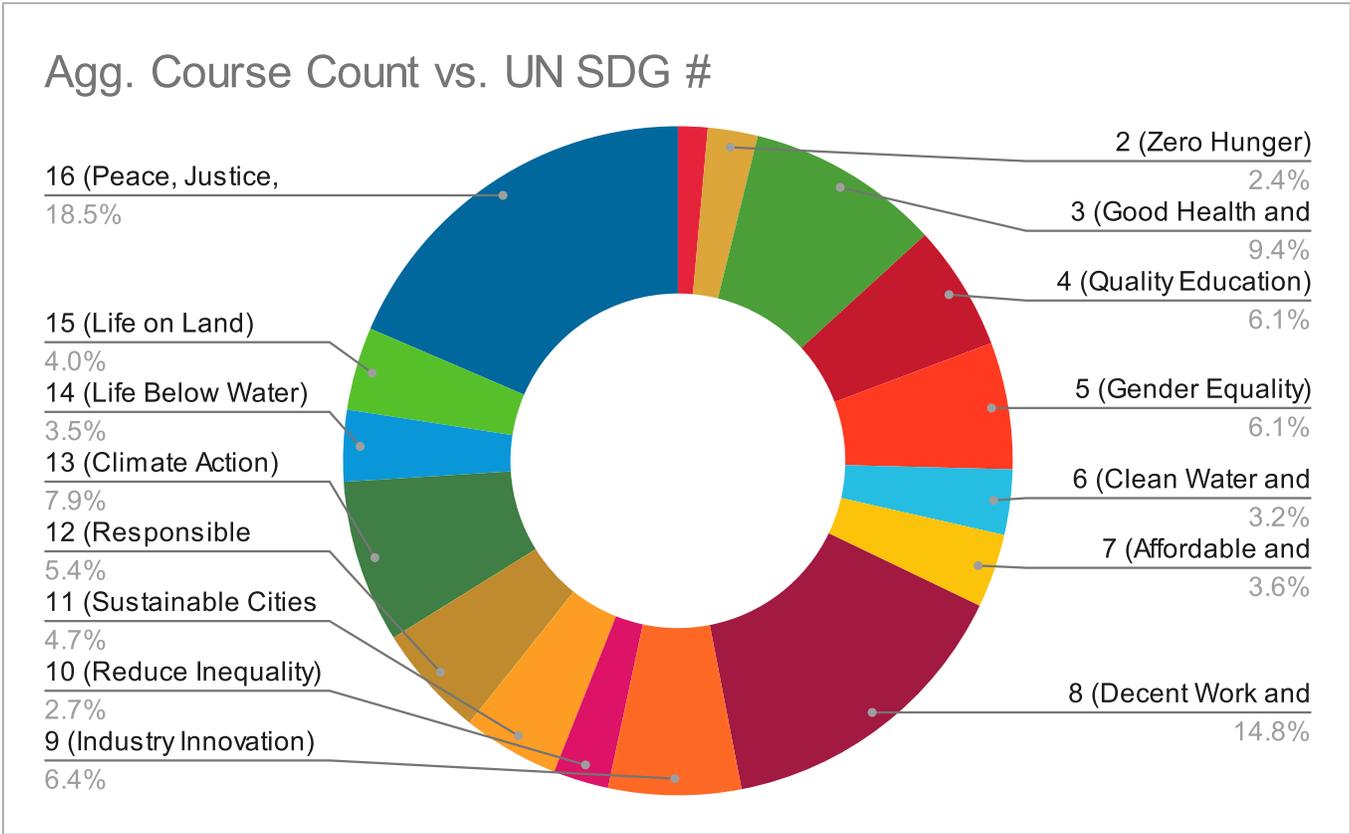
Overview of Data

Figure 5 illustrates the percentages of all courses that fall under each UN SDG. Although every UN SDG was covered by the UC Berkeley STARS course list, some SDGs were more represented than others, with UN SDG 16: Peace and Justice being the most represented at 18.5%, UN SDG 8: Decent Work and Economic Growth being the second most represented at 14.8%, and UN SDG 3: Good Health and Well-being being the third most represented at 9.4%. The UN SDGs that were the most underrepresented in the UC Berkeley STARS course list were UN SDG 10: Reduced Inequality, UN SDG 2: Zero Hunger, and UN SDG 1: No Poverty, represented at 2.7%, 2.4%, and 1.4%, respectively.

Figure 5. Waffle chart showing the percentage representation of each SDG for all courses.



