DEGREES, CERTIFICATES, AND TRANSFER PREPARATION INFORMATION

AQUACULTURE

For additional career possibilities, visit the Career Services Center on the main campus to utilize computerized career information systems and other valuable career resources.

Programs Offered

- Transfer Preparation
- Associate Degree
  - Sustainable Aquaculture Technology
- Certificates of Achievement
  - Aquaculture Technician I
  - Aquaculture Technician II
- Career Opportunities

Associate Degree Requirements

An Associate degree is granted upon successful completion of a program of study with a minimum grade point average (GPA) of 2.0 (C) in degree applicable coursework and a minimum of **60 degree applicable semester units**, including:

- Completion of the area of emphasis with a grade of C or higher in each course, or with a P if the course was taken on a Pass/No Pass basis, and the P is equal to a C or higher;
- Completion of one of the following general education patterns: SMC GE or Cal-GETC;
- Completion of the SMC Global Citizenship graduation requirement.

Certificate of Achievement Requirements

A Certificate of Achievement is granted upon successful completion of a program of study with a minimum overall grade point average (GPA) of 2.0 (C) and a **designated minimum number of units**, including:

- Completion of the area of emphasis with a grade of C or higher in each course, or with a P if the course was taken on a Pass/No Pass basis, and the P is equal to a C or higher;
- Completion of at least 50% of area of emphasis units at Santa Monica College. Department Chairs have the discretion to waive the 50% minimum units required at SMC to meet the major or area of emphasis. All major coursework must be completed with a "C" or better grade.

Catalog Rights

A student may satisfy the requirements of a degree that were in effect at any time of the student's ***continuous*** enrollment. Continuous enrollment means attendance in at least one semester (Fall or Spring) in each academic year.

Transfer Preparation

Many colleges/universities offer baccalaureate degrees in this field. Students planning to transfer to a four-year college or university should complete the lower-division major requirements and the general education pattern for the specific transfer institution. SMC has articulation agreements with the many UC and CSU campuses, as well as several private and out-of-state institutions.

Exact major requirements for UC and CSU campuses can be found online at *assist.org*.

A listing of private, nonprofit California colleges and universities can be found online at *aiccu.edu*. For articulation agreements between SMC and some of these institutions see *smc.edu/articulation*.

Sustainable Aquaculture Technology, Associate Degree

The Associate of Science in Sustainable Aquaculture Technology program at Santa Monica College provides students with the knowledge and hands-on experience needed to pursue careers in the growing field of aquaculture. This program covers key areas such as ecology and sustainability, systems design, sustainable fish farming, shellfish and seaweed cultivation, marine ecosystem management, microbial ecology in aquaculture, genetics in aquaculture, and special topics on sustainable aquaculture technology. Students will learn about water quality management, invertebrate and vertebrate health, rare species cultivation, hatchery and propagation operations, biosecurity, and food safety practices while gaining practical skills through laboratory work and practical work experiences. Graduates will be prepared to work in various sectors, including fish farms, hatcheries, environmental agencies, and marine/aquaculture-focused research institutions.

Program Highlights

- Comprehensive curriculum that is industry-aligned, emphasizing aquaculture techniques and design for algae, shellfish, and finfish in open water off-shore applications and onshore recirculating aquaculture systems (RAS)
- Experiential learning through practical laboratory work, internships, and fieldwork
- Engage students with local aquaculture operations and industry experts to provide networking opportunities

Program Learning Outcomes: Upon completion of the program, students will analyze historical and current aquaculture practices to propose sustainable strategies that account for environmental, ecological, and global climate factors. Demonstrate readiness for the aquaculture workforce by applying breeding, cultivation, and harvesting methodologies to effectively manage the production of aquatic species. Develop problem-solving skills to address challenges in aquaculture operations, such as disease management, resource optimization, and sustainable farming practices, by applying research principles and innovative approaches. Integrate fundamental business and management principles to support the efficient operation and growth of aquaculture enterprises. Demonstrate professional work habits, technical competencies, and adherence to safety protocols through hands-on aquaculture experiences in real or simulated workplace settings.

Area of Emphasis: (22-27 units)

Core Aquaculture Requirements: (15 units)
AQUA 1, Introduction to Aquaculture: History, Ecology and Sustainability (3)
AQUA 2, Applications in Aquaculture – System Design, Monitoring and Maintenance (4)
AQUA 3, Microbiology and Genetics for Aquaculture (4)
AQUA 4, Husbandry and Life Support in Aquaculture and Aquarium Science (2)
AQUA 5, Advanced Topics in Aquaculture (2)
Elective 1: (4-6 units)
It is highly recommended that students complete BIOL 15.
BIOL 15, Marine Biology with Laboratory (4)
or
Two classes, one from each group
GROUP 1:
BIOL 9, Environmental Biology (3)

