

BLUE ECONOMY
AND **CLIMATE ACTION**
PATHWAYS

SANTA
MONICA
COLLEGE

Blue Economy and Climate Action Pathways (BECAP)

Blue Economy and Climate Action Pathways (BECAP) aims to meet the emerging employment demands in ocean-related labor markets that are aligned with climate action and environmental justice priorities.***

BECAPS OVERARCHING GOALS:

1

Curriculum Development

- *Updating/”Climatizing” existing curriculum*
- *New program development.*

2

Faculty Professional Development and Community of Practice

3

BECAP College to Career

* see July 2022 Ocean Economy 101 report

** see March 2023 Ocean Climate Action Plan
by the White House’s Ocean Policy Committee

PROJECT OVERVIEW

Blue Economy and Climate Action Pathways (BECAP) aims to meet the emerging employment demands in ocean-related labor markets in Los Angeles that are aligned with California state climate action and environmental justice priorities. National priorities include the March 2023 Ocean Climate Action Plan by the White House Ocean Policy Committee.

Our community college Blue Economy and Climate Action Pathways (BECAP) overarching goals are:

- 1) To increase and improve career education training opportunities in the areas identified in these reports as both promising and fast-growing career pathways in the ocean economy, including
 - a) Regenerative Aquaculture,
 - b) Ocean Renewable Energy & Clean Air,
 - c) Blue Tech & Underwater Robotics, and
 - d) Ecosystems Conservation and Restoration.

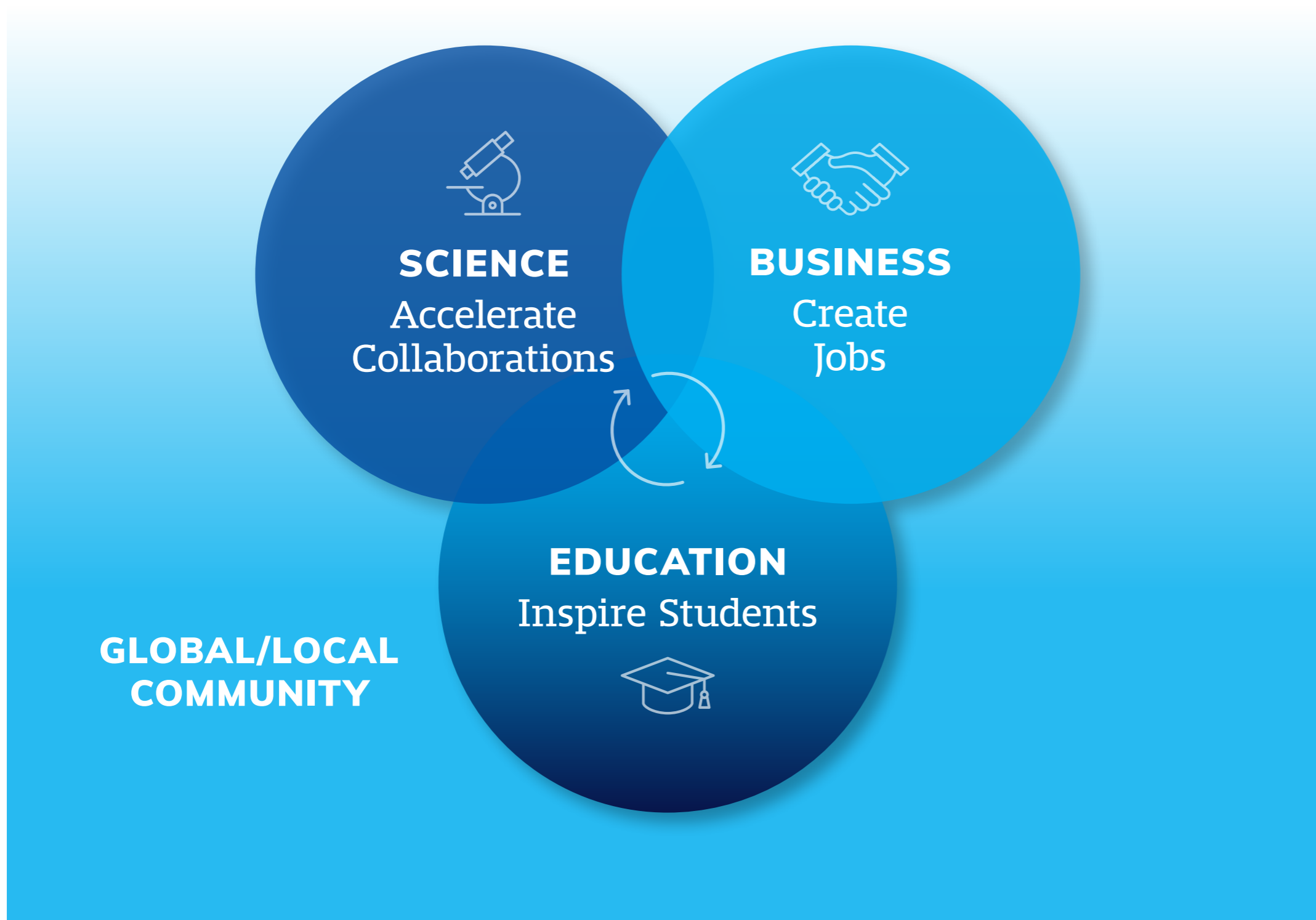
These project goals will be accomplished through curriculum development:

