



Office of the President

August 31, 2017

Michael J. Kiphart, Ph.D.
Director of Academic Affairs
Maryland Higher Education Commission
6 N. Liberty Street
Baltimore, MD 21201

Dear Dr. Kiphart:

I am forwarding the following new academic program for Commission review:

Maritime Operations Technology, AAS

This degree was the result of a need expressed by the Seafarers Harry Lundberg School of Seamanship. It will give the students both theoretical and practical experience in the needs of seamanship in one of two options for the program: Nautical Science and Marine Engineering.

This submission has been thoroughly reviewed within the college and approved by the Board of Trustees. If further information is required, please contact Dr. Eileen Abel, Vice President of Academic Affairs (301) 934-7846.

Sincerely,

Maureen Murphy, Ph.D.
President

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Office of the President
Center for Business and Industry, Room 204
8730 Mitchell Road, PO Box 910, La Plata MD 20646-0910
301-934-7625 • www.csmd.edu

MARYLAND HIGHER EDUCATION COMMISSION

ACADEMIC PROGRAM PROPOSAL

PROPOSAL FOR:

NEW INSTRUCTIONAL PROGRAM
SUBSTANTIAL EXPANSION/MAJOR MODIFICATION
COOPERATIVE DEGREE PROGRAM
WITHIN EXISTING RESOURCES or REQUIRING NEW RESOURCES

(For each proposed program, attach a separate cover page. For example, two cover pages would accompany a proposal for a degree program and a certificate program.)

College of Southern Maryland

Institution Submitting the proposal

Spring 2018

Projected Implementation Date

AAS

Award to be offered

To be determined by
MHEC due to no other
program in MD

Suggested HEGIS Code

Maritime Operations Technology

Title of Proposed Program

15.9999

Suggested CIP Code

Division of Academic Affairs

Department of Proposed Program

Dr. Eileen Abel

Name of Department Head

Robert Farinelli

Contact Name

rfarinelli@csm.edu

Contact E-mail Address

301-934-7655

Contact Phone Number

Signature and Date

President/Chief Executive Approval

Maureen Murphy 9/8/17

3-16-2017

Date Endorsed/Approved by Governing Board

A. Centrality to mission and planning priorities, relationship to the program emphasis as outlined in the mission statements, and an institutional priority for program development;

The College of Southern Maryland (CSM) meets the diverse needs of students and the community by providing accessible, accredited, affordable, and quality learning opportunities for intellectual development, career enhancement, and personal growth. In accomplishing the mission, the institutional strategic plan includes several goals related specifically to workforce preparation and development, which charges CSM with effectively addressing the life-long educational, workforce development, and cultural needs of Southern Maryland. In efforts to meet this goal, the college has established a strategic objective to develop and administer academic career programs and courses that meet the educational needs of the Southern Maryland/Washington Metropolitan area. In the current CSM strategic plan, the first goal states that “CSM provides the Southern Maryland community with programs and services that meet its educational, workforce and cultural needs.” An objective of this strategic goal is that CSM will expand and strengthen partnerships with government, business, and non-profit sectors. This new AAS program will meet the needs of those choosing a career in maritime operations as well as meeting the workforce needs of the Seafarers International Union at the Harry Lundeberg School of Seamanship.

B. Critical and compelling regional or Statewide need as identified in the State Plan;

This new program directly supports the mission of the College of Southern Maryland by helping students to meet their career goals. This degree will reflect the advancement and evolution of knowledge in that it will enable students to prepare for variety of opportunities in a maritime career including management positions, supervisory roles and future licensed masters and engineers

This degree was the result of a need expressed by the Seafarers Harry Lundeberg School of Seamanship (SHLSS). It will give the students both theoretical and practical experience in the needs of seamanship in one of two options for the program: Nautical Science Technology and Marine Engineering Technology.

Specifically, this program addresses Goals 2 and 5 in the MD State Plan. Goal 2 addresses the issue of Access, Affordability, and Completion. This program will allow individuals who complete the unlicensed apprentice program at the SHLSS to complete their associate degree. In essence, it provides access for many students to complete a credential who might not otherwise have this opportunity. In many cases, these students will be first-generation and minority students.

Goal 5 addresses Economic Growth and Vitality. This program will provide experienced seafarers, who have the necessary sea-time, the opportunity to advance in their professional skills, keep pace with changes in the maritime industry and increase their earning potential. The program will also keep students abreast of changing technology. Clearly today’s modern automated vessel, which costs millions of dollars cannot be entrusted to an unskilled non-professional. This program will allow modern vessels to be staffed by well-trained maritime professionals.

C. Quantifiable and reliable evidence and documentation of market supply and demand in the region and service area;

This program compliments the existing programs of the college and allows another venue for students to pursue their education as well as becoming prepared for a very specific career. The need for this program was brought to the college by the administrators at the Seafarers International Union. There is a need for highly trained individuals in both options of this program and this would fill need demonstrated by community employer. In the past, this need had been filled by a for-profit institution that had not been responsive and did not deliver on the necessary courses and curricula.