BIOL 10, Applied Ecology and Conservation Biology (4)
BUS 55, Southern California's International Connections and Blue/Ocean Economy (3)
ENGR 11, Engineering Graphics and Design (3)
and
GROUP 1:
BIOL 15N, Marine Biology (Non-Laboratory) (3)
GEOL 31, Introduction to Physical Oceanography (3)
Elective 2: Select one course (2-3 units)
**Note: AQUA 10A or industry equivalent. Credit for prior learning may be granted for students who hold recognized industry certifications. Acceptable documentation includes: NAUI Master Diver or equivalent; or NAUI Advanced Diver plus Rescue Diver certifications; or any dive certification combined with AAUS certification or equivalent; or First Aid/CPR certification equivalent to those issued by the American Heart Association, Red Cross, or comparable agencies. Please contact the life sciences department or counseling for more information.*
AQUA 10A, SCUBA (same as KIN PE 49D) (2)
HEALTH 11, First Aid and Cardio-Pulmonary Resuscitation (3)
Elective 3: Select one course (1-3 units)
AQUA 88B, Independent Studies in Aquaculture (2)
AQUA 90A, Aquaculture Internship (1)
AQUA 90B, Aquaculture Internship (2)
AQUA 90C, Aquaculture Internship (3)

Aquaculture Aquaculture Technician I, Certificate of Achievement

This certificate prepares students for entry- and middle-skill work for the burgeoning Blue Economy in Southern California, including the aquaculture industry. The program emphasizes workforce preparation at the interface of global climate change and sustainability. With consideration for environmental change, additionally, this program addresses conservation and restoration practices for endangered species.

Program Learning Outcomes: Upon completion of the program, students will analyze and evaluate the history, ecology, and sustainability of local and global aquaculture systems. Special attention will be paid to indigenous and modern practices, environmental and human health impacts, as well as endangered species. Create, design, construct, monitor, and maintain aquaculture systems for a variety of aquatic species. Apply their understanding of SCUBA and/or First Aid / CPR knowledge to establish safe practices in their future career in aquaculture or a related field.

Area of Emphasis: (14-19 units)

Required Courses: (8-10 units)
AQUA 1, Introduction to Aquaculture: History, Ecology and Sustainability (3)
AQUA 2, Applications in Aquaculture – System Design, Monitoring and Maintenance (4)

AQUA 88B, Independent Studies in Aquaculture (2)
or
AQUA 90A, Aquaculture Internship (1)
or
AQUA 90B, Aquaculture Internship (2)
or
AQUA 90C, Aquaculture Internship (3)
Aquaculture Focused Electives: (4-6 units)
It is highly recommended that students complete BIOL 15.

BIOL 15, Marine Biology with Laboratory (4)
or
Two classes, one from each group
GROUP 1:
BIOL 9, Environmental Biology (3)
BIOL 10, Applied Ecology and Conservation Biology (4)
BUS 55, Southern California's International Connections and Blue/Ocean Economy (3)
ENGR 11, Engineering Graphics and Design (3)
and
GROUP 1:
BIOL 15N, Marine Biology (Non-Laboratory) (3)
GEOL 31, Introduction to Physical Oceanography (3)
Scuba Diving/First Aid Course: (2-3 units)
**Note: AQUA 10A or industry equivalent. Credit for prior learning may be granted for students who hold recognized industry certifications. Acceptable documentation includes: NAUI Master Diver or equivalent; or NAUI Advanced Diver plus Rescue Diver certifications; or any dive certification combined with AAUS certification or equivalent; or First Aid/CPR certification equivalent to those issued by the American Heart Association, Red Cross, or comparable agencies. Please contact the life sciences department or counseling for more information.*
AQUA 10A, SCUBA *(same as KIN PE 49D)* (2)
HEALTH 11, First Aid and Cardio-Pulmonary Resuscitation (3)

Aquaculture Aquaculture Technician II, Certificate of Achievement

The Certificate of Achievement in Aquaculture Technician II prepares students for higher-skill work for the burgeoning Blue Economy in Southern California, including the aquaculture industry. The program emphasizes workforce preparation at the interface of global climate change and sustainability. With consideration for environmental change, this program addresses conservation and restoration practices for endangered species.

Program Learning Outcomes: Upon completion of the program, students will analyze, evaluate, and apply microbiological and genetic concepts, data, and laboratory techniques to manage the health and sustainability of aquaculture systems. Analyze conditions for culturing aquatic species, and develop optimal strategies to maximize production, while minimizing environmental impact. Design, justify, and communicate a business model for an aquaculture facility that integrates site selection, permitting, biosecurity, social license, production logistics (food creation/delivery/handling), and sustainable market delivery.

Area of Emphasis: (8 units)

Required Courses: (8 units)
AQUA 3, Microbiology and Genetics for Aquaculture (4)
AQUA 4, Husbandry and Life Support in Aquaculture and Aquarium Science (2)
AQUA 5, Advanced Topics in Aquaculture (2)