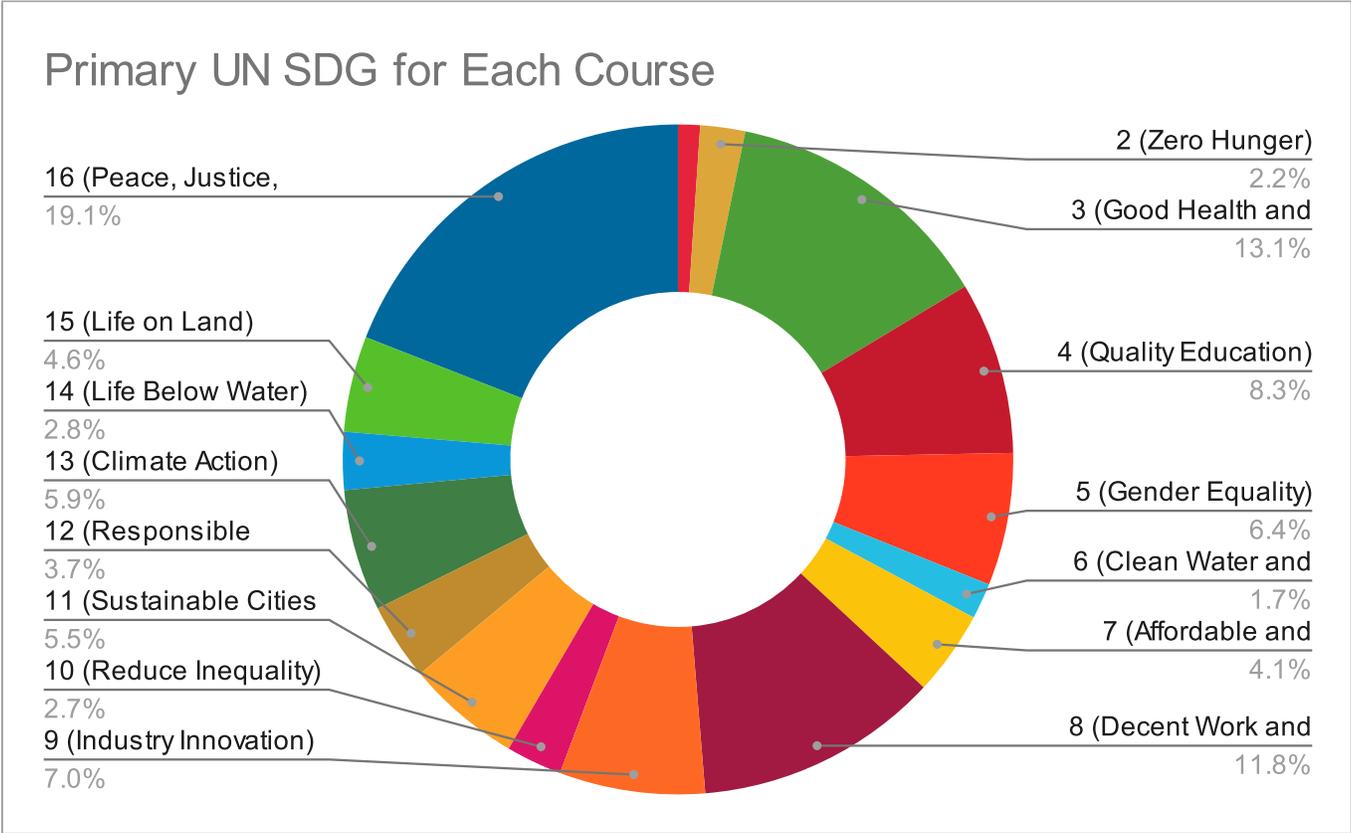
Figure 6. Aggregate Course Count vs. UN SDG #



The rankings for both primary and related UN SDGs for all courses in decreasing order of prevalence are as follows:

- 1) SDG 16 - Peace, Justice and Strong Institutions: (18.5%)
- 2) SDG 8 - Decent Work and Economic Growth: (14.8%)
- 3) SDG 3 - Good Health and Well-being: (9.4%)
- 4) SDG 13 - Climate Action: (7.9%)
- 5) SDG 9 - Industry, Innovation and Infrastructure: (6.4%)
- 6) SDG 5 - Gender Equality: (6.1%)
- 7) SDG 4 - Quality Education: (6.1%)
- 8) SDG 12 - Responsible Consumption and Production: (5.4%)
- 9) SDG 11 - Sustainable Cities and Communities: (4.7%)
- 10) SDG 15 - Life on Land: (4.0%)
- 11) SDG 7 - Affordable and Clean Energy: (3.6%)
- 12) SDG 14 - Life Below Water: (3.5%)
- 13) SDG 6 - Clean Water and Sanitation: (3.2%)
- 14) SDG 10 - Reduced Inequality: (2.7%)
- 15) SDG 2 - Zero Hunger: (2.4%)
- 16) SDG 1 - No Poverty: (1.4%)