There are currently 370 students in the Unlicensed Apprenticeship Program at SHLSS. Many of these student have not had access to post-secondary education. This degree program will broaden their world view, improve their written and oral communication, and develop critical thinking skills. These attributes will greatly contribute to their professional success as future licensed masters and engineers as well as prepare them for management positions within the shipping industry.

U.S. Department of Labor indicates projected employment for individuals engaged in supervising, operating and maintaining equipment aboard a ship will grow 8% through 2024 creating a projected 350 job openings.

It is anticipated that there will be 20 graduates the first year of the program and a 5% increase each year afterwards.

D. Reasonableness of program duplication, if any;

No other program exists at any other community college within the state. There are similar programs in other areas of the country – New York (Kingsborough CC), Maine (Maine Maritime Academy), Virginia (Tidewater CC), North Carolina (Cape Fear CC), Louisiana (Northshore Technical CC), and Washington (Seattle Central CC). The SHLSS houses the largest training facility for deep-sea merchant seafarers and inland waterway mariners in the United States.

E. Relevance to the implementation or maintenance of high-demand programs at HBIs;

It is not anticipated that this program will have an impact on HBIs.

F. Relevance to the support of the uniqueness and institutional identities and missions of HBIs;

It is not anticipated that this program will have an impact on HBIs.

G. Adequacy of curriculum design and delivery to related learning outcomes consistent with Regulation .10 of this chapter;

There are two options in this degree program: Nautical Science Technology Option and Marine Engineering Technology Option. The Nautical Sciences Technology Option gives students the theoretical and practical background necessary to work on the deck and in the wheelhouse of today's modern vessels. The Marine Engineering Technology Option is designed to give students both the theoretical and practical background necessary to work in the engine rooms of today's modern vessels.

Students eligible for this program must have completed all the required technical courses at SHLSS, graduated from the Unlicensed Apprenticeship program and be members of the Seafarers International Union.

Technical courses adhere to United States Coast Guard regulations. Credits for the technical courses will be transferred to CSM based on the recommendation of the American Council of Education as published in the current addition of the National Guide to Education Credit for Training Programs. These credits will be posted on CSM records as Maritime Operations Technology (MOT) courses. The course transfer specifications are indicated with the course descriptions. In addition to the technical courses offered, students complete general education courses designed to develop skills in written and oral communication, managing personnel, and scientific and quantitative reasoning. Students who choose this curriculum should recognize that some of the technical courses may not transfer to most four-year colleges.

Maritime Operations Technology, AAS

General education

Course number and name	Credits
ENG-1010 English Composition	3 credits English Composition
Arts General Education	3 credits Arts/Humanities
PHY-1010 Fundamentals of Physics I or ENV-1300 Environmental Science	3 credits Biological/Physical Sciences
MTH-1012 Mathematics for Technologies	3 credits Mathematics
POL-2020 International Relations	3 credits Social Behavioral Sciences
COM-1350 Intercultural Communication	3 credits Humanities
General Education Credit Total: 18	

Major requirements

	1 credit PHY-1010L Fundamentals of Physics I Lab or ENV-1300L Environmental Science Lab 4 credits MTH-1011 Mathematics for Technologies I 3 credits COM-1450 Groups, Teams and Leadership 4 credits PHY-1020 Fundamentals of Physics II and PHY-1020L Fundamentals of Physics Lab, or ELT-1010 DC Electronics and ELT-1020 AC Electronics
Major credit total: 12	

Nautical Science Technology Concentration

Required courses offered at the Harry S. Lundeberg School of Seamanship

Credits for the technical courses will be transferred into the college based upon the recommendation of the American Council of Education as published in the current edition of the National Guide to Education Credit for Training Programs.

1 credit MOT 1010 – Shipboard Sanitation 2 credits MOT 1015 – Vessel Familiarization 2 credits MOT 1020 – Basic Firefighting 2 credits MOT 1021 – Water Survival 1 credit MOT 1030 – Galley Familiarization 1 credit MOT 1031 – First Aid and CPR 1 credit MOT 1032 – Physical Conditioning for the Mariner 3 credits MOT 1040 – Tanker Familiarization 2 credits MOT 1050 – Vessel Maintenance and Operations 1 credit MOT 2100 – Automatic Radar Plotting Aids 4 credits MOT 2200 – Ratings Forming Part of a Navigational Watch 4 credits MOT 2300 – Able Seafarer – Deck 2 credits MOT 2320 – Advanced Fire Fighting 2 credits MOT 2380 – Radar Observer 2 credits MOT 2400 – Global Maritime Distress & Safety System
Concentration credit total: 30

Program credit total: 60

Maritime Operations Technology, AAS

General