**CSU Degree Program Proposal**

**Master of Science in Sustainability Management and Policy Revised February 2019**

1. **Program Type** (Please specify any from the list below that apply - delete the others)
	1. Self-Support
	2. Face-to-Face
	3. New Program

# Program Identification

* 1. **Campus:**

California State University, Long Beach

# Full and exact degree designation and title (e.g. Master of Science in Genetic Counseling, Bachelor of Arts with a Major in History):

Master of Science in Sustainability Management and Policy

# Date the Board of Trustees approved adding this program projection to the campus Academic Plan:

Spring 2019

# Term and academic year of intended implementation:

Fall 2020

# Total number of units required for graduation (this will include all requirements (and campus-specific graduation requirements, not just major requirements):

36 units

# Name of the department(s), division, or other unit of the campus that would offer the proposed degree major program (please identify the unit that will have primary responsibility, campus partners will decide which college the degree will come from):

College of Business, College of Liberal Arts (primary responsibility), College of Natural Sciences and Mathematics, and the College of Professional and International Education

# Name, title, and rank of the individual(s) primarily responsible for drafting the proposed degree major program:

Argandoña, Monica, PhD. Lecturer, Environmental Science and Policy Laris, Paul, PhD. Chair of Geography Department

Martin, Ingrid, Ph.D. Professor of Marketing, Director of Graduate Studies Martin, Wade, PhD. Professor of Economics

Whitcraft, Christine, PhD. Assoc. Professor of Biological Sciences Department and

Director of Environmental Science and Policy

# Statement from the appropriate campus administrative authority that the addition of this program supports the campus mission and will not impede the successful operation and growth of existing academic programs:

Scott Apel, VP of Administration and Finance endorsed the proposed program. Scott Apel’s support letter is in appendix A.

Curtis Bennett, Dean of the College of Natural Sciences and Mathematics, endorsed the proposed program. Dean Bennett’s support letter is in appendix A.

Jeet Joshee, Dean of the College of Professional and International Education, endorsed the proposed program. Dean Joshee’s support letter is in appendix A.

Michael Solt, Dean of the College of Business, endorsed the proposed program. Dean Solt’s support letter is in appendix A.

Mary Stephens, retired VP of Administration and Finance, endorsed the proposed program. Mary Stephens’ support letter is in appendix A.

David Wallace, Dean of the College of Liberal Arts, endorsed the proposed program. Dean Wallace’s support letter is in appendix A.

# Any other campus approval documents that may apply (e.g. curriculum committee approvals):

The Pre-Proposal was approved in June 2018.

# Please specify whether this proposed program is subject to WASC Substantive Change review. The campus may submit a copy of the WASC Sub-Change proposal in lieu of this CSU proposal format.

Not applicable

# Optional: Proposed Classification of Instructional Programs and CSU Degree Program Code

49050, Sustainability Studies, 30.3301

# Program Overview and Rationale

* 1. **Provide a rationale, including a brief description of the program, its purpose and strengths, fit with institutional mission, and a justification for offering the program at this time. A comprehensive rationale also explains the relationship between the program philosophy, design, target population, and any distinctive pedagogical methods.**

Program Purpose and Description

Sustainability is the consideration of the idea that the current generation can meet its needs without compromising the ability of future generations to meet their needs.

This is accomplished by considering three crucial elements: the environment, society, and the economy. A self-support Master of Science in Sustainability Management and Policy (hereafter referred to as M.S. in Sustainability Management and Policy) will be designed to prepare students (cohort size = 25-30) to apply the concepts of sustainability within an organization and the regulatory environment by engaging them in advanced and in-demand training. This program will provide a transdisciplinary graduate degree that will empower students with technical, managerial, and problem- solving skills to guide the decision-making process in the context of sustainability. The

curriculum design objective is to offer a balance between theory and application by illustrating the holistic dynamics of social, economic, environmental, business, and technical systems. Students with a science or engineering foundation, who are interested in sustainability, will increase their knowledge and competence in the field, enabling them to pursue careers in management or policy with a sustainability focus.

Program Philosophy and Justification

The proposed M.S. in Sustainability Management and Policy program is part of a growing trend in environmentally-related programs throughout the CSU (CSUCI, CSUC, CSUDH, CSUEB, and CSUF). These include CSUCI: Master of Science in Environmental Science & Resource Management, CSUC: Master of Science in Environmental Science, CSUDH: Master of Science in Environmental Science, CSUEB: Master of Science in Recreation and Tourism, and CSUF: Master of Science in Environmental Studies. Unlike the programs listed above, the proposed CSULB program specifically addresses sustainability.

Alignment with the University Mission

The proposed program embraces the CSU mission to prepare the future workforce to create innovative products and services, and to conduct transformative research by providing targeted training, experiential learning, and networking opportunities. This program will serve the immediate Long Beach community and extend to the greater Los Angeles and Orange County regions for individuals who work in private, public, non- profit, and government agencies. CSULB envisions changing lives by expanding educational opportunities, championing creativity, and preparing leaders for a changing world; our proposed program will meet all these objectives. In addition, this program is aligned with the CSULB commitment to provide highly valued graduate educational opportunities through superior teaching, research, creative activities, and service to communities both locally and globally. According to its mission statement, “CSULB is committed to being an outstanding teaching-intensive, research-driven university that emphasizes student engagement, scholarly and creative achievement, civic participation, and global perspectives.” This program will bring professionals and graduates into a graduate-only class, with the goal of blending the student population into a collaborative professional and academic learning experience. In particular, this proposed degree program “makes a positive contribution to the greater society by developing responsible citizens, with highly valued degrees, for the 21stcentury.”

Strengths

This program is the result of collaborative efforts between four colleges: College of Business, College of Liberal Arts, College of Natural Sciences and Mathematics, and College of Professional and International Education. This collaboration reflects the integrative nature of the field of sustainability. It is no longer enough to have a degree in the natural sciences, environmental studies or

engineering; many jobs require an in-depth understanding of multiple disciplines that can lead to integrated approaches within sustainability management.

The M.S. in Sustainability Management and Policy is intended for individuals seeking management, entrepreneurial, and leadership positions related to sustainability. The program design considers those who are pursuing a position that includes responsibilities in sustainability as part of their organizational practices or are switching career paths to pursue opportunities in this field.

Students will engage with regional and national sustainability groups and collaborate with various professionals from a wide array of industries, government, non- government, and academic organizations, in order to excel as active leaders in sustainability fields.

# Provide the proposed catalog description, including program description, degree requirements, and admission requirements. For master's degrees, please also include catalog copy describing the culminating experience requirement(s).

Catalog Description

The Master of Science in Sustainability Management and Policy (MSSMP) is designed to provide students with the advanced and highly sought-after expertise needed in the field of sustainability management. The program provides training to prepare students to apply the concepts of sustainability within an organization and the regulatory environment. This program will provide a transdisciplinary graduate degree that will empower students with technical, managerial, and problem-solving skills while offering a balance between theory and application by illustrating the holistic dynamics of social, economic, environmental, business, and technical systems.

Degree Requirements

The program’s requirements comprise a 36-unit, cohort-based, lock-step sequence of courses covering three core components: i) developing an advanced understanding of sustainability in the management and policy realms; ii) acquiring data analytics, systems analysis and design skills to tackle real-world problems in business and policy; and iii) demonstrating competency through a culminating project in which students interact with local leaders to identify improvement opportunities and develop sustainability-based solutions.

Program Prerequisites

Admission decisions are based on consideration of the applicant’s previous academic record, statement of purpose, resume, letters of recommendation, and performance on

admission and English proficiency exams:

* A bachelor’s degree from an accredited university in science and/or engineering or other discipline that includes the following coursework:
	+ Chemistry
	+ Mathematics through college-level Calculus
	+ Additional science courses, which could include Biology, Microbiology, Chemistry, or Physics.
* Applicants with a bachelor’s degree in other disciplines may be considered if the applicant has the above course work completed prior to applying.
* Minimum grade point average of 2.75 in the last 60 semester units attempted and in good standing at the last college attended.
* A statement of purpose
* A recent resume
* Two letters of recommendation
* A satisfactory score is required on either the Graduate Management Admission Test (GMAT) or the Graduate Record Exam (GRE) that demonstrates balance between verbal and quantitative skills and ability
	+ A score of 4.0 or higher on the writing portion of GMAT/ GRE can be used to waive the TOEFL requirement of the Center for International Education and Global Engagement for international students. All other international applicants must take TOEFL and score 80 (550 paper- based) or higher. If not, international students will have to take GWAR.
	+ U.S. institution located in a country where English is a primary language of communication have satisfied the GWAR and are not required to complete additional assessment.
	+ Applicants with a score of 3.5 or lower on the GMAT/ GRE writing portion will not be admitted to the program.

