

**Career Launch Endorsement Review
(CLER) Application
Marine Maintenance Technology Program**

SVC | Skagit Valley College

April 2020

INSTITUTION Skagit Valley College

PROPOSED PROGRAM Marine Maintenance Technology

PROGRAM CIP 47.0616 PROGRAM EPC (Legacy) 736

CONTACT INFORMATION

Name: Jennifer Veltri

Title: Associate Dean of Instruction

Address: 2405 E. College Way

Telephone: 360-416-7921

Email: jennifer.veltri@skagit.edu



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Chief Academic Officer – Kenneth Lawson, Vice President of Instruction Date

Introduction:

Skagit Valley College is applying for Career Launch Endorsement for its Marine Maintenance Technology program. Students learn the skills and receive the training they need to launch careers in the recreational boat, ship repair, and maintenance industries. Training with a faculty of industry experts, they learn in a purpose-built professional facility and prepare to work as a technician on recreational and commercial vessels in this high demand industry. Curriculum is thoughtfully aligned to industry standards and credentials and students receive hands-on, work-based experience through paid cooperative education opportunities.

The Marine Maintenance Technology program is a member of the Marine League of Schools, a national consortium of marine technology education providers (primarily community and technical colleges in North America) all of whom teach to industry standards. The Marine League of Schools comes under the operational umbrella of the American Boat and Yacht Council, and as a member we are able to offer intensive certification courses multiple times a year for industry professionals.

Program faculty, advisory committee leaders, and college administration see alignment between the program growth goals and Career Launch endorsement. An endorsement would allow for the Marine Maintenance Technology program to apply for funds to expand program capacity, enhance the student experience, and deepen employer relationships.

Program Checklist

P1. Program description including length of program in years and total hours (including split between classroom and worksite).

Program Description: Marine Maintenance Technology (MT) prepares students for marine trades employment in marine propulsion, marine electrical and vessel systems, and marine composites. Marine Maintenance Technology offers two one-year certificates which serve as the core for the two-year AAS degree.

Marine mechanics and propulsion instructs in the installation and repair of marine propulsion systems for modern boat and ship engines consisting of diesel engines, inboard gasoline engines, sterndrives, sail drives, and outboard motors. Starting with simple, portable power units (outboard engines), students explore fuel, cooling, exhaust, ignition, lubrication, and control systems for these engines. Students gain an understanding of how to make engines perform to manufacturer’s specifications and learn about mounting and rigging engines for use, maintenance, adjustments, and remote controls. Coursework includes fuel injected gasoline and diesel inboard engine operation and troubleshooting.

In marine electrical and vessel systems, students learn how to install, repair, maintain, and troubleshoot modern boat systems using established industry standards and best practices. Systems course work includes learning about AC and DC electrical systems, plumbing, rigging, electronics, sanitation, refrigeration, communication, HVAC, and navigation systems.

Additionally, marine composites curriculum prepares students by teaching the theory and practical application of a wide variety of composite materials and resins. Though the composites portion of the program targets the marine industry, students will have the option of seeking employment in several industries in addition to marine, such as energy, aerospace, automotive, recreation, bio-medical, construction and consumer goods - each of which requires similar skill sets. Students learn wet layup, and closed-molding, tool fabrication, light resin transfer molding (RTM); developing hands-on practical skills in addition to learning the theory behind the processes.

Certified instructors have direct industry experience and prepare students to apply their skills to virtually any professional scenario involving troubleshooting, repair, upgrading and integrating modern marine systems on board vessels of all types. Students work toward earning manufacturer specific and American Boat and Yacht Council (ABYC) propulsion certifications among others.

Length of Program(s) and Total Hours: There are two certificate programs at 1 year/3 quarters each and 55/58 credits respectively. These certificate programs can both be taken to complete a 2 year/6 quarter Associate of Applied Science degree in Marine Maintenance Technology.

	Credits	Lecture	Lab	Clock Hours
Marine Electrical Technician Certificate	55	473	275	748
Marine Mechanical Technician Certificate	58	517	253	770
Associate of Applied Science (AAS) Marine Technician	99	836	561	1397

P2. Estimated number of hours per week at worksite and in classroom (this approach may shift throughout the program).

Certificate students take two quarters of course and lab work before completing additional coursework and a cooperative education experience in their final quarter consisting of at least 50 hours of worksite experience. Degree seeking students complete five quarters of course and lab work and complete additional coursework along with their cooperative education experience in their 6th and final quarter, consisting of at least 100 hours of worksite experience.

P3. Demonstration of labor market demand for specified skills/career in local region

The Marine Maintenance Technology program prepares students to become Marine Electricians, Marine Diesel Service Technicians and Mechanics, Motorboat Mechanics and Service Technicians, and Marine HVAC Technicians among others. According to EMSI, the Occupation Summary for Motorboat Mechanics and Services Technicians in Washington anticipates a +4.6% change (2015-20). ONET reports that these positions anticipate the following growth in Washington through 2028:

- Motorboat Mechanics and Service Technicians 49-3051: 4%
- Electricians 47-2111: 18%
- Diesel Service Technicians and Mechanics 49-3031: 14%
- HVAC Technicians 49-9021: 22%

The Washington Northwest Center of Excellence for Marine Manufacturing & Technology reports that in *Boating Industry Magazine*, (January 10, 2019) the National Marine Manufacturers Association (NMMA) reported that the US boating industry supports over 691,000 jobs. As of 2012, there were 150 employers in Washington State in boat/ship building, repair, and maintenance, and 16,500 jobs according to the *Proposed Strategic Plan for Washington State Maritime Sector 2017-2019*.