Figure 7. Primary UN SDG for Each Course



The rankings for primary UN SDGs for all courses in decreasing order of prevalence are as follows:

- 1) SDG 16 - Peace, Justice and Strong Institutions: (19.1%)
- 2) SDG 3 - Good Health and Well-being: (13.1%)
- 3) SDG 8 - Decent Work and Economic Growth: (11.8%)
- 4) SDG 4 - Quality Education: (8.3%)
- 5) SDG 9 - Industry, Innovation and Infrastructure: (7.0%)
- 6) SDG 5 - Gender Equality: (6.4%)
- 7) SDG 13 - Climate Action: (5.9%)
- 8) SDG 11 - Sustainable Cities and Communities: (5.5%)
- 9) SDG 15 - Life on Land: (4.6%)
- 10) SDG 7 - Affordable and Clean Energy: (4.1%)
- 11) SDG 12 - Responsible Consumption and Production: (3.7%)
- 12) SDG 14 - Life Below Water: (2.8%)
- 13) SDG 10 - Reduced Inequality: (2.7%)
- 14) SDG 2 - Zero Hunger: (2.2%)
- 15) SDG 6 - Clean Water and Sanitation: (1.7%)
- 16) SDG 1 - No Poverty: (1.1%)

Discussion of Results

Within the UC Berkeley 2021 Sustainability Course Inventory, the number of courses that qualified for the categories “sustainability-focused” and “sustainability-inclusive” has increased from around 600 courses (2018) to 3221 courses (2021). Though 2021 Sustainability Course Inventory had a greater amount of sustainability courses to conduct the keyword filter on, the Office of Sustainability was able to analyze changes based on the percentages of which each SDG was represented.

In terms of the aggregate course count, UN SDG 16: Peace and Justice remained the most represented SDG, with 18.5% of sustainability courses in 2021, compared to 22% of sustainability courses in 2018. Conversely, SDG 1: No Poverty remained in the bottom three rankings in both the 2021 (1.4%) and 2018 SDG Course Mapping (1.2%). The lowest rankings for 2021 and 2018 were SDG 1: No Poverty (1.4%) and SDG 4: Quality Education (0.4%).

Figure 8. Comparing aggregate course count rankings for SDG prevalence in the 2021 versus 2018 SDG Course Mapping

Rankings for SDG prevalence	2021 SDG Course Mapping	2018 SDG Course Mapping
1	SDG 16: Peace and Justice - 18.5%	SDG 16: Peace and Justice - 22%
2	SDG 8: Decent Work and Economic Growth - 14.8%	SDG 15: Life on Land - 10.1%
3	SDG 3: Good Health and Well-being - 9.4%	SDG 9: Innovation and Infrastructure - 9.1%.
14	SDG 10: Reduced Inequality - 2.7%	SDG 5: Gender Equality - 2.0%
15	SDG 2: Zero Hunger - 2.4%	SDG 1: No Poverty - 1.2%
16	SDG 1: No Poverty - 1.4%	SDG 4: Quality Education - 0.4%

Overall, the 2021 SDG Course Mapping had a more distributed percentage of courses that qualified for each SDG. The Office of Sustainability can infer that the course list has diversified in the sustainability courses that meet the criteria for each SDG.

Conclusion



This research was conducted in order to investigate the distribution of the United Nations Sustainable Development Goals within the UC Berkeley sustainability curriculum, as well as identify SDG topics in which the course inventory is lacking.

Though the 2021 SDG Course Mapping has indicated a more distributed aggregate course count within the SDGs, a greater campus-wide effort must be taken to integrate the SDGs of the lower percentages into the course list (SDG 10: Reduced Inequality, SDG 2: Zero Hunger, and SDG 1: No Poverty). The noticeable improvement in SDG aggregate course count from 2018 to 2021 is representative of the growing upwards trend of sustainability courses on campus. Keeping that momentum is vital to improve the sustainability curriculum and diversify the UC Berkeley Course List.

The Office of Sustainability's next steps include receiving feedback through sending the evaluation to the heads of academic departments listed in the STARS report, student groups on campus, and student advisors. From accessing the public facing spreadsheet, students and their advisors will be able to filter and view courses by SDG, and make enrollment decisions that correspond with their fields of interest. By furthering this sustainability-oriented academic curriculum, the UC Berkeley community can advance the Sustainable Development Goals and prepare students to strategize and create solutions for modern issues, now and in the future.