- 1) the updating or "climatizing" of participating STEM disciplines & CTE programs, modify existing curriculum, degree programs, and certificates and/or the creation of new curriculum and programs.
- 2) Create a faculty communities of practice to facilitate the sharing and scaling of existing curriculum, development of new curriculum, "climatizing" existing curriculum, training, internships, and other on-the-job training opportunities by working with current and potential partners (e.g. LAEDC partners, Alta Sea, and tenants)
- 3) Assist students in obtaining jobs and internships (paid, and subsidized wages with LAEP) and post completion job placement. BECAP will be inclusive and interdisciplinary by design. Our program will improve access to various sectors of the Ocean Economy by creating opportunities for students to succeed in traditional occupations within the blue economy, such as technology, computer science, entrepreneurship/ business, global trade and logistics, as well as emerging careers in biotech, renewable/clean energy, aquaculture, robotics, GIS, and ocean technology, that integrate policy and planning aspects, including permitting matters, community engagement, communication and outreach.

This integrative approach is essential to the growth of an ocean economy in the L.A. region that includes climate action, and climate justice.

UNIQUELY POSITIONED TO DRIVE CHANGE

...for an ocean that will sustain us now and for generations to come.



FOCUS CLUSTERS

1



Regenerative Aquaculture

- On-land Aquaculture
- Open Ocean Aquaculture
- Food Production
- Kelp Extraction Products

2



Renewable Energy

- Carbon Capture
- Energy Storage
- Hydrogen Energy
- Wave & Wind Energy

3



Bluetech & Underwater Robotics

- Data Acquisition
- Deep-water Monitoring
- Maritime Security
- Robotic Innovation

4



Ecosystems Conservation and Restoration

FOCUS CLUSTERS

1

Regenerative Aquaculture

2

Renewable Energy

3

Bluetech & Underwater Robotics

4

Ecosystems Conservation and Restoration

CURRENT AND PROSPECTIVE PARTNERS & TENANTS

- CA Department of Fish & Wildlife
- Holdfast Aquaculture
- Pacific Mariculture/Pacific 6
- Primary Ocean Producers
- USC Nuzhdin Aquaculture Lab
- SDSU Edwards Lab

- CA Department of Fish & Wildlife
- Holdfast Aquaculture
- Pacific Mariculture/Pacific 6
- Primary Ocean Producers
- USC Nuzhdin Aquaculture Lab
- SDSU Edwards Lab

- Aquaai Corporation
- Braid Theory
- Tekevar
- Blue Robotics
- Jet Propulsion Laboratory
- Mountain and Sea Adventures
- Nautilus Data Technologies
- Network of Ocean Ambassadors
- Headquarters (NOAH)
- Ocean Exploration Trust (OET)
- Maritime Security
- Robotic Innovation