University Graduation Requirements

* Satisfactory completion of 36 units of approved graduate courses with a GPA of

3.0 or higher.

* Applicants who are admitted to the program will be subject to the university’s Graduation Writing Assessment Requirement (GWAR). All entering students are required to take the GWAR Placement Exam (GPE), except students who have previously (1) received degrees from accredited colleges and universities in the United States; or (2) received degrees from an accredited non-U.S. institution located in a country where English is a primary language of communication; or (3) achieved a score of 4.0 or higher on the writing portion of the GMAT or GRE.
* Completion of the culminating activity course with a grade of “B” or better.
* Compliance with all other university graduation requirements.

Program Course Requirements

REQUIRED (30 units, 10 courses)

1. SUST 601 Sustainability and Society
2. SUST 602 Sustainability Science
3. SUST 603 Sustainability Case Studies
4. SUST 604 Data Analytics and Sustainability
5. SUST 605 Sustainability and Organization Theory
6. SUST 606 Environmental Law, Policy and Ethics
7. SUST 607 Decision Making and Uncertainty
8. SUST 608 Benefit Cost Analysis
9. SUST 609 Environmental Economics and Policy
10. SUST 610 Sustainability and Strategic Management

CULMINATING EXPERIENCE - REQUIRED (6 units, 2 courses)

1. Capstone Course – Project Orientation and Support (SUST 699A) and Applied Professional Project (SUST 699B)

Description of Culminating Project:

The Integrative Capstone Experience course (6 units) will serve as the culminating educational experience for students in the M.S. in Sustainability Management and Policy Program. It is designed to integrate the transdisciplinary fields of the program’s curriculum. Students must draw on both the practical skills and the analytical knowledge they have gained in order to address crucial sustainability management issues as consultants for a real-world client, potentially related to the student’s ongoing professional positions. Under the guidance of faculty mentors, interdisciplinary teams of students will engage in a twelve-week project with partner companies and non-profit organizations.

In accordance with the California Code of Regulations: Title 5 Education, Section 40510, the projects will be a significant undertaking appropriate to the professional sustainability field. Each project will investigate a range of sustainability issues, including: aligning business strategies with social and environmental goals; developing methodologies to measure business impacts on the environment; and measuring the return on investment from environmental and social initiatives. The project will include a written report documenting the project’s significance, objectives, methods, and recommendations for potential solutions to the problem. In addition, students will be required to do an oral presentation of the project results and recommendations.

# 4. Curriculum

**Describe the goals for the (1) program and (2) student learning outcomes. Program goals are very broad statements about what the program is intended to achieve, including what kinds of graduates will be produced. Student learning outcomes are more specific statements that are related to the program goals, but that more narrowly identify what students will know and be able to do upon successful completion of the program.**

**Institutional Learning Outcomes**

**Institutional learning outcomes (ILOs) highlight the knowledge, skills, and dispositions all students are expected to have upon graduating from an institution of higher learning.**

Upon completion of the program, student will be:

(I-1) Well-prepared with critical thinking skills to succeed in the workforce of California and the world;

(I-2) Critically and ethically engaged in global and local issues;

(I-3) Knowledgeable and respectful of the diversity of individuals, groups, and cultures; (I-4) Capable of applying theory to solve practical problems;

(I-5) Skilled in collaborative decision-making, research, and creative activities.

# Program Learning Outcomes

**Program learning outcomes (PLOs) highlight the knowledge, skills, and dispositions students are expected to know as program graduates. PLOs are more narrowly focused than ILOs.**

**Program Learning Outcomes (PLOs) for proposed program:**

P-1) Business Functions & Sustainability: Define and apply sustainability principles and practices within professional responsibilities.

P-2) Communications: Explain how the environment, economics, and social values interact to foster or hinder sustainability and sustainable practices.

P-3) Critical Theory: Analyze and experience local, national, and global sustainability using a transdisciplinary approach.

P-4) Critically and Ethically Engaged: Apply sustainability principles within the context of developing personal and professional values.

P-5) Numeracy and Measurement: Develop proficiency with data collection, analysis, and representation on a range of sustainability-related topics.

# Student Learning Outcomes

**Student learning outcomes (SLOs) clearly convey the specific and measurable knowledge, skills, and/or behaviors expected, and guide the type of assessments to be used to determine if the desired level of learning has been achieved.**

**Student Learning Outcomes for proposed program:**

**SUST 601 Sustainability and Society**

SLO 1: Content Based. Define sustainability from a transdisciplinary perspective. Typically measured by in-class exams.

SLO 2: Content Based. Differentiate sustainability and sustainable development. Typically measured by in-class exams.

SLO 3: Content Based. Identify the three pillars (triple bottom line) of sustainability: people, planet and profit. Typically measured by in-class exams.

SLO 4: Skill Based. Develop the skills necessary to evaluate tradeoffs between multiple objectives, in sustainability decision making. Skills developed by position papers on specific case studies or topics. SLO 5: Skill Based. Determine appropriate sustainability measure to evaluate progress toward sustainability goals.

SLO 6: Content Based. Differentiate sustainability practices across countries and critically analyze the evolution of sustainability policy. Typically measured by team assignments on sustainability challenges.

SLO 7: Content Based. Evaluate the risk of climate change to society from a sustainability framework. Typically measured by position papers on specific topics or case studies.

# SUST 602 Sustainability Science

SLO 1: Content Based. Analyze physical and behavioral dimensions involving society, the environment, and the economy. Typically measured by in-class exams.

SLO 2: Skilled Based. Communicate the value of sustainability and assess the ways that sustainability topics are approached by a diversity of academic disciplines. Skill developed by research project.

SLO 3: Skilled Based. Evaluate the components, pathways, and relationships of the biosphere. Skill developed by written assignments.

SLO 4: Content Based. Define the basic sustainability concepts of homeostasis, carrying-capacity, evolutionary processes, climate change, ecosystem services, and understand the relationships between them and socioeconomic concepts. Typically measured by in-class exams.

SLO 5: Skilled Based. Utilize the appropriate methodological tools and scientific method to analyze and address specific research questions and solve large scale problems. Skills developed by written assignments and collaborative project.

SLO 6: Content Based. Integrate the basic theoretical concepts and methodologies of both the physical and social sciences with respect to sustainability. Typically measured by in-class exams and problem- solving assignments.

# SUST 603 Sustainability Case Studies

SLO # 1: Identify the individual components of the Earth’s climate system, comprehend how they interact, and discuss how they can be understood within the context of equilibrium and feedback. Typically developed by lectures, required reading, class discussion. Typically measured by essay exams, student-led discussions, written assignments.

SLO# 2: Examine the context of the Earth’s climate history, evaluate various natural and anthropogenic mechanisms of climate change over a variety of time scales, and analyze climate model predictions.

Typically developed by lectures, required reading, class discussion. Typically measured by essay exams, student-led discussions, written assignments.

SLO # 3: Synthesize physical and human concepts to assess the relationship between the climate system and ecosystems, economic and political structures, social impacts, and human health. Typically developed by lectures, required reading, class discussion. Typically measured by essay exams, research paper, student-led discussions, and oral presentations.

SLO # 4: Identify and evaluate examples of strategies and initiatives that promote sustainability and

mitigate or adapt to the impacts of climate change and express these in concepts in written and oral communication. Typically developed by required reading, class discussion, field trips. Typically measured by short written assignments, student-led discussions, research paper, oral presentation. SLO # 5: Assess the economic inequities and environmental injustices inherent in the impacts of climate change and express these in concepts in written and oral communication. Typically developed by required reading, class discussions, field trips. Typically measured by short written assignments, student-led discussions, research paper, oral presentation.

# SUST 604 Data Analytics and Sustainability

SLO 1: Analyze data related to sustainability: Students will define and understand key issues related to sustainability and implement the various steps needed to obtain insights from data analysis related to sustainability. Typically measured by in-class data analysis exercises.

SLO 2: Theories on statistical analysis of data: Students will apply statistical theories and proper methods of analysis to given research questions and types of data. Skill developed by case analysis assignments with data: Case writing to recommend a proper course of action based on analytic results. SLO 3: Effective sustainable business management: Students will apply knowledge of sustainability to develop and assess business responses to sustainability. Skill developed by written assignments.

SLO 4: Critical thinking: Student will identify and apply appropriate analytical methods to business, environmental and social issues related to sustainability. Typically measured by case writing.

SLO 5: Strategic thinking: Students will utilize empirical evidence to develop business strategies that maximize economic values while minimizing environmental and social risks. Skill developed by collaborative project.

SLO 6: Data analysis software: Students will learn a statistical software package appropriate to handle sustainability data such as Stata, R, Python, SAS, and SPSS. Typically measured by in class examinations.