Also per the Maritime *Proposed Strategic Plan*, in 2013 the average age of the workforce in maritime industry was 54 years old. In November 2017, *Workboat* magazine reported that there were concerns in the industry regarding the impending retirement of many of its employees. This will lead to an increased need of skilled employees in this sector moving forward.

A study conducted in 2017 by the Washington Maritime Federation outlines the growth rate from 2012-2015 of the industry was 1.4% annually; the Washington Maritime Federation is currently in the process of updating the 2017 study to show the impact of the maritime industry in Washington state.

P4. Projected count of student enrollment, student completion, and anticipated employer participation for 5 years, post-pilot.

Enrollment: The Marine Maintenance Technology program is consistently enrolled, and enrollment grew each year through 2018. With the recent change in program certificate offerings and more streamlined alignment with industry need, we expect enrollment to increase due to the specificity of the certificate options as this change has been in direct response to the industry's strong needs for more techs coming out of the school directly into waiting jobs.

Year	Projection					
	2019-20 Baseline	2020-21	2021-22	2022-23	2023-24	2024-25
Headcount	35	44	53	53	60	60
State AFTEs	22	28	34	34	38	38

By utilizing Career Launch FTE funding, SVC plans to add 6 FTE in 2020-21, 12 FTE in 2021-22 and 2022-23, and 16 FTE each of the following two years. Space considerations have been an enrollment-limiting factor in the past, as has the need for additional recruitment, instructional faculty and program support. The recent restructuring of curriculum will optimize space and lab availability for students. With Career Launch FTE funding, we will focus on increasing qualified instructors, coordination and lab support, as well as recruitment.

Completion: Within the certificates as well as the degree, students complete their general education requirements along with a college success skills class aligned specifically to the marine industry and taught by a Marine Maintenance program instructor. Program retention rates from Fall through Spring in the last three academic years have been 70%, 74%, and 75% respectively. We anticipate that with the change in the one year certificate options offered, students will continue to retain and have a greater incentive to complete at a high rate.

In the past our student mix has been made up of part-time, certificate, and degree seeking students. We plan that with the streamlining of the certificate options we will have less part-time students and additional certificate seeking students and completions, while still maintaining our degree completions.

	Projection				
	2020-21	2021-22	2022-23	2023-24	2024-25
Total Completions	13	15	15	18	18

Employer Participation: The Marine Maintenance Technology program is strongly connected to the workforce through its advisory committee, the onsite Center for Excellence for Marine Manufacturing and Technology, it’s location in the heart of Anacortes (a marine industry center), and mandatory work placements during the last quarter of the program. Students work closely with faculty for placement with industry businesses where they are interested in future employment and many students are offered ongoing employment after their cooperative education experience.

Students achieve a number of industry credentials during their programs, which make them highly desirable as employees. The program’s advisory committee has made note of the dire need of the marine sector for technicians over recent years, prompting the change in program certificates in order to prepare students for immediate employment.

P5. Concise description of development process to create the Career Launch program (e.g. who was involved, when, how was the program piloted, etc.)

The Marine Maintenance Technology program has been established since 1968 and over the years has changed credential offerings in response to demand. In recent years it has been brought up through the program advisory committee that there is an industry need for employees coming out of school into waiting jobs. In 2019-20 SVC faculty and administration have updated the program by splitting the current Associate of Applied Science degree into two stackable certificates. This allows for students to have two tracks to pursue for job specificity while also maintaining the degree option.

A great deal of attention has been paid to tracking credits, aligning curriculum to industry standard and certifications, and avoiding repetition. Student, industry, and Advisory Committee input and feedback have been solicited and included throughout the entire process, and the Advisory Committee review was a final approval of what has been so carefully crafted. The proposal has been approved by SVC’s Instruction Committee and has been submitted to the SBCTC for state approval, the plan being for the launch of the updated stackable certificates to take place in Fall 2020.

P6. Signed letter of endorsement from all relevant partners, stakeholders and regional networks (including employers, labor organizations, academic institutions, community-based organizations, individuals, and other relevant stakeholders in support of the proposed Career Launch program). Regional network endorsement preferred.

Please see letters of support from the following at the end of the application:

- Center of Excellence for Marine Manufacturing & Technology
- Northwest Marine Trade Association
- North Harbor Diesel
- NW Explorations

P7. Description of resources, supports, or other processes to recruit and support students from underserved backgrounds (e.g. including students of color, students from low income families, English language learners, students with disabilities, foster students, students experiencing homelessness, students from single parent homes, and other populations that face barriers to employment); or create an implementation plan to do so.

Skagit Valley College provides the following programs/services to recruit and support students from underserved and/or special populations.

Recruitment:

- Through the Customer Relationship Management (CRM) software SVC uses, SVC asks applicants to provide information that 1) identifies them as special/underserved populations and 2) may qualify them for financial and other resources including grants and special programs. SVC staff use this information to reach out to students and offer these resources as soon as possible.
- Recruitment events are held regularly to offer one on one support of enrollment, including admissions and financial aid labs, "SVC 101" information nights held across the three-county district. We also offer individualized campus tours depending on the interest of the prospective student.
- SVC hosts a Try a Trade event for approximately 240 high school students to spend time in our professional technical classroom and lab areas to have exposure to the classroom environment for those trades. We work closely with high school partners to recruit interested students into participation in this event.