- The Bay Foundation
- CA Coastal Conservancy
- CA Department of Fish & Wildlife
- County of Los Angeles
- Friends of Ballona Creek
- Heal the Bay

CONSORTIA OF 13 COLLEGES



PROJECT OVERVIEW

- **\$1,077,558 total total**
- **\$50,000 for each participating college**
- **Inclusive Participation of CC LA 19**
- **BECAP Overarching Goals:**
 - 1 Curriculum Development
 - Updating/”Climatizing” existing curriculum
 - New program development
 - 2 Faculty Professional Development and Community of Practice
 - 3 BECAP College to Career

BLUE ECONOMY AND CLIMATE ACTION PATHWAYS (BECAP)

Logic Model

INPUTS	OUTPUTS			OUTCOMES - IMPACT		
Resources	Participants	Activities	Products	Short Term	Immediate Term	Long Term
Blue Economy-related Programs	Blue Economy-related program faculty	Industry aligned curriculum	Curriculum	Blue Economy Curriculum	Revise curriculum to incorporate aspects of the Blue Economy	Develop and share new Blue Economy curriculum
Strong Workforce Program	Blue Economy-related program faculty	Acquiring scientific and industry knowledge	Blue Economy curriculum development and integration	Faculty Professional Development	Provide professional development opportunities for faculty to learn about the blue economy	Consortium faculty collaboration knowledge/ efforts on program development based on ongoing professional development
Partnerships	AltaSea, LAEDC and other partners	Convenings	Industry career pathways for students	Blue Economy industry engagement	Develop industry relationships and engagement around Blue Economy with AltaSea and LAEDC	Providing opportunities to connect students and faculty to industry partners AltaSea, LAEDC and others
SWP & District HR	Lead colleges and District HR	District hiring processes	Project manager in position	Project Managers	Hire PMs to oversee communication and collaboration between consortium colleges and budgets	Support and manage industry partnerships, curriculum development and reporting

ASSUMPTIONS

- Faculty professional development will lead to curriculum development
- LA Blue Economy report workforce projections will materialize
- Blue Economy industry engagement will yield beneficial career pathways for students

EXTERNAL FACTORS

- Project manager hiring processes dependent on District HR policies
- Student demand for Blue Economy curriculum

BLUE ECONOMY PROGRAM TOP CODES

- **1920.00 – Ocean Technology**
Procedures and techniques used to measure and analyze ocean currents, seas, and other major bodies of water and ocean life, including the operation and/or maintenance and repair of related equipment and instruments. Includes aquarium technology and aquaculture.
- **0959.00 – Marine Technology**
Operation and maintenance of ships systems and marine equipment.
- **0959.10 – Diving and Underwater Safety**
Professional diving, diving instructors or diving support personnel.
- **1919.00 – Oceanography (non-CTE)**
The physical and chemical properties of water, the topography and composition of the ocean bottom, waves, currents, tides, the formation of islands, and related subjects.
- **0303.00 – Environmental Technology**
Environmental management, monitoring, assessment, and restoration, including environmental pollution control systems and the management of hazardous materials and hazardous waste, and related government regulations.
- **0935.00 – Electro-Mechanical Technology**
Design, development, testing, and maintenance of electro-mechanical and servo-mechanical devices and systems.
- **0506.40 – Small Business and Entrepreneurship**
Principles, practices, and strategies of small business wholesale, retail, or service operations for owners/managers, and marketing principles and methods applicable to developing businesses.
- **0956.50 – Welding Technology**
Welding techniques, processes, and equipment applied in accordance with diagrams, blueprints, or other specifications.
- **0946.10 – Energy Systems Technology**
Theory and methods of energy conservation applied to heating, cooling, and related systems, including the measurement and assessment of energy consumption, diagnosis, and prescription. Includes alternative energy systems.
- **0948.40 – Alternative Fuels and Advanced Transportation Technology**
Conversion to, installation of, and maintenance of electric vehicles, liquefied petroleum gas, compressed natural gas, hybrid fuel technologies, and related systems.
- **2206.10 – Geographic Information Systems**
Computer-based tools for acquiring, editing, storing, analyzing, and visualizing geographically referenced information, with applications in research, education, management, and planning. Includes Global Positioning System (GPS).



LA REGION COMMUNITY COLLEGE'S BLUE ECONOMY SKILLS AND PATHWAYS

COMMUNITY COLLEGE	BLUE ECONOMY SKILLS	BLUE ECONOMY CAREER PATHWAYS
Cerritos College	Biology, Botany, Chemistry, Computer and Information Sciences, Aerospace, Mechanical and Electrical Engineering, Microbiology, Zoology, Geology, Physics, Welding, Engineering Tech, Automotive Tech	Welding, Earth Sciences, Botany, Microbiology, Zoology, Welding, Biology, Geology, Automotive Tech
Citrus College	Computer Science, Information Technology and Systems, Biology, Biotechnology, Earth Sciences	Biology, Biotechnology, Earth Sciences
Compton College	General Science, Mathematics, Physical Sciences, Physics	Physical Sciences
East Los Angeles College	Oceanography, Earth Sciences, Computer Science Information Technology, Chemistry, Engineering and Technologies, Biology, Microbiology	Oceanography, Earth Sciences, Biology, Microbiology
El Camino College	Biology, Chemistry, Computer Science, Construction Technology, Electronics and Computer Hardware Technology, Engineering Technology, Environmental Horticulture, Environmental Technology, Geology, Machine Tool Technology, Welding, Physical Science	Biology, Environmental Horticulture, Earth Sciences, Welding Technology, Machine Tool Technology, Geology, Life Sciences
Glendale Community College	Biology, Small Business and Entrepreneurship, Oceanography, Mathematics, Physics, Welding, Mechanical Engineering, Electrical Engineering, Welding	Oceanography, Welding, Small Business and Entrepreneurship, Biology
Los Angeles City College	Small Business and Entrepreneurship, Computer Sciences, Earth Sciences, Life Sciences	Small Business and Entrepreneurship, Earth Sciences, Life Sciences
Los Angeles Harbor College	Oceanography, Earth Science, Biology, Engineering, Geology, Microbiology	Oceanography, Earth Sciences, Geology, Biology, Microbiology
Los Angeles Mission College	Biology, Biotechnology, Chemistry, Robotics, Engineering, Computer Programming	Robotics, Robotics and PLC's, Fundamentals of Robotics, Biotechnology
Los Angeles Pierce College	Geographic Information Systems, Small Business and Entrepreneurship, Biology, Oceanography, Engineering, Environmental Science	Geographic Information Systems, Oceanography, Small Business and Entrepreneurship
Los Angeles Southwest College	Robotics, Biology, Chemistry, Engineering, Natural Sciences, Physics	Robotics, Robotics and PLC's, Fundamentals of Robotics, Earth Sciences, Biology, Natural Sciences
Los Angeles Trade Tech	Geographic Information Systems, Biotechnology and Manufacturing, Chemical Technology, Computer Information Systems, Electronics Communications, Physics, Renewable Energy, Small Business Admin, Welding	Geographic Information Systems, Biotechnology, Renewable Energy, Welding, Small Business and Entrepreneurship