# SUST 605 Sustainability and Organization Theory

SLO 1: Content Based. Describe how economic, social, political, and regulatory forces shape the context and conduct of business Typically measured by in-class examinations.

SLO 2: Content Based. Identify the core elements of a sustainable organization. Typically measured by in-class examinations.

SLO 3: Content Based. Define the key dimensions of environmental management systems. Skill developed by written assignments and examinations.

SLO 4: Skill Based. Describe the frameworks and tools for creating and implementing sustainable business practices. Skill measured by simulation exercises.

SLO 5: Skill Based. Identify the basic principles of organization design and craft compelling arguments for organization redesign proposals. Skill developed by simulations and exercises.

SLO 6: Skill Based. Develop a systems view of how organizations can adopt, survive, and succeed in rapidly changing environments. Skill developed by team projects.

SLO 7: Skill Based. Make logical and defensible recommendations on how to achieve sustainable effectiveness. Skill developed by debate and case analysis.

# SUST 606 Environment, Law, Policy and Ethics

SLO 1: Identify major pieces of environmental legislation, how they were developed and their significance to environmental policy and management in the United States. This will be measured through exams.

SLO 2: Content-based Outcome. Apply and critique environmental policy making and environmental governance including the three branches of government, the operation of administrative agencies, various levels of government, and the philosophies of pluralism and elitism and their influence on democratic decision-making. This will be accomplished by reviewing case studies and through class discussions and in-class activities.

SLO 3: Content-based Outcome. Analyze the impact of natural resource and environmental laws and policies developed and implemented through governance structures on human behavior and social systems, and indirectly on natural systems. This will be accomplished by reviewing case studies and through class discussions and in-class activities.

SLO 4: Delineate the numerous ethical issues and perspectives confronting society and environmental scientists and their influence on the development of environmental policy and regulation. This will be accomplished by reviewing case studies and through class discussions and in-class activities.

SLO 5: Skill-based Outcome. Develop skills in policy analysis and collaboration. This will be accomplished and measured utilizing team-based learning, critical essays and a collaborative project. SLO 6: Skill-based Outcome. Demonstrate proficiency in applying the basic concepts of the course, analytical frameworks, and theoretical perspectives. Skill will be developed through a research project on a topic of the student’s choice.

# SUST 607 Decision Making and Uncertainty

SLO 1: Content Based. Frame a decision that incorporates the uncertainty in the problem to be addressed. Typically measured by in-class examinations and case analysis.

SLO 2: Skill Based. Develop a decision-making framework that leads to success in rapidly changing environments Skill developed by simulations.

SLO 3: Skill Based. Create quantitative models to support decision making in an uncertain environment; Skill developed by team project.

SLO 4: Skill Based. Communicate a logical and defensible recommendation that will achieve sustainable effectiveness. Skill developed by team project.

SLO 5: Content Based. Valuate tradeoffs when there are conflicting objectives for the organization. Typically measured by written assignments.

# SUST 608 Benefit Cost Analysis

SLO 1: Content Based. Structure a policy or project decision in a benefit-cost framework. Typically measured by in-class examinations and written assignments.

SLO 2: Skill Based. Identify the market and non-market benefits of an analysis and the impact on sustainability. Skill developed by case analysis.

SLO 3: Content Based. Identify the various stakeholder groups involved in a decision. Typically

measured by case studies.

SLO 4: Content Based. Analyze the social welfare effects as well as the private effects of a particular policy or project. Skill measured by written exercises.

SLO 5: Skill Based. Use benefit-cost analysis to evaluate the outcomes of a particular policy or project. Skill developed by simulations and exercises.

SLO 6: Skill Based. Conduct an economic impact analysis using a benefit-cost framework. Skill developed by team projects.

SLO 7: Skill Based. Assign monetary values to market and non-market benefits and costs. Skill developed by team projects.

# SUST 609 Environmental Economics and Policy

SLO 1: Content Based. Identify efficient policies to correct for market failures from externalities and public goods. Typically measured by in-class examinations and written assignments.

SLO 2: Content Based. Incorporate environmental considerations into production decisions. Skill developed by simulations.

SLO 3: Skill Based. Design policy that incorporates environmental justice considerations. Typically measured by simulations.

SLO 4: Content Based. Use a transdisciplinary perspective to design environmental policy. Typically measured by written exercises.

SLO 5: Skill Based. Use data to support business and policy-making decisions. Skill developed by simulations and exercises.

SLO 6: Skill Based. Categorize environmental impacts by type of pollutant. Skill developed by case studies.

SLO 7: Skill Based. Evaluate international environmental agreements that affect trade and economic development. Skill developed by written assignments.

SLO 8: Skill Based. Incorporate sustainability and sustainable development principles into policy and business decisions. Skill developed by team project.

# SUST 610 Sustainability and Strategic Management

SLO 1: Content Based. Predict the impact of governmental regulations and policies on strategy formation and execution. Typically measured by in class exams.

SLO 2: Content Based. Evaluate strategic management processes from the perspective of sustainability. Typically measured by in class examinations.

SLO 3: Skilled Based. Assess a company’s sustainability strategy, market positioning, performance, and sustainable advantage. Skill developed by case studies.

SLO 4: Skill Based. Formulate sustainability strategies to maximize the strategic benefits of integrating business value chains from suppliers through to end customers to achieve sustainability outcomes.

Skills developed by written assignments and collaborative project.

SLO 5: Skill Based. Measure the environmental footprint of businesses with Life Cycle Analysis, reporting frameworks, and other relevant metrics. Skill developed by simulations.

SLO 6: Content Based. Identify the interests of stakeholder groups and formulate strategies for creating

shared value around sustainability issues. Typically measured by case studies and written reports.

# SUST 699A Project Orientation and Support

SLO 1: Skill Based. Apply theories of sustainability, management and policy.

SLO 2: Skill Based. Develop and demonstrate research and creative thinking skills by conceptualizing and framing an analytical approach to a sustainability problem within scientific, management and applied contexts.

SLO 3: Skill Based. Evaluate methods and approaches used to address a variety of sustainability issues. SLO 4: Skill Based. Construct and justify a research problem in terms of its conceptual, technical, economic, societal, or institutional importance, including stakeholder needs.

SLO 5: Develop and apply oral and written communication skills.

# SUST 699B Applied Professional Project

SLO 1: Skill Based. Apply technical competencies developed in the Sustainability Management and Policy program to the problem as formulated, including quantitative analysis, ethical considerations, policy analysis, professional writing, and presentation.

SLO 2: Content Based. Explain and evaluate the importance of professional ethics and rules of conduct. SLO 3: Skill Based. Demonstrate knowledge of business practices and skills to guide a project from inception through completion.

SLO 4: Skill Based. Recognize and address interpersonal tensions inherent in team work and consulting through conflict management.

SLO 5: Develop skills in building relationships, negotiating tensions, and developing leadership by collaborating with others within a research team and a defined stakeholder group.

SLO 6: Develop self-knowledge and self-management by integrating time management and design project management skills.

SLO 7: Apply oral and written communication skills.

# Include plans for assessing Program Learning Outcomes or Goals and Student Learning Outcomes.

The Assessment matrix is below.

Table 4.1 Comprehensive assessment plan

*Comprehensive Assessment Plan: MSSMP*

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** | **I** | **J** | **K** |
| **ILO** | **PLO** | **SLO** | **Course where each SLO is assessed** | **Assessment / Activity assignment used to measure SLO** | **Assessment tool used to measure outcome success** | **Assessment schedule – how often SLOs will be assessed** | **How will data****/ findings be quantitatively or qualitatively reported?** | **Designated personnel to collect, analyze, and interpret student learning outcomes** | **Program data/findings dissemination schedule** | **Closing the loop strategies** |
| I1 | P1 | S1 & S4 | SUST 610 | Team project reports and discussions | Rubrics | 2 times in 7- year period | Percentage of students scoring above designated level | Assessment Committee | The semester following assessment done | Program faculty will periodically review and improve curriculum, assess individual course content, and make changes to courses according torecommendations. |
| I1 | P1 | S1 | SUST 608 | Written report | Rubrics | 2 times in 7- year period | Percentage of students scoring above designated level | Assessment Committee | The semester following assessment done | Program faculty will periodically review and improve curriculum, assess individual course content, and make changes to courses according torecommendations. |
| I1 | P1 | S1 & S6 | SUST 699AB | Written Report | Rubrics | 2 times in 7- year period | Percentage of students scoring above designated level | Assessment Committee | The semester following assessment done | Program faculty will periodically review and improve curriculum, assess individual course content, and make changes tocourses according to recommendations. |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| I2 | P3 | S1 & S2 | SUST 606 | Written exams | Rubrics | 2 times in 7- year period | Percentage of students scoring above designated level | Assessment Committee | The semester following assessment done | Program faculty will periodically review and improve curriculum, assess individual course content, and make changes to courses according to recommendations. |
| I2 | P4 | S3 & S9 | SUST 609 | Team and individual presentations | Rubrics | 2 times in 7- year period | Percentage of students scoring above designated level | Assessment Committee | The semester following assessment done | Program faculty will periodically review and improve curriculum, assess individual course content, and make changes tocourses according to recommendations. |
| I3 | P2 | S8 | SUST 699AB | Written report | Rubrics | 2 times in 7- year period | Percentage of students scoring above designated level | Assessment Committee | The semester following assessment done | Program faculty will periodically review and improve curriculum, assess individual course content, and make changes to courses according toRecommendations. |
| I3 | P2 | S5 & S6 | SUST 603 | Research paper | Rubrics | 2 times in 7- year period | Percentage of students scoring above designated level | Assessment Committee | The semester following assessment done | Program faculty will periodically review and improve curriculum, assess individual course content, and make changes to courses according torecommendations. |
| I3 | P3 | S6 & S7 | SUST 601 | Written exams | Rubrics | 2 times in 7- year period | Percentage of students scoring abovedesignated | Assessment Committee | The semester following assessmentdone | Program faculty will periodically review and improve curriculum, assess individual course content, and make changes to courses according torecommendations. |
| I4 | P3 | S6 | SUST 602 | Written exams and Problem-solving assign-ments | Rubrics | 2 times in 7- year period | Percentage of students scoring abovedesignated | Assessment Committee | The semester following assessmentdone | Program faculty will periodically review and improve curriculum, assess individual course content, and make changes to courses according torecommendations. |
| I4 | P1 | S2 & S5 | SUST 604 | Written exams | Rubrics | 2 times in 7- year period | Percentage of students scoring abovedesignated | Assessment Committee | The semester following assessmentdone | Program faculty will periodically review and improve curriculum, assess individual course content, and make changes to courses according torecommendations. |
| I5 | P1 | S6 & S7 | SUST 605 | Team project and case analysis | Rubrics | 2 times in 7- year period | Percentage of students scoring abovedesignated | Assessment Committee | The semester following assessmentdone | Program faculty will periodically review and improve curriculum, assess individual course content, and make changes to courses according torecommendations. |
| I5 | P4 | S2 & S3 | SUST 607 | Team project and case analysis | Rubrics | 2 times in 7- year period | Percentage of students scoring abovedesignated | Assessment Committee | The semester following assessmentdone | Program faculty will periodically review and improve curriculum, assess individual course content, and make changes to courses according torecommendations. |

\*Examples of assessment activities: final exam, presentation, project, performance, observations, classroom response systems, computer simulated tasks, analytical paper, case study, portfolio, critique, policy paper, comparative analysis project, qualifying or comprehensive examination, project, thesis, dissertation, and many others.

\*\*Examples of Assessment Tools (an instrument used to score or evaluate an assessment activity/assignment): Rubrics (that produce scores based on established criteria– can be used with most activities listed above), observational checklists, etc.

\*\*\*Examples of ways to report assessment data: number/percentage of those scoring at or above

4.0 on a 5.0 point scale on the assessment used to measure mastery of a specific SLO; number/percentage of students scoring at the highly proficient level; instructor observational narrative that includes analysis and findings to qualitatively show trends and patterns; mean scores of all who exhibited desired traits or behaviors on an observational checklist. Other examples?

Table 4.2 shows where program goals are introduced (I), developed (D), and mastered (M). The SCOs for each of the courses listed contain the specific student learning outcomes related to each program goal.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Course Number** | **SUST601** | **SUST 602** | **SUST 603** | **SUST 604** | **SUST 605** | **SUST 606** | **SUST 607** |
| **Course Title** | Sustainability and Society | Sustainability Science | Sustainability Case Studies | Data Analytics and Sustainability | Sustainability and Organization Theory | Environment, Law, Policy and Ethics | Decision Making |
| **Units** | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| **P-1) Business Functions & Sustainability** | I | I | I/D | I/D | D |  | D |
| **P-2)****Communications** | I | I | D | I | I/D | I | D |
| **P-3) Critical Theory** | I | I | I/D | I | I | I/D |  |
| **P-4) Critically****and Ethically****Engaged** | I | I | I/D | I | I | D |  |
| **P-5) Numeracy and Measurement** |  | I | I/D | I/D | I/D |  | D |
|  |  |  |  |  |  |  |  |
| **Course Number** |  **SUST 608** | **SUST 609** | **SUST 610** | **SUST 699AB** |  |  |  |
| **Course Title** | Benefit Cost Analysis | Environmental Economics and Policy | Sustainability & Strategic Management  | Capstone |  |  |  |
| **Units** | 3 | 3 | 3 | 6 |  |  |  |
| **P-1) Business Functions & Sustainability** | D | I/D | D | M |  |  |  |
| **P-2)****Communications** |  | D |  | M |  |  |  |
| **P-3) Critical Theory** | D | I/D | D | M |  |  |  |
| **P-4) Critically****and Ethically****Engaged** |  | D | D | M |  |  |  |
| **P-5) Numeracy and****Measurement** | I/D | D |  | M |  |  |  |

Note: “I” indicates where the SLO is introduced, “D” indicates where the SLO is developed, and “M” indicates where the SLO is mastered.

# Indicate total number of units required for graduation:

The total number of units required to graduate is 36.

# Include a justification for any baccalaureate program that requires more

**than 120-semester units or 180-quarter units. Programs proposed at more than 120 semester units will have to provide either a Title 5 justification for the higher units or a campus-approved request for an exception to the Title 5-unit limit for *this* kind of baccalaureate program.**

Not applicable

# If any formal options, concentrations, or special emphases are planned under the proposed major, identify and list the required courses. Optional: You may propose a CSU degree program code and CIP code for each concentration that you would like to report separately from the major program.

Not applicable

# List all requirements for graduation, including electives, for the proposed degree program, specifying course catalog numbers, course titles, total units required for completion of the degree, major requirements, electives, and prerequisites or co- requisites (ensuring there are no "hidden” prerequisites that would drive the total units required to graduate beyond the total reported in 4c above). Include proposed catalog descriptions of all new courses.

Table 4.3 Required courses (All graduate level)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Catalog** | **Course Title** | **Units** | **Prerequisites** | **New** |
| SUST 601 | Sustainability and Society | 3 | Graduate Standing | X |
| SUST 602 | Sustainability Science | 3 | Graduate Standing | X |
| SUST 603 | Sustainability Case Studies | 3 | Graduate Standing | X |
| SUST 604 | Data Analytics & Sustainability | 3 | Graduate Standing | X |
| SUST 605 | Sust. And Org Theory | 3 | Graduate Standing | X |
| SUST 606 | Law Policy and Ethics | 3 | Graduate Standing | X |
| SUST 607 | Decision Making andUncertainty | 3 | Graduate Standing | X |
| SUST 608 | Benefit Cost Analysis | 3 | Graduate Standing | X |
| SUST 609 | Environmental Economics | 3 | Graduate Standing | X |
| SUST 610 | Sust. & Strategic Mgmt | 3 | Graduate Standing | X |
| SUST699A&B | Project Orientation & Supportand Applied Professional Project | 6 | Completion of SUST601-610 | X |

# List any new courses that are: (1) needed to initiate the program or (2) needed during the first two years after implementation. Include proposed catalog descriptions for new courses. For graduate program proposals, identify whether each new course would be at the graduate level or undergraduate level.

The following new courses will appear in AY 2020-2021 catalog and all graduate courses:

**SUST 601 Sustainability and Society:** Introduction to sustainability using a transdisciplinary foundation based on social sciences and natural sciences. The focus is on developing the skills to integrate material from diverse disciplines to understand the human dimension.

**SUST 602 Sustainability Science:** This course will provide a comprehensive compilation of conceptual perspectives, methodological approaches and empirical insights of inter- and transdisciplinary sustainability science. Developed and taught by a transdisciplinary team of faculty, it will offer perspectives and topics focused on the development, integration, and application of knowledge about Earth systems.

**SUST 603 Sustainability Case Studies:** Examines the science of climate change and the prospect of global, regional, and local sustainability within the context of a warming planet. Uses contemporary case studies to examine climate impacts on natural and human systems and to evaluate climate-change policies.

**SUST 604 Data Analytics and Sustainability**: The course explores how data analytics applied to the area of sustainability can help managers enhance economics, environmental impacts, and social performance.

**SUST 605 Sustainability and Organization Theory**: Explore the core organization elements for building highly sustainable organizations that can achieve both business and environmental objectives. Identify the business issues related to sustainability. Develop analytical tools for assessing and designing organization structures and processes to achieve high sustainability.

**SUST 606 Environmental Law, Policy and Ethics**: Focuses on the law and politics that govern, manage, and change the relationships between human activities and the environment. Examine how those policies are created, how people respond, and the underlying ethical debates.

**SUST 607 Decision-Making and Uncertainty**: This course provides tools that allow decision makers to make better choices when uncertainty exists. Tools may include decision trees, determining risk tolerance, identifying subjective and objective probabilities, and other techniques.

**SUST 608 Benefit Cost Analysis**: This course introduces how and when to use the tools of benefit cost analysis while considering issues of sustainability. Content includes identification of both private and social costs and benefits used to evaluate projects and policies within the context of sustainability.

**SUST 609 Environmental Economics and Policy**: Economic analysis of environmental problems that lead to market failure. Analysis of policy options to provide incentive compatible mechanisms to correct for market failure from externalities, the tragedy of the commons, and information inefficiencies.

**SUST 610 Sustainability and Strategic Management:** Examine the strategic sustainability issues confronting contemporary organizations. Explore strategy formulation and implementation process for creating sustainable organizations that can achieve both business and environmental objectives. Integrate sustainability into the business value chain to create sustainable competitive advantage.

**SUST 699A Project Orientation and Support**: Develop skills necessary to complete an applied project. Specific focus on proposal development and writing. Review of research methods and project deliverables. A grade of C or better is required for students to progress to SUST 699B.

**SUST 699B Applied Professional Project:** Complete an applied project. Specific focus on proposal development and writing. Give an oral presentation and produce a written report. A grade of B or better is required for students to pass.

Table 4.4 New Courses (All are graduate level)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Catalog** | **Course Title** | **Unit****s** | **Prerequisites** | **New** |
| SUST 601 | Sustainability and Society | 3 | Graduate Standing | X |
| SUST 602 | Sustainability Science | 3 | Graduate Standing | X |
| SUST 603 | Sustainability Case Studies | 3 | Graduate Standing | X |
| SUST 604 | Data Analytics andSustainability | 3 | Graduate Standing | X |
| SUST 605 | Sustainability & Org Theory | 3 | Graduate Standing | X |
| SUST 606 | Law Policy and Ethics | 3 | Graduate Standing | X |
| SUST 607 | Decision Making andUncertainty | 3 | Graduate Standing | X |
| SUST 608 | Benefit Cost Analysis | 3 | Graduate Standing | X |
| SUST 610 | Sustainability & StrategicManagement | 3 | Graduate Standing | X |
| SUST699A&B | Project Orientation & Supportand Applied Professional Project | 6 | Completion ofSUST 601-610 | X |

# Attach a proposed course-offering plan for the first three years of program implementation, indicating, where possible, likely faculty teaching assignments.

Table 4.5 Proposed Course-Offering Plan for Year One through Three

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **Semester** | **Cohort** | **Course Title** | **Faculty who are able and likely to teach** |
| Year 1 | Fall | Cohort 1 | Sustainability and Society | Wade Martin, Ingrid Martin |
| Sustainability and Org. Theory | Chailin Cummings |
| Spring | Sustainability Science | Christine Whitcraft, Monica Argandoña, Paul Laris, David Pepper |
| Data Analytics and Sustainability | Reo Song |
| Summer | Sustainability Case Studies | David Pepper |
|  | Benefit Cost Analysis | DeDe Long |
| Year 2 | Fall | Cohort 1 | Law Policy Ethics | Monica Argandoña |
|  |  |  | Environmental Economics | Elaine Frey, Louis Vayo |
|  |  | Cohort 2 | Sustainability and Society | Wade Martin, Ingrid Martin |
|  |  |  | Sustainability and Org. Theory | Chailin Cummings |
|  | Spring | Cohort 1 | Decision Making and Uncertainty | Wade Martin |
|  |  |  | Sust. & Strategic Mgmt. | Chailin Cumming |
|  |  | Cohort 2 | Sustainability Science | Christine Whitcraft, Monica Argandoña, Paul Laris, David Pepper |
|  |  |  | Data & Sustainability | Reo Song |
|  | Summer | Cohort 1 | Project Orientation & Support andApplied Professional Project | Christine Whitcraft, Paul Laris, Monica Argandoña |
|  |  | Cohort 2 | Sustainability Case Studies | David Pepper |
|  |  |  | Benefit Cost Analysis | DeDe Long |
| Year 3 | Fall | Cohort 2 | Law Policy Ethics | Monica Argandoña |
|  |  |  | Environmental Economics | Elaine Frey, Louis Vayo |
|  |  | Cohort 3 | Sustainability and Society | Wade Martin, Ingrid Martin |
|  |  |  | Sustainability & Org. Theory | Chailin Cummings |
|  | Spring | Cohort 2 | Decision Making and Uncertainty | Wade Martin |
|  |  |  | Sustainability & Strategic Management | Chailin Cumming |
|  |  | Cohort 3 | Sustainability Science | Christine Whitcraft, Monica Argandoña, Paul Laris,David Pepper |
|  |  |  | Analytics & Sustainability | Reo Song |
|  | Summer | Cohort 2 | Project Orientation & Support and Applied Professional Project | Christine Whitcraft, Paul Laris, Monica Argandoña |
|  |  | Cohort 3 | Sustainability Case Studies | David Pepper |
|  |  |  | Benefit Cost Analysis | DeDe Long |

# For master's degree proposals, include evidence that program requirements conform to the minimum requirements for the culminating experience, as specified in Section 40510 of Title 5 of the California Code of Regulations.

The Project Orientation & Support and Applied Professional Project courses (6 units) will serve as the culminating educational experience for students in the M.S. in Sustainability Management and Policy Program. It is designed to integrate the transdisciplinary fields of the program’s curriculum. Students must draw on both the practical skills and the analytical knowledge they have gained in order to address crucial sustainability management issues as consultants for a real-world client, potentially related to the student’s ongoing professional positions. Under the guidance of faculty mentors, interdisciplinary teams of students will engage in a twelve week-long project with partner companies and non-profit organizations.

In accordance with the California Code of Regulations: Title 5 Education, Section 40510, the projects will be a significant undertaking appropriate to the professional sustainability field. Each project will investigate a range of sustainability issues, including: aligning business strategies with social and environmental goals; developing methodologies to measure business impacts on the environment; and measuring the return on investment from environmental and social initiatives. The project will include a written report documenting the project’s significant, objectives, methods, and recommendations for potential solutions to the problem. In addition, students will be required to do an oral presentation of the project results and recommendations.

# For graduate degree proposals, cite the corresponding bachelor's program and specify whether it is (a) subject to accreditation and (b) currently accredited.

Possible bachelor degree programs may include, but are not limited to, environmental science, biology, geology, chemistry, and engineering.

# For graduate degree programs, specify admission criteria, including any prerequisite coursework.

* + A bachelor’s degree from an accredited university in science and/or engineering or other discipline that includes the following coursework:
		- Chemistry
		- Mathematics through college-level Calculus
		- Additional science courses, which could include Biology, Microbiology, Chemistry, or Physics.
	+ Applicants with a bachelor’s degree in other disciplines may be considered if the applicant has the above course work completed prior to applying.
	+ Minimum GPA of 2.75 in the last 60-semester units attempted and good standing at the last college attended
	+ A statement of purpose
	+ A recent resume
	+ Two letters of recommendation
	+ Admission and English Proficiency Exams
	+ A satisfactory score is required on either the Graduate Management Admission Test (GMAT) or the Graduate Record Exam (GRE) that demonstrates balance between verbal and

quantitative skills.

* + International applicants must take TOEFL and score a minimum of (i) 80 on the online version or (ii) 550 on the paper version of this examination.
	+ A score of 4.0 or higher on the writing portion of the GMAT or GRE may be used to waive the TOEFL requirement for international applicants.

# For graduate degree programs, specify criteria for student continuation in the program.

* + Satisfactory completion of 36 units (12 courses) of approved graduate courses with a GPA of 3.0 or higher.
	+ Applicants who are admitted to the program will be subject to the university’s Graduation Writing Assessment Requirement (GWAR). All entering students are required to take the GWAR Placement Exam (GPE), except students who have previously (1) received degrees from accredited colleges and universities in the United States; or (2) received degrees from an accredited non-U.S. institution located in a country where English is a primary language of communication; or (3) achieved a score of 4.0 or higher on the writing portion of the GMAT or GRE.
	+ Completion of the culminating activity course with a grade of “B” or better.
	+ Compliance with all other university graduation requirements.

# For undergraduate programs, specify planned provisions for articulation of the proposed major with community college programs.

Not applicable

# Describe advising "roadmaps" that have been developed for the major.

Schedule

* Semester 1 (Fall): Sustainability and Society, Org Theory
* Semester 2 (Spring): Sustainability Science, Data Analytics
* Semester 3 (Summer 12 weeks): Sustainability Case Studies, Benefit Cost Analysis
* Semester 4 (Fall): Law Policy Ethics, Environmental Economics
* Semester 5 (Spring): Decision-Making Under Uncertainty, Corporate Strategy
* Semester 6 (Summer 12 weeks): Culminating Experience - Project Orientation & Support and Applied Professional Project (6 units)



# Describe how accreditation requirements will be met if applicable, and anticipated date of accreditation request (including the WASC Substantive Change process).

Not applicable

# Accreditation Note:

*Master's degree program proposals*

If subject to accreditation, establishment of a master’s degree program should be preceded binational professional accreditation of the corresponding bachelor’s degree major program.

*Fast-track proposals*

Fast-track proposals cannot be subject to specialized accreditation by an agency that is a member of the Association of Specialized and Professional Accreditors unless the proposed program is already offered as an authorized option or concentration that is accredited by an appropriate specialized accrediting agency.

# Societal and Public Need for the Proposed Degree Major Program (Mark: sec. A-C & E 7/8/16) Complete

The MS in Sustainability Management and Policy will help CSULB fulfill its mission, which specifically refers to the University’s image as a “globally-engaged public

university” for “people of California and the world” that is “preparing leaders for a changing world.” The MS in Sustainability Management and Policy will fully support and enhance the

CSULB brand as a “highly valued degree” with widespread visibility as a model for innovative educational excellence.

# List other California State University campuses currently offering or projecting the proposed degree major program; list neighboring institutions, public and private, currently offering the proposed degree major program.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CSU** | **Program** | **Website** | **Modality** | **Student****Population** | **Program****Objective** |
| CSUChico | Master of Science in Environmental Science | https://bit.ly/2O1cQLz | Face to Face | Students with a strong science and technical background | To provide advanced training in the environmentalsciences for management andnon-academicpositions |

* 1. **Describe differences between the proposed program and programs listed in Section 5a above.**

There are a number of differences which will make CSULB’s Master of Science in Sustainability Management and Policy stand out from other somewhat similar CSU programs.

First, we provide a transdisciplinary curriculum - not solely focused on the technical aspects of Environmental Science.

Secondly, as our commitment is to serve the regional workforce, our program will utilize a face-to-face format and accommodate regionally-specific research and activities. This will make it attractive to working professionals who may find it inconvenient to commute to a campus for instruction any more than is necessary.

Third, the CSULB program is a partnership among four vibrant colleges (CLA, CNSM, College of Business, and CPIE). The sharing of academic and administrative roles provides for insights not bound from a single perspective. Working together, curriculum evaluation can be focused on building the strength of the program to offer the most current thinking on all the subjects.

Fourth, the CSULB MS in Sustainability Management and Policy will have a program- specific advisory board. While other Colleges (including CSULB’s College of Engineering and College of Business) have advisory boards, they serve all degrees and programs. The MS in Sustainability Management and Policy Advisory Board’s involvement will be ongoing and regular and include curriculum review, student interaction, and program promotion.

Fifth, CSULB has done very recent research on the national, regional and local need and demand for a Master’s in Sustainability. Utilizing the services of the Education Advisory Board and Burning Glass technologies (all within last 12 months), commissioned reports made it evident that the market is not even close to being saturated, and that there are plenty

of career opportunities wanting program graduates, either within their current forms or elsewhere. Those reports provided important input into the planning process and insured this program was designed to be relevant and meet the needs of both industry and potential students. It is documented, and has been noted before, that the growing demand for this specific graduate degree is not being met by current programs.

All these differences are intended to put the student at the center of this graduate experience. The delivery format, the curriculum, the administrative resources, the external advice, the recent need and demand analysis all work together to ensure that from the student perspective, the Master of Science in Sustainability is smooth-running and completely relevant.

# List other curricula currently offered by the campus that are closely related to the proposed program.

The proposed curriculum is entirely new; however, there are two related programs at CSULB with curricula that can be built upon. (i) Presently, the College of Business offers an MBA for middle managers (SMBA) that has a focus in the second year on sustainability. This degree is solely in the College of Business and has been quite successful, having graduated their fifth cohort in 2016. Some of the curriculum from the SMBA program will be used a foundation for the new courses in the MSSMP. (ii) Environmental Science and Policy (ES&P) currently offers both a BA and a BS (no Master's level courses). The ES&P curricula includes several courses at the upper division undergraduate level that mirror those for the proposed MS degree including: Environmental Economics, Global Change, Introduction to the Global Environment (Sustainability), Climate Change, and Environmental Law, and Environmental Politics.

# Describe community participation, if any, in the planning process. This may include prospective employers of graduates.

Two focus groups were conducted during the fall semester 2016. The participants represented private sector employers, non-governmental organizations, public sector employers, and individuals from the target market. Each focus group was structured based upon an interview guide developed to generate feedback on topics related to the content of the program, structure of the program, the capstone experience, career opportunities and an open discussion to allow participants to address any additional issues they thought needed to be addressed to strengthen the proposed program.

The feedback we received from the focus groups is organized around four themes. First, the importance of teams in the curriculum, or more generally the role of “soft skills.” The participants identified the importance of working in teams in this industry. The original plan for the program explicitly required students to work in teams in the capstone class but was agnostic for other classes. The results of the interview stressed that teamwork and other soft skills should be integrated into the program early and continue through the capstone experience. It was also stressed that training in managing people is a critical skill for someone in a management position.

The second issue identified during the focus groups was the need to provide training in the area of communication skills. Specific topics that were stressed are: 1) dealing with the media;

2) making presentations to diverse groups (both technical and non-technical audiences); and 3) technical writing, which is needed when responding to a “request for proposals.”

The third topic focused on the content and order of the proposed classes. It was suggested that the class on law, policy and ethics be offered early in the program to provide a big picture perspective of the challenges the industry faces. Another topic that was raised is the need to have the ability to analyze risk in making decisions. The program includes a module on Decision Making Under Uncertainty to address this need. Finally, it was suggested that the program include instruction on managing public/private/NGO partnerships on projects.

Finally, most participants identified the potential vagueness and lack of standardized definitions for sustainability. Thus, they emphasized that advertising for the program needs to come with a clear definition of sustainability in order for prospective applicants and their future employers to understand the integrative and skill-based nature of the program.

The overall outcome of the focus groups indicated that with the issues highlighted above, the program would meet the needs for employers in this industry. The career opportunities for graduates of the program are significant as the results of the focus groups and the next section demonstrate.

# Provide applicable workforce demand projections and other relevant data.

(Burning Glass)

The chart below indicates a projected workforce growth as high as 44.4% for jobs including “Sustainability” in the job title. The search parameters of the chart below are: last 12 months for the LA-Long Beach-Anaheim MSA with Sustainability in the job title.

Source: Burning Glass Labor/Insight **Source: Labor Insight Jobs (Burning Glass Technologies)**

# Jul. 01, 2015 - Jun. 30, 2016

**Active Selections: Last 12 months AND (MSA: Los Angeles-Long Beach-Anaheim, CA (Metropolitan Statistical Area)) AND**

**(Title with: Sustainability)**

|  |  |  |  |
| --- | --- | --- | --- |
| **SOC Code** | **Occupation Title** | **Number Employed** | **Projected Change 2012-22** |
| 11-1021 | General and Operations Managers | 102,660 | 16.5% |
| 43-4051 | Customer Service Representatives | 82,770 | 16.4% |
| 43-6014 | Secretary and Admin Assistants, Except Legal, Medical and Executive | 80,460 | 17.5% |

|  |  |  |  |
| --- | --- | --- | --- |
| 41-4012 | Sales Representatives, Wholesale Manufacturing, Except Technical and Scientific | 63,270 | 14.6% |
| 13-1199 | Business Operations, Specialists, All Other | 46,160 | 14.2% |
| 13-1071 | Human Resource Specialists | 19,950 | 15.3% |
| 11-9199 | Managers, All Other | 13,380 | 14.1% |
| 13-1041 | Compliance Officers | 12,060 | 7.3% |
| 11-1011 | Chief Executives | 11,610 | 7.8% |
| 11-9111 | Medical and Health Services Managers | 10,710 | 22.2% |
| 11-9021 | Construction Managers | 9,950 | 18.4% |
| 11-2021 | Marketing Managers | 9,920 | 21.8% |
| 15-1199 | Computer Occupations, All Other | 6,260 | 17.3% |
| 17-2199 | Engineers, All Other | 5,140 | 13.1% |
| 17-1011 | Architects, Except Landscape and Naval | 5,130 | 12.8% |
| 11-9033 | Education Administrators, Postsecondary | 4,990 | 15.8% |
| 41-9099 | Sales and Related Workers, All Other | 4,640 | 18.9% |
| 19-2041 | Environmental Scientists and Specialists, Including Health | 4,150 | 29.5% |
| 11-2031 | Public Relations and Fundraising Managers | 2,280 | 16.7% |
| 19-3051 | Urban and Regional Planners | 2,130 | 18.3% |
| 17-2081 | Environmental Engineers | 1,930 | 24.7% |
| 19-3091 | Anthropologists and Archeologists | 520 | 44.4% |

# Note: Data Sources for Demonstrating Evidence of Need

APP Resources We[b http://www.calstate.ed](http://www.calstate.ed/) u/app/resources.shtml US Department of Labor, Bureau of Labor Statistics

California Labor Market Information on Labor Forecast

# Student Demand

In May through November 2016, an online survey was conducted among alumni of the College of Natural Science and Math, the College of Engineering, and industry trade associations to include the Association for the Advancement of Sustainability in Higher Education and the International Society of Sustainability Professionals. Comprehensive response data are available upon request. A total of 309 responses were obtained.

The survey’s key questions of interest were:

1. “How interested are you in applying to the Master of Science in Sustainability Management and Policy degree program at CSULB?”
2. “Considering the additional information, how likely are you to apply to the Master of Science in Sustainability Management and Policy degree program at CSULB?”

The first question addressed the level of interest in a master’s degree program in general. Of the original 309 responses, 15% chose “very likely,” 34% selected “likely,” and 14.3% stated “somewhat likely.” Then, the follow-up question regarding their interest in the Master of Science in Sustainability Management and Policy was asked. 53% of the respondents showed of interest in pursuing the Master of Science in Sustainability Management and Policy, once they had more detailed information about the actual degree.

Table 6.1 Summary of the Survey

**Question Available**

**Responses**

|  |  |  |
| --- | --- | --- |
| 1 - How interested are you in | Not at all interested | 25.71% |
| applying to the Master of | Somewhat | 11.43% |
| Sciencein Sustainability Management | uninterestedUndecided | 14.29% |
| Policy degree program at | Somewhat interested | 33.47% |
|  | Very interested | 15.10% |
| (307 responses) |  |  |

**% of Responses**

and CSULB

**Question Available**

**Responses**

**% of Responses**

2 - Considering the additional Not at all likely 28.63%

information, how likely are you to

apply to the Master of Science in sustainability management and policy program at CSULB?

(277 responses)

Somewhat unlikely Undecided Somewhat likely Very likely

18.38%

19.23%

25.64%

8.12%

The table demonstrates that 53% of those with some interest in pursuing a sustainability management and policy graduate degree also expressed an interest specifically in our MSSMP program. This is a compelling finding given that our program has not been publicized, nor has it officially launched.

The survey also gathered information on each respondent’s current employment area, field of study, gender, and work experience. 75.6% of those who are interested in pursuing the MSSMP

degree have either science or engineering backgrounds and the other 24.4% have various backgrounds from Operations Management to healthcare to education, and clerical.

52% of the respondents have a bachelor’s degree and 32% have a master’s degree in another area, while 5% have a Ph.D. and 12% are still pursuing their undergraduate degree. 86.24% are currently working, with 44% working in the science, engineering, and conservation fields. The gender split is 57% male and 39% female with 4% declining to answer. The majority of the respondents (70%) were between the ages of 20 and 40, which is our target age group.

In summary, the survey provides compelling evidence of a strong demand for our MSSMP program proposed herein. Over 53% of the respondents that expressed some degree of interest in our program of MSSMP were culled from a wide variety of disciplines and professions. Finally, there were some strong interests in this new degree among some of the respondents who provided their contact information stating that they would be willing to provide more detailed feedback on this proposed degree. We have one individual who would like to “be part of the pilot program by bringing ideas and options to the table.” In addition, we have 14 respondents that provided their contact information requesting to receive additional information on this degree program.

# Identify how issues of diversity and access to the university were considered when planning this program.

Policies and procedures are in place across the campus, providing access for diverse populations, and will be employed in the proposed MSSMP program. This includes recruiting female and under-represented minorities to be part of this program through noteworthy associations. The MSSMP program will be offered through the College of Professional and International Education (CPIE), and thus will be in line with the policy set forth by CPIE with regard to issues of diversity and access.

# For master's degree proposals, cite the number of declared undergraduate majors and the degree production over the preceding three years for the corresponding baccalaureate program, if there is one.

Not applicable

# Describe professional uses of the proposed degree program.

Professional uses of the proposed degree program include employment

in the industry as sustainability professionals and managers; in private businesses in a range of professions from engineering to aerospace; in non-governmental organizations related to the environment or sustainability; and in government, including resource agencies and green business organizations.

# Specify the expected number of majors in the initial year, and three years and five years thereafter. Specify the expected number of graduates in the initial year, and three years and five years thereafter.

Students will be admitted on a cohort-basis (25-30), to ensure the context for discussion and sharing of information, and to provide a solid learning community. It is expected that in the first year, one cohort will be served. However, if demand is high, as is expected, 2-3

cohorts could be admitted on a rolling admission basis in the future. Below is a sample of expected enrollments:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** |
| **Expected****Students** | 25 | 25 | 25 | 30 | 30 |
| **M.S. in** |  |  |  |  |  |
| **Sustainability** |  |  |  |  |  |
| **Management** |  |  |  |  |  |
| **and Policy** |  |  |  |  |  |
| **Expected** | 0 | 22 | 22 | 22 | 27 |
| **Graduates** |  |  |  |  |  |

# Existing Support Resources for the Proposed Degree Major Program (Campus partners)

* 1. List of faculty who would teach in the program: indicating rank, appointment status, highest degree earned, date and field of highest degree, professional experience, and affiliations with other campus program s. For master 's degrees, include faculty publications or curriculum vitae. Note: For all proposed graduate degree programs, there must be a minimum of five full- time faculty members with the appropriate terminal degree. (Coded Memo EP&R 85-20)

Table 7.1 List of Faculty Members for the Program

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Rank | Status | Highest Degree | Degree Date | Field of Highest Degree |
| Chailin Cummings | Associate Professor | Full- Time | Ph.D. | 2009 | Strategic Management and Organization Theory |
| Reo Song | Associate Professor | Full- Time | Ph.D. | 2010 | Marketing |
| Wade Martin | Professor | Full- Time | Ph.D. | 1985 | Economics |
| Monica Argandoña | Full timeLecturer | Full- Time | Ph.D. | 2012 | Anthropology |
| David Pepper | Professor | Full- Time | Ph.D. | 2000 | Oceanography |
| Christine Whitcraft | AssociateProfessor | Full- Time | Ph.D. | 2007 | Biological Oceanography |
| Paul Laris | Professor | Full- Time | Ph.D. | 2002 | Geography |
| Ingrid Martin | Professor | Full- Time | Ph.D. | 1994 | Marketing and ConsumerPsychology |
| Elaine Frey | AssociateProfessor | Full- Time | Ph.D. | 2008 | Economics |
| Louis Vayo | Lecturer | Full- Time | M.S. | 2014 | Environmental Science,Economics |

Please see Appendix B for biographical sketches for the program’s primary faculty.

* 1. **Describe facilities that would be used in support of the proposed program.** College of Professional and International Education (CPIE): CPIE is uniquely capable of providing the technical support that will help make the Master of Science in Sustainability Management and Policy program successful. For example, the CPIE has experience in offering self-support programs as well as delivery of courses via virtual classrooms.

CPIE’s Information Technology group maintains network servers and a large number of workstations. A Microsoft-centered software infrastructure includes full implementation of an Exchange server, and additional collaboration is supported via the SharePoint platform.

To provide full and effective learning experience, the Office of Academic Technology uses “BeachBoard,” the e branded implementation of Desire2Learn’s Brightspace. The Blackboard Collaborate virtual classroom and several other key online learning tools. Over one hundred synchronous and asynchronous course sections are generally underway at any time.

The in-house Marketing Communications group creates CPIE’s catalogs and other marketing materials. The Information Systems Department will provide the content to be linked to CPIE’s website. Promoting and marketing the MSSMP program will be done in collaboration with CPIE using various media.

* 1. Provide evidence that the institution provides adequate access to both electronic and physical library and learning resources.

Library Services

# The Library in General

The University Library is a six-story structure which houses more than one million volumes, more than 1 million microforms, and extensive collections of other non- print materials, including a media collection that contains DVD’s, CD’s as well as older formats such as LP’s, VHS, cassette tapes, and slides along with appropriate viewing and listening equipment. The library subscribes to close to 200 electronic databases that provide access to millions of full text articles across a multitude of disciplines.

# Reference Services

The Spidell Technology Center, where Reference services are located, is the place to get started with research. There are approximately 200 computers that are fully internet capable and offer access to the entirety of research services the library provides, as well as Microsoft products, many other specialized software programs, MACs, color printing, and scanners.

There is a large Reference book collection with many encyclopedias, dictionaries, and bibliographies and indexes. Subject specialist librarians are available to explain and interpret these materials and are available for consultation.

# Library Instruction

To foster Information Competence on the CSULB Campus, the subject librarians offer approximately 600 individual information literacy sessions each academic year.

There are five librarians who specialize in environmental science and policy, environmental economics, business, global atmospheric issues, and geological and biological science. They are available for one-on-one consultations as well as having online access. Each of them covers basic search techniques, an introduction and

demonstration of the online Library Catalog, COAST, the research databases for journal article searching, proper citing of materials, citing information sources, as well as critical thinking and evaluation skills for utilizing information. For graduate students, other topics are added to sessions.

# Interlibrary Loan Services (ILS)

The realities of smaller budgets, burgeoning amounts of available and electronic information, and the increasing demands of faculty and student research have made access to other library collections in the region, state, and nation increasingly important. The Library’s Interlibrary Loan services are an unparalleled set of services. Easy online request interfaces and prompt fulfillment of requests to thousands by participating libraries allows for seamless access to thousands of materials the CSULB Library unfortunately cannot purchase. A brief description of the two central ILS services follows:

Link+

Link+ is a consortium that allows for a single search to be broadcast to more than more than fifty regional libraries. This service is for books and selected media only

and the delivery time is within 2-4 working days. The service is available to CSULB students and faculty via COAST, thereby allowing requests to be made from any computer anywhere in the world.

ArticleReach (AR) & ILLiad

For article requests, the library has fully automated and integrated the request process into the search and discovery interface. When a patron is searching for an article in one of the many online databases and we do not have access to the full text of an article, the patron can initiate the request for us to get the item without having to leave the database system.

*ArticleReach* is a consortium of about 10 Research Institutions who have an agreement to process article requests the same day they are received, thereby providing a 24-hour delivery turnaround time for article requests. This is an unmediated service, so service and delivery are extremely quick.

*ILLiad* is the other article request system. When the AR libraries cannot fill a request, the patron request is sent to the ILLiad system without the patron having to do anything further. ILLiad can also be used for books, theses/dissertations and other materials.

## Database Support

The University Library has access to a wide number of science, business and engineering databases that would support this program. These include the following:

* + ABI/INFORM Complete (Geographical Abstracts, Physical and Human), 1949 to date.
	+ Academic Search Complete
	+ ACM Digital Library
	+ Books 24/7 (Full text of over 500 IT books on hundreds of different technology topics. They include books from premier industry publishers, such as Wrox, McGraw-Hill, and Microsoft Press as well as popular book series, such as The Complete Reference, Inside Out, and Bibles.)
	+ Business Source Premier
	+ EBSCO Ejournals
	+ IEEE Xplore
	+ Journal Citation Reports
	+ Library Information Science & Technology Abstracts (LISTA)
	+ Science Direct
	+ TOXLINE
	+ GeoScienceWorld
	+ Web of Science
	+ The library supports a number of statistical databases and links to datasets from government and commercial sources.

Library cautions that future budget difficulties may reduce certain library collections and resources.

## Conclusions:

The CSULB library has the ability support a graduate MSSMP program in terms of serials (as supported by Journal Citation Reports rankings) and interdisciplinary online databases. The library has extensive access to research databases and datasets. The library has extensive borrowing options for books and journals to support such a program.

# Describe available academic technology, equipment, and other specialized materials.

Existing Academic Technology

Academic Technology Services provided include the following:

* Help services
* Desktop support and system administration services
* Web and application development services
* Server hosting and server management services
* Classroom support services
* Instructional technology and multimedia services
* Technology coordination, project planning and management services
* Academic Technology to Enhance Learning and Discovery
* Instructional Technology Support Services (ITSS)
* CSU System-wide Academic Technology
* Other Academic Technology Resources:
* Academic Technology to Enhance Learning and Discovery
* Faculty Center for Professional Development (FCPD)
* Instructional Technology Support Services (ITSS)
* CSU System-Wide Academic Technology Services
* Microsoft Office Document Compatibility Problem

Campus Computer Labs

Two Open Access Computer Labs are available for current CSULB students, faculty, and staff: the ***Spidell Technology Center*,** located in the Library on the first floor and the ***Horn Center*,** located on lower campus at the Steve and Nina Horn Center. The Horn Center has 139 PC computers and 52 Macintosh computers. The Spidell Technology Center has 187 PC computers and 10 Macintosh computers.

CPIE Resources

In collaboration with College partners, CPIE has extensive experience in offering face- to-face, hybrid, or fully online programs and an early adopter of “virtual classroom” synchronous course delivery technology. It has the most technologically sophisticated support structures among continuing education institutions in California. A group of five Information Technology (IT) experts maintains a network of about 30 servers and over

100 workstations. A Microsoft-centered software infrastructure includes full implementation of an Exchange server, and collaboration is supported internally and externally via the SharePoint platform.

To provide a full and effective learning experience, the Office of Academic Technology uses “BeachBoard,” the branded implementation of Desire2Learn’s Brightspace, the Blackboard Collaborate virtual classroom, and several other key online learning tools. Over one hundred synchronous and asynchronous course sections are generally underway at any time.

CPIE uses Plexus Spectrum, which is the comprehensive student and faculty course management system. It acts as a content management system for the CPIE website and assists production of CPIE’s traditional print publications.

The in-house Marketing division creates CPIE’s catalogs and other marketing materials. Four graphic designers contribute to the development of multimedia resources and many other elements of online courses.

CPIE’s Advanced Media Production (AMP) Center has full resources to create documentaries, marketing videos, community service programs and a variety of other broadcast-quality video products.

# Additional Support Resources Required

**Note: If additional support resources will be needed to implement and maintain the program, a statement by the responsible administrator(s) should be attached to the proposal assuring that such resources will be provided.**

* 1. **Describe additional faculty or staff support positions needed to implement the proposed program.**

Please see Appendix C

# Include a report written in consultation with the campus librarian which indicates any necessary library resources not available through the

**CSU library system. Indicate the commitment of the campus to purchase these additional resources.**

Please see Appendix D

# Indicate additional academic technology, equipment, or specialized materials that will be (1) needed to implement the program; and (2) needed during the first two years after initiation. Indicate the source of funds and priority to secure these resource needs.

No additional equipment required

# Self-Support Programs

* 1. **Confirm that the proposed program will not be offered at places or times likely to supplant or limit existing state-support programs.**

There is no stateside counterpart of this program, so the proposed program will not supplant or limit any stateside program. All classes will be conducted in CPIE facilities, including classrooms in the CSULB Foundation Building and the Studebaker Facilities during the evenings and weekends or online. None of these classrooms are used by state- support programs, and their scheduling will be handled by dedicated CPIE program coordinators. Further, as indicated above, technical and other online support will be provided by CPIE**.**

# Explain how state-support funding is either unavailable or inappropriate.

Operating the MS in Sustainability Management and Policy program as a stateside program would require, at a minimum, several faculty across a variety of disciplines, and stateside funding for a program director and support staff. Stateside funds and facilities to support those requirements are simply unavailable.

# Explain how the program is different, in one or more of the following ways, from state-supported campus offerings operating on campus:

1. Primarily designed for career enrichment or retraining.

The MS in Sustainability Management and Policy program is designed to prepare students with advanced and in-demand training in applying the concept of sustainability within an organization and the regulatory environment. The MS in Sustainability Management and Policy program is designed to develop technical, managerial, and problem-solving skills to guide decision making in the context of sustainability. The classes will be in a face-to-face format and will be scheduled in the evenings around students’ work schedules, so they can advance their careers without jeopardizing their existing employment and career progress. Furthermore, the program’s learning objectives emphasize skills and knowledge demanded by employers.

1. Program location is significantly removed from state-supported campus facilities.

As discussed above, all classes will be offered on evenings and weekends, or online, and will extend beyond periods that state-supported facilities are available.

Accordingly, all classes will be scheduled by CPIE program coordinators and conducted in CPIE facilities.

1. The program client group receives educational or other services at a cost beyond what could be reasonably provided under state support.

The program necessarily entails costs that would be difficult or impossible to cover if run as a state-support program. Essential program elements generating those costs include:

* + Classrooms during periods when state-supported classrooms are unavailable, and the availability of parking spaces close to classroom facilities to accommodate working professionals who are commuting directly to class.
	+ Classrooms equipped with power supplies at each desk, and sufficient room for students to operate laptop computers while simultaneously referring to printed material and lecture notes.
	+ As applicable, year-round online course conversion and support for faculty and students.
	+ Career advising services

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# For self-support programs, please provide information on the per-unit cost to students and the total cost to complete the program (in addition to the required cost recovery budget elements listed earlier in this document).

Please see Appendix C

**Submit completed proposal packages to:** degrees@calstate.edu