Support:

- Skagit Valley College created the Champions of Diversity program, which supplies scholarships for local high school students to SVC as well as other colleges. This includes a celebration event and additional supports for students who attend SVC.
- Skagit Valley College has a multicultural recruitment specialist who works specifically with historically underserved populations. This specialist is bilingual and supports students through Champions of Diversity, focused programming with local partners, and general recruitment.
- For students with disability, SVC has a counselor and a support staff who work to provide accommodations so these students can participate fully in their programs.
- For those with low income, SVC has a robust workforce grants program which includes access to TANF, Workfirst, and other funds like BFET for tuition, training assistance, and resources.
- SVC has built robust navigation supports. A 2-credit career exploration / education planning course has shown retention is significantly higher for those who take it compared to those who don't and includes the development of an education plan, career plan, and financial plan. Mandatory advising is implemented at checkpoints throughout the student's program.

- Completion data disaggregated by gender and ethnicity is used to compare to the system average to make decisions and develop new initiatives.
- Bilingual recruitment, enrollment services, navigators, and financial aid staff are available to work with students.
- A Retention Specialist tracks student progress and responds to Early Alert recommendations.

While SVC has integrated equity efforts throughout all institutional practices, the primary method for ensuring equitable student outcomes is our newly established Program Review Process. Comprehensive Program Review is a four-year process that includes three years of program data collection followed by a fourth year of data analysis and planning. The four-year Comprehensive Program Review is the culmination of three years of annual program reports. Each year, program faculty review the annual data in four areas: access, achievement, student experience, and Student Learning Outcomes (SLOs).

The Marine Maintenance Technology program specifically enrolls a greater share of Veterans. Over the last 4 years, the program has averaged 21.1% veterans compared to an average of 5.6% enrolled at SVC as a whole. Additionally, over that same time non-traditional gender has increased in the program around 4% each year, from 5.6% in 2015-16 to 19.6% in 2018-19.

Industry-Related Checklist

I-R1. Address of worksite(s) where Career Launch students will complete supervised training.

Employer	Address
All American Marine	1010 Hilton Ave, Bellingham, WA 98225
Cap Santé Marine	2915 W Ave, Anacortes, WA 98221
Fathom Marine	2201 Skyline Way Suite 203, Anacortes, WA 98221
Marine Servicer	2417 T Ave, Anacortes, WA 98223
Marine Services Group	1910 Skyline Way, Anacortes, WA 98221
Munson Boat Builders	15806 Preston Pl, Burlington, WA 98233
North Harbor Diesel	720 30 th St A, Anacortes, WA 98221
Northwest Explorations	2623 S. Harper Loop Dr, Bellingham, WA 98225
Seattle Yachts	2887 T Ave #112, Anacortes, WA 98221
TOMCO, American Tug	800 Pearl Jensen Way, La Conner, WA 98257

I-R2. Hourly wage for Career Launch participants.

Hourly wage for participants ranges from \$15-\$18 depending on employer.

I-R3. List of entry-level positions and associated job descriptions for which a Career Launch student would be eligible for upon completion.

Examples of entry level positions titles for students in the Marine Maintenance Technology program include the following: Marine Technician, Marine Mechanic, Marine Electronic and Systems Installer, Marine Diesel Mechanic, Marine Service Technician, Marine Electronics Technician, Marine Electronics Installer.

Following are three examples of entry level job descriptions a Marine Maintenance Career Launch program student would be eligible for upon completion.

Marine Diesel Mechanic

<https://www.indeed.com/jobs?q=Diesel%20Mechanic&l=Anacortes%2C%20WA&vjk=12b1b27eecd13>

Marine Services Group; Wage: \$22 to \$27/hour DOE plus Medical, Vacation & Sick pay

Job Duties:

- Responsible for the upkeep, maintenance and functionality of vessels and other marine equipment
- Install and maintain products and equipment onsite at the boatyard or customers' sites
- Install or repair navigation equipment, electrical and refrigeration
- Commission and perform acceptance sea trails and demonstrate functionality of equipment to customers
- Liaise with boatyard personnel and boat representatives to ensure smooth communication
- Troubleshoot, identify, analyze, and repair product failures

Minimum Qualifications:

- Diesel engine and mechanic experience
- Vast knowledge of the functionality of marine equipment, including: in-board engines (gas or diesel) outboard engines, 2 or 4 stroke, gensets, running gear, hydraulics and systems
- Customer service
- Diagnostics

Preferred skills/experience:

- Marine experience
- ABYC or manufacturer certifications

Marine Mechanic Service and Installation Technician

<https://marinesc.com/about-us/employment-opportunities/>

Marine Servicenter, Wage: \$16 to \$25/hour DOE plus Medical, Vacation & Sick pay

Job Duties:

- Repair, service, and installation of diesel and/or gasoline engines, their associated powertrains including shafts, outdrives, saildrives, and steering systems
- Service and installation of water, fuel, and sanitation systems

Minimum Qualifications:

- Previous experience in diesel and/or gasoline engines
- Teamwork

Preferred skills/experience:

- Manufacturer's certifications are a plus

Marine Electronics & Systems Installer

<https://marinesc.com/about-us/employment-opportunities/>

Marine Servicenter, Wage: \$16 to \$25/hour DOE plus Medical, Vacation & Sick pay

Job Duties:

- Custom installations of navigation, communication, sonar, entertainment, computer, and service systems
- Repair and service of existing customers' boats

Minimum Qualifications:

- Previous experience in electronic boating systems
- Teamwork

Preferred skills/experience:

- 2-3 years experience
- Electrical and electronics certifications as a marine electronics installer or electrical certification by ABYC
- NMEA 2000 experience and certifications
- Some college or trade school experience

I-R4. List of specific skills and competencies required for completion of Career Launch program, with demonstrated alignment to entry-level positions, job descriptions, and average local salary ranges.