LA REGION COMMUNITY COLLEGE'S BLUE ECONOMY SKILLS AND PATHWAYS

COMMUNITY COLLEGE	BLUE ECONOMY SKILLS	BLUE ECONOMY CAREER PATHWAYS
Los Angeles Valley College	Applied Technology, Biological Sciences, Business Admin, Chemistry, Physics, Engineering, Computer Applications and Information Systems, Robotics, Welding	Robotics, Robotics and PLC's, Fundamentals of Robotics, Welding Automation, Small Business and Entrepreneurship
Long Beach City College	Robotics, Oceanography, Earth Science, Life Sciences, Marine Biology, Computer Science, Engineering, Engineering Technology, Geology, Horticulture, Mathematics, Physical Sciences	Robotics, Robotics and PLC's, Fundamentals of Robotics, Oceanography, Marine Biology, Horticulture, Earth Science, Physical Sciences
Mt. San Antonio College	Oceanography, Earth Science, Agricultural Technology, Aviation Science, Biology, Automation, Business Admin, Computer Programming, Digital Systems Technology, Electronics Technology, Environmental Studies, Engineering, Geology, Geotech, Industrial Engineering, Natural Sciences, Ornamental Horticulture, Unmanned Aircraft Systems, Welding	Oceanography, Earth Sciences, Agricultural Tech, Aviation Science, Biology, Automation, Small Business and Entrepreneurship, Ornamental Horticulture, Unmanned Aircraft systems Welding, Environmental Studies, Geology, Geotech, Natural Sciences
Pasadena City College	Aquaponics, Geographic Information System, Biological Technology, Business Admin, Computer Information Systems, Electrical Technology, Welding, Geology, Microbiology	Aquaponics, Geographic Information Systems, Small Business and Entrepreneurship, Welding, Earth Sciences, Microbiology
Rio Hondo College	Geographic Information Systems, Alternative Technology, Automotive Technology, Biology, Electronics, Engineering Design, Environmental Science, Geology, Heavy Equipment Technology, Physics, Welding Technology	Geographic Information Systems, Earth Sciences, Welding, Heavy Equipment Technology, Biology, Environmental Science, Geology
Santa Monica College	Aquaculture, Information Systems, Earth Sciences, Oceanography, Biology, Microbiology	Aquaculture, Earth Sciences, Biology, Microbiology, Oceanography, Geographic Information Systems, Entrepreneurship
West Los Angeles College	Biology, Bio Tech, Climate Change and Environmental Studies, Earth Science, Microbiology, Oceanography	Biology, Biotechnology, Earth Sciences, Microbiology, Oceanography, Environmental Studies

Other College Blue Economy Career Pathways

COLLEGES

Fullerton College →
 Orange Coast College →
 Cypress College →
 Cal State Long Beach →

BLUE ECONOMY CAREER PATHWAY

Hydroponics/Aquaponics
 Aquarium Science
 Marine Engineering, Naval Architecture
 Marine Terminal Operations

BECAP POTENTIAL COURSES AND CERTIFICATES

Certificate Level 1

AQUA 1:

Introduction to Aquaculture

history, ecology and sustainability (4 units)

AQUA 2:

Applications in Aquaculture

system design, monitoring and maintenance (5 units)

ADDITIONAL ELECTIVE:

- **First Aid/CPR** or ***Rescue SCUBA diver** (*includes first aid/CPR or equivalent (X units)*)
- **Internship** (*2 units) or equivalent [internship at aquarium or aquaculture facility, or work hours at any aquaculture related job]*)

AQUACULTURE FOCUSED ELECTIVE

(4-7 units)

- **Bio 15**, or
- **Two Classes**, one from each of the following groups:
 - **Group 1:** Bus 55, Bio 9, Bio 10, Engraving 11
 - **Group 2:** Bio 15N, Geol 31

Certificate Level 2

AQUA 3:

Aquaculture Microbiology, Genetics, Larval Spawning and Rearing

(4 units hybrid; labs are 2x 2-d wkd workshops - 18 hrs/wkd)

AQUA 4:

Advanced Topics in Aquaculture

(2-unit hybrid; lab is 1 3-d wkd 6hr/d workshop)

AQUA 5:

Aquaculture Permitting and Logistics

(2 units fully online)



DOING WHAT WORKS

PODCAST

A Podcast Focused on Career Pathways

Doing What Works is a podcast that explores various career pathways and offers insights from experts in different industries. Our goal is to help listeners discover their own career paths by sharing stories of success and offering practical advice.

Each episode will feature a guest who has achieved success in their respective field. We'll dive deep into their experiences, learning about the challenges they faced and how they overcame them. From the Blue Economy to Climate Pathways, we'll cover a wide range of topics, giving listeners a broad understanding of what's possible.



BECAP CONTACTS

Steven Sedky, Interim Associate Dean, CTE (sedky_steven@smc.edu)

Ferris Kawar, Sustainability Project Manager (kawar_ferris@smc.edu)

Dr. Patricia Ramos, Dean, Academic Affairs, Santa Monica College (Ramos_Patricia@smc.edu)

Prof. Ashanti Blaize-Hopkins, Santa Monica College (Blaize_Ashanti@smc.edu)