At Skagit Valley College, each program must meet General Education Learning Outcomes. Additionally, there are developed Program Learning Outcomes which consist of the main skills and competencies that are emphasized and reinforced throughout the program. Below is a list of the Program Learning Outcomes along with the General Education Learning Outcomes, aligned with the Entry Level Position Job Descriptions. Average local salaries can be found above in I-R3.

SKILLS AND COMPETENCIES REQUIRED FOR COMPLETION OF MARINE MAINTENANCE PROGRAM	
Program Learning Outcomes:	Job Duties/Qualifications/Preferred Skills:
Demonstrate mechanical and/or electrical skills	<p>Mechanical skills:</p> <ul style="list-style-type: none"> - Diesel engine and mechanic experience - Repair, service, and installation of diesel and/or gasoline engines, their associated powertrains including shafts, outdrives, saildrives, and steering systems - Vast knowledge of the functionality of marine equipment, including: in-board engines (gas or diesel) outboard engines, 2 or 4 stroke, gensets, running gear, hydraulics and systems <p>Electrical skills</p> <ul style="list-style-type: none"> - Previous experience in electronic boating systems - Install or repair navigation equipment, electrical and refrigeration - Custom installations of navigation, communication, sonar, entertainment, computer, and service systems
Develop the knowledge and proficiency necessary to pass certification exams	<ul style="list-style-type: none"> - ABYC or manufacturer certifications - Electrical and electronics certifications as a marine electronics installer or electrical certification by ABYC - NMEA 2000 experience and certifications - Some college or trade school experience
Exhibit safe and proficient working practices in the lab/shop environment	<ul style="list-style-type: none"> - Commission and perform acceptance sea trails and demonstrate functionality of equipment to customers - Teamwork
General Education Learning Outcomes	Job Duties/Qualifications/Preferred Skills:
Communicate. Produce and exchange ideas and information through written, spoken, and visual forms	<ul style="list-style-type: none"> - Liaise with boatyard personnel and boat representatives to ensure smooth communication. - Customer service - Teamwork
Quantify. Apply mathematical skills quantitatively, logically, creatively, and critically.	<ul style="list-style-type: none"> - Diagnostics - Troubleshoot, identify, analyze, and repair product failures.

I-R5. Employer attests that Career Launch program is in compliance with required federal, state, and local regulations.

Please see letters of support from the following at the end of the application:

- North Harbor Diesel
- NW Explorations

I-R6. Employers will outline a student supervision and mentorship model.

Please see letters of support from the following at the end of the application:

- North Harbor Diesel
- NW Explorations

I-R7. Description of common career pathway(s) beginning with entry-level position specified with demonstration of likely salary growth over specified time period.

The Marine Maintenance Technology pathway at SVC is designed to be stackable, with two certificates that would each lead to employment and then combining into a degree for career progression. Each certificate was designed to provide immediate employer-recognized skills and credentials at every level.

The salaries for these positions in Washington range from \$14/hour to \$32.25/hour per ONET. With the additional industry-recognized credentials built into the pathway, the program ensures that students are able to work in positions with positive wage potential, culminating in a degree that would qualify them to work in numerous specialties within the industry and an increasing hourly wage.

After completing either the Marine Electrical Technician or Marine Mechanical Technician Certificate, students would be qualified to obtain employment. The progression to the Associate of Applied Science Marine Maintenance Degree at SVC would allow further diversification, and students looking for management positions could enroll in SVC's Bachelors of Applied Science in Applied Management.

I-R8. Demonstrated competency alignment with relevant professional standards for specified entry-level positions when applicable.

Skagit Valley College is a member of the Marine League of Schools, a national 14-member consortium of marine technology educators providing industry standards-based training and education. Curriculum is aligned with the standards as set forth by industry organizations to ensure industry alignment. Each Marine Maintenance Technology instructor is certified in the area in which they teach and must engage in professional development each year.

In the Marine Maintenance Technology program, students divide their time between the classroom and lab facilities, and complete testing toward credentials with the following:

- American Boat & Yacht Council (**ABYC**),
- American Composites Manufacturers Association (**ACMA**),
- National Marine Electronics Association (**NMEA**)
- OSHA & Forklift
- VGI-EPA Part 608

All exams are offered on-site so students do not have to leave campus and take the exam at a 3rd party proctoring center.

Industry Organizations and Certifications offered through the SVC Marine Technology Program:

American Boat & Yacht Council (ABYC)	American Composites Manufacturers Association (ACMA)	National Marine Electronics Association (NMEA)	OSHA & Forklift	VGI – EPA Part 608
Certification students may earn via proctored exam: 1. Marine Systems 2. Marine Corrosion 3. Marine Electrical 4. Diesel Engines 5. Gasoline Engines 6. A/C Refrigeration	Certification students may earn via proctored exam: 1. Vacuum Infusion Process (VIP) Technician	Certifications students earn via proctored exam: 1. Marine Electronics Installer (MEI) 2. NMEA 2000 Technician	Certifications students may earn: 1. OSHA 10 for General Industry 2. OSHA/WISHA compliant forklift card	Certification students may earn via proctored exam: 1. EPA Part 608
ABYC is a non-profit, member organization that develops voluntary global safety standards for the design, construction, maintenance, and repair of recreational boats. Seminars, workshops and technician certification courses are instrumental in increasing the level of knowledge and professionalism throughout the boating industry. www.abycinc.org	ACMA is the voice of the composites industry, providing an opportunity for distributors, suppliers and manufacturers of all sizes to gain knowledge, influence and competitive advantage. www.acmanet.org	The NMEA is committed to enhancing the technology and safety of marine electronics through installer training and interface standards. www.nmea.org		The EPA Section 608 test measures basic knowledge of refrigerant containment laws set by the Clean Air Act.

I-R9. Signed letter from employer partners attesting that Career Launch completers will be ready for specified entry-level jobs, including an optional, non-binding commitment estimating number of Career Launch completers they plan to interview/hire over the first three years of the program.

Please see letters of support from the following at the end of the application:

- North Harbor Diesel
- NW Explorations

Academic-Related Checklist

A-R1. List of academic institution(s) providing career-aligned instruction for Career Launch program.

The academic institution providing career-aligned instruction is Skagit Valley College.

A-R2. Curriculum scope and sequence aligned to skills and competencies provided in employment checklist.

Program Learning Outcomes (PLOs) are the overarching skills and competencies that are emphasized and reinforced throughout the curriculum. They are measurable statements that define what students should know or be able to do by the end of a certificate or degree at Skagit Valley College. All Program Learning Outcomes were developed and approved by the Program Advisory Committee to guarantee alignment with industry need. Additionally, all Skagit Valley College programs meet General Education Learning Outcomes (GELOs), as required by the Northwest Commission on Colleges and Universities.

The following charts map the program curriculum with Program Learning and General Education Outcomes for the Marine Maintenance Technology Program. The Program Learning and General Education Outcomes (PLOs and GELOs) Key is listed first, followed by the program course maps for the Marine Electrical Technician Certificate, the Marine Mechanical Technician Certificate, and the Associate of Applied Science (AAS) Degree in Marine Maintenance Technology, Marine Technician.

Program Learning and General Education Learning Outcomes (PLOs and GELOs) Key:	
1	(PLO) Demonstrate mechanical and electrical skills.
2	(PLO) Develop the knowledge and proficiency necessary to pass certification exams.
3	(PLO) Exhibit safe and proficient working practices in the lab/shop environment.
4	(GELO) Produce and exchange ideas and information through written, spoken, and visual forms
5	(GELO) Apply mathematical skills quantitatively, logically, creatively, and critically.

MARINE ELECTRICAL TECHNICIAN CERTIFICATE							
20-21 Catalog					CIP: 47.0616; EPC: 736		
Program	Course Number	Title	Credits	Lecture	Lab	Clock Hours	PLOs
QUARTER 1							
MT WMATH	102 or 100	Marine Applied Mathematics OR Professional Technical Applied Math	5	55	0	55	5
MT	105	Safety, Tools, and Fastenings	3	22	22	44	3
MT	132	Marine Electrical Systems I	4	33	22	55	1, 2
MT	240	Outboard Motor Operation/Service	3	22	22	44	
CSS	103	First Quarter Experience	2	22	0	22	
		Total:	17	154	66	220	
QUARTER 2							
MT	110	Electrical Tool Fundamentals	2	11	22	33	3
MT	133	Marine Electrical Systems II	6	55	22	77	2
MT	230	Marine Electronics	3	22	22	44	2
CMST&	210	Interpersonal Communication: D	5	55	0	55	4
ENGL&	101	English Composition I	5	55	0	55	4
		Total:	21	198	66	264	
QUARTER 3							
CMPST	121	Composites Construction and Repair	3	22	22	44	
MT	134	Marine Electrical Systems III	5	44	22	66	2
MT	136	Marine Sanitation Systems, Plumbing and Pumps	5	33	44	77	2
MT	199	Cooperative Education Experience	1	0	33	33	
MT	236	Marine Electronics II	3	22	22	44	2
		Total:	17	121	143	264	
		Total Credits/Clock Hours:	55	473	275	748	

MARINE MECHANICAL TECHNICIAN CERTIFICATE							
20-21 Catalog					CIP: 47.0616; EPC: 736		
Program	Course Number	Title	Credits	Lecture	Lab	Clock Hours	PLOs
QUARTER 1							
MT WMATH	102 or 100	Marine Applied Mathematics OR Professional Technical Applied Math	5	55	0	55	5
MT	105	Safety, Tools, and Fastenings	3	22	22	44	3
MT	132	Marine Electrical Systems I	4	33	22	55	1, 2
MT	240	Outboard Motor Operation/Service	3	22	22	44	
CSS	103	First Quarter Experience	2	22	0	22	
		Total:	17	154	66	220	
QUARTER 2							
MT	112	Mechanical Tool Fundamentals	2	11	22	33	3
MT	160	Marine Engine Systems I	5	44	22	66	2
MT	161	Inboard Drivetrains	5	44	22	66	1
CMST&	210	Interpersonal Communication: D	5	55	0	55	4
ENGL&	101	English Composition I	5	55	0	55	4
		Total:	22	209	66	275	
QUARTER 3							
CMPST	121	Composites Construction and Repair	3	22	22	44	
MT	163	Marine Engine Systems II	5	44	22	66	
MT	199	Cooperative Education Experience	1	0	33	33	
MT	241	Outboard Motors II	5	44	22	66	
MT	270	Marine Hydraulic Systems	5	44	22	66	
		Total:	19	154	121	275	
Total Credits/Clock Hours:			58	517	253	770	

ASSOCIATE OF APPLIED SCIENCE (AAS)							
MARINE MAINTENANCE TECHNOLOGY - MARINE TECHNICIAN							
20-21 Catalog					CIP: 47.0616; EPC: 736		
Program	Course Number	Title	Credits	Lecture	Lab	Clock Hours	PLOs
QUARTER 1							
MT WMATH	102 or 100	Marine Applied Mathematics OR Professional Technical Applied Math	5	55	0	55	5
MT	105	Safety, Tools, and Fastenings	3	22	22	44	3
MT	132	Marine Electrical Systems I	4	33	22	55	1, 2
MT	240	Outboard Motor Operation and Service	3	22	22	44	
CSS	103	First Quarter Experience	2	22	0	22	
		Total:	17	154	66	220	
QUARTER 2							
MT MT	110 112	Electrical Tool Fundamentals OR Mechanical Tool Fundamentals	2	11	22	33	3
MT	133	Marine Electrical Systems II	6	55	22	77	2
MT	230	Marine Electronics	3	22	22	44	2
ENGL&	101	English Composition I	5	55	0	55	4
		Total:	16	143	66	209	
QUARTER 3							
CMPST	121	Composites Construction and Repair	3	22	22	44	
MT	134	Marine Electrical Systems III	5	44	22	66	2
MT	136	Marine Sanitation Systems, Plumbing and Pumps	5	33	44	77	2
MT	199	Cooperative Education Experience	1	0	33	33	
MT	236	Marine Electronics II	3	22	22	44	2
		Total:	17	121	143	264	
QUARTER 4							
MT	106	Rigging	4	33	22	55	
MT	119	OSHA 10 Training and Forklift Certification	2	11	11	22	2
MT	231	Marine Heating, Air Conditioning & Refrigeration	5	44	55	99	2
CMST&	210	Interpersonal Communication: D	5	55	0	55	4
MANF	121	First Aid and CPR	1	11	0	11	
		Total:	17	154	88	242	
QUARTER 5							
MT	160	Marine Engine Systems I	5	44	22	66	2
MT	161	Inboard Drivetrains	5	44	22	66	1
MT	204	Advanced Marine Systems	5	44	22	66	2
		Total:	15	132	66	198	
QUARTER 6							
MT	163	Marine Engine Systems II	5	44	22	66	
MT	199	Cooperative Education Experience	2	0	66	66	
MT	241	Outboard Motors II	5	44	22	66	
MT	270	Marine Hydraulic Systems	5	44	22	66	
		Total:	17	132	132	264	
		Total Credits:	99	836	561	1397	

A-R3. Demonstration of student supports (e.g. mentoring, advising, financial aid, tutoring) available for Career Launch students enrolled in the course.

There are a number of student supports provided by Skagit Valley College to Career Launch students to assist them in achieving academic success:

- **CSS 103:** Skagit Valley College has developed a First Quarter Experience course, College Success Skills 103 (CSS 103) that all new students are required to take. Students learn about college resources, meet with their advisor, and plan their course of study. By the end of the course, students have a personalized educational plan and have registered for the following quarter’s courses.
- **Academic Advisor and Mandatory Checkpoints:** At Skagit Valley College, all students are assigned an Academic Advisor who assists with academic and non-academic supports throughout their journey. SVC has also implemented mandatory advising checkpoints where students meet and plan their course of study with an advisor. These occur initially before the student enrolls in a program of study, then again during their first quarter.
- **Appreciative Advising:** Skagit Valley College has implemented the Appreciative Advising Model that supports students in a holistic manner. This is an intentional collaborative practice of asking positive, open-ended questions that help students optimize their education experiences and achieve their dreams, goals, and potentials.
- **Financial Aid:** Financial Aid is available to provide students with a variety of funding supports to help cover the cost of education expenses to include tuition, fees, books and supplies. The Financial Aid Office is available to assist students in understanding financial aid options, to include student loans, grants, work study and scholarships.

A-R4. Number of postsecondary credits provided and / or credential earned upon completion of program.

Marine Maintenance Technology Options:

- Marine Electrical Technician Certificate: 55 (748) hours)
- Marine Mechanical Technician Certificate: 58 credits (770 clock hours)
- Associate of Applied Science (AAS) Marine Technician: 99 credits (1397 clock hours)

These certificates are stackable and general courses overlap so that if a student earns one certificate they can return and earn both the second certificate and the AAS degree in only one additional year.

A-R5. Demonstrated curricular alignment with relevant professional and /or academic standards associated with coursework and credential, when applicable.

All Skagit Valley College programs meet General Education Requirements, as required by the Northwest Commission on Colleges and Universities (NWCCU):

General Education Learning Outcomes	Courses Where Assessed
Communicate. Produce and exchange ideas and information through written, spoken, and visual forms	ENGL& 101: English Composition I CMST& 210: Interpersonal Communication
Quantify. Apply mathematical skills quantitatively, logically, creatively, and critically.	MT102: Marine Applied Mathematics OR WMATH 100: Professional Technical Math

Skagit Valley College recently went through a full program review redesign, and in this process limited programs to 3 main overarching Program Learning Outcomes. These Learning Outcomes were approved by the Program Advisory Committee and must be assessed over a span of three years. The Learning Outcomes for the Marine Maintenance program and the courses they are assessed in are the following:

Marine Maintenance Program Learning Outcomes	Courses Where Assessed
Demonstrate mechanical and electrical skills	MT132: Marine Electrical Systems I MT161: Inboard Drivetrains
Develop the knowledge and proficiency necessary to pass certification exams	MT132: Marine Electrical Systems MT133: Marine Electrical Systems II MT160: Marine Engine Systems I MT230: Marine Electronics MT236: Marine Electronics II
Exhibit safe and proficient working practices in the lab/shop environment	MT105: Safety, Tools, and Fastenings MT110: Electrical Tool Fundamentals MT112: Mechanical Tool Fundamentals

Additionally, the Marine Maintenance program offers students the opportunity to sit for exams to obtain industry-recognized certifications. These certifications are aligned with the following courses:

Marine Industry Certifications	Courses Aligned
American Boat & Yacht Council (ABYC)	
1. Marine Systems	MT132: Marine Electrical Systems I MT133: Marine Electrical Systems II MT136: Marine Sanitation Systems, Plumbing and Pumps MT204: Advanced Marine Systems
2. Marine Corrosion	MT134: Marine Electrical Systems III
3. Marine Electrical	MT132: Marine Electrical Systems I MT133: Marine Electrical Systems II
4. Diesel Engines	MT160: Marine Engine Systems
5. Gasoline Engines	MT160: Marine Engine Systems
6. A/C Refrigeration	MT231: Marine Heating, Air Conditioning, and Refrigeration
American Composites Manufacturers Association (ACMA)	
1. Vacuum Infusion Process (VIP) Technician	CMPST123: Composite Vacuum Infusion/Light RTM Process
National Marine Electronics Association (NMEA)	
1. Marine Electronics Installer (MEI)	MT230: Marine Electronics I
2. NMEA 2000 Technician	MT236: Marine Electronics II
OSHA & Forklift	
1. OSHA 10 for General Industry	MT119: OSHA 10 Training and Forklift Certification
2. OSHA/WISHA compliant forklift card	MT119: OSHA 10 Training and Forklift Certification
VGI – EPA Part 608	
1. EPA Part 608	MT231: Marine Heating, Air Conditioning, and Refrigeration

A-R6. Details of potential for current or future partnerships and/or scalability of the program within and across sectors and/or geographic locations (e.g. articulation, degree pathways), when applicable.

The Marine Maintenance Technology program is exploring the possibility of expanding capacity geographically with the possibility of remote training. Through online delivery of course content and intense week-long completion of hands-on lab activities, the faculty and Program Advisory Board feels they can reach out to incumbent employees to expand skills and increase earning potential.

Additionally, this has the potential to increase partnerships with employers both regionally and in other states, as this highly sought-after training would be made available in a format that could meet the needs of current employees.

THESE LETTERS OF ENDORSEMENT ARE INCLUDED IN THE FOLLOWING PAGES:

- North Harbor Diesel
- NW Explorations
- Northwest Marine Trade Association
- Center of Excellence for Marine Manufacturing & Technology



NORTH HARBOR DIESEL & YACHT SERVICE, INC.

March 2020

Re: Skagit Valley College Marine Maintenance Technology Career Launch Endorsement

Washington State Board for Community and Technical Colleges,

North Harbor Diesel would like to offer this letter of endorsement for the Skagit Valley College Marine Maintenance Technology program for Career Launch Endorsement. We have a long standing relationship with the SVC Marine Maintenance Technology program, have been involved in their Technical Advisory Committee, and have seen many graduates become successful interns and employees for our company. We look forward to continuing our work with Skagit Valley College to build successful students and graduates in the marine trades.

North Harbor Diesel is a partner of Skagit Valley College, accepting students participating in the Cooperative Education internship during their last quarter and hiring graduates from the Marine Maintenance Technology program. The Cooperative Education piece is a mandatory work-based learning component which provides on-the-job paid experience. Supervisors and students outline specific goals that must be met by the end of the internship and through hands-on work experience complete these objectives. Students earn comparable industry wages, college credit, and work experience under the guidance of experienced industry workers who provide mentorship and supervision. We work closely with SVC to ensure that students are trained and adhere to federal, state, and local regulations covering the work and the workplace.

Being closely tied to the Marine Maintenance program at Skagit Valley College, we are familiar with the curriculum and rigorous standards the students meet. The curriculum aligns with industry needs and standards and incorporates industry certifications; all of the students we have experience with had earned ABYC (American Boat and Yacht Council) certification. We are confident that students graduating from the program are prepared for at minimum, entry-level work in in-demand positions. We are prepared to offer graduates who meet our employment qualifications, interviews and potential employment based on our hiring needs.

We value Skagit Valley College as an industry partner and believe the Marine Maintenance Technology program would be ideal for Career Launch Endorsement. Thank you for your consideration; please let us know if you have any questions.

Dianna Chonka
CEO/General Manager



March 10, 2020

Re: Skagit Valley College Marine Maintenance Technology Program Career Launch Endorsement

Washington State Board for Community and Technical Colleges.

NW Explorations would like to offer this letter of endorsement for the Skagit Valley College Marine Maintenance Technology program for Career Launch Endorsement. We have been involved with SVC for many years working with students and participating on their TAC (Technical Advisory Committee). Our company works each year with highly qualified interns and has hired many of the graduates to work at our company. We are committed to continuing to partner with Skagit Valley College to foster this program and support students and graduates.


NW Explorations participates in work based learning during the final quarter of the program under the MT199 Cooperative Education course. Students initiate an interest in our company, sit for an interview, and are hired on by our company. They are also required to provide necessary documentation before starting on the job and agree to a work schedule.

Students who participate in our work based learning experience earn competitive wages, college credit, and valuable work experience when working side by side with an experienced marine technician who provides guidance and supervision. Supervisors and students outline specific goals that must be met by the end of the internship and through hands on work experience, complete these objectives. Our lead technicians focus on making sure the students are following our industry standards and best practices they learned during the course work at SVC. We work closely with SVC to ensure that students are trained and adhere to federal, state, and local regulations covering the work and the workplace.

Being closely tied to the Marine Maintenance program at Skagit Valley College, we are familiar with the curriculum and rigorous standards the students meet. The curriculum aligns with industry needs and standards and incorporates industry certifications. As demonstrated by the high percentage of employees we have that are former graduates, and our involvement on the TAC, it is clear we support this program and the quality and preparedness of the students. All of the students we have experience with have earned ABYC (American Boat and Yacht Council) certification and are qualified for employment in this high demand field. We are always prepared to offer graduates of the program interviews and potential employment in the marine trades.

Thank you for considering Skagit Valley College's Marine Maintenance Technology program for Career Launch endorsement! Please feel free to follow up if there are any remaining questions.

Sincerely,



John Nassichuk
General Manager

WWW.NWEXPLORATIONS.COM
2825 S. HARBOR ROAD | BELLINGHAM, WA 98225
OFFICE: 360.676.1248 | 800.826.1430 | FACSIMILE: 360.676.9059



March 2020

Re: Skagit Valley College Marine Maintenance Technology Program Career Launch Endorsement

To the SBCTC Career Launch Endorsement Committee,

The Northwest Marine Trade Association (NMTA) is pleased to support the Skagit Valley College Career Endorsement application for the Marine Maintenance Technology program. The combination of rigorous, career-aligned curriculum, certified instructors preparing students for industry-standard certifications, and on-site work-based learning is evidence that SVC's Marine Maintenance Technology program provides highly qualified, certified employees for in-demand positions within the marine industry.

The Northwest Marine Trade Association is the country's largest regional marine association. With a membership exceeding 700 companies, we are familiar with the region's industry needs. The Marine Maintenance Technology program at SVC provides comprehensive training unlike any other program in the area. Many of our members partner with the program for work-based learning and hire their students upon graduation for much-needed specialty positions.

To further support Skagit Valley College's Marine Maintenance Technology Career Launch Endorsement application, our Association commits to the following:

- Expanding the employer knowledge of and participation in the program
- Supporting policies and initiatives that promote and grow the Marine Maintenance Career Launch mission
- Continued partnership of curriculum alignment with industry standards

We fully recommend the Marine Maintenance Technology program at Skagit Valley College for Career Launch Endorsement and look forward to continuing our close partnership into the future.

A handwritten signature in black ink, appearing to read "Peter Schrappen".

Peter Schrappen
Director of Government Affairs
Northwest Marine Trade Association
1900 N Northlake Way, #233
Seattle, WA 98103
O: (206) 634-0911F: (206) 632-0078
E: peter@nmta.net

April 15, 2020

Re: Skagit Valley College Marine Maintenance Technology Program Career Launch Endorsement

To: The SBCTC Career Launch Endorsement Committee,

The Northwest Center of Excellence for Marine Manufacturing & Technology (Center) is pleased to offer this letter of support and commitment to the Skagit Valley College Career Endorsement application for the Marine Maintenance Technology Program. The combination of industry standards based, rigorous, career-aligned curriculum, certified instructors preparing students for industry-standard certifications, and on-site work-based learning demonstrates that the Marine Maintenance Technology Program provides highly qualified, certified employees for in-demand positions within the marine industry.

The Center works with industry, labor, association and education partners throughout the State of Washington, and is uniquely positioned to understand the breadth and scope of the industry wide need for employees with technical competencies. The Marine Maintenance Technology Program at Skagit Valley College provides comprehensive training unlike any other program in the state and region, providing highly contextualized education and training specifically tailored to the needs of the marine industry in Washington State. The program is notable for its affiliation with the Marine League of Schools, a national consortium of marine technology education providers, all adhering to standards-based education and learning. This designation sets the Marine Maintenance Technology Program apart and affords students access to a very competitive program, preparing them to enter the industry equipped with the technical skills and knowledge employers demand.

To further support Skagit Valley College's Marine Maintenance Technology Career Launch Endorsement application, the Center commits to the following:

- Expanding the employer knowledge of and participation in the program.
- Facilitating professional development access for faculty and students.
- Supporting policies and initiatives that promote and grow the Marine Maintenance Career Launch mission.
- Continued partnership of curriculum alignment with industry standards.

The Center enthusiastically recommends the Marine Maintenance Technology program at Skagit Valley College for Career Launch Endorsement and looks forward to continuing the partnership with program into the future.

Respectfully,



Ann Avary
Director, Northwest Center of Excellence for Marine Manufacturing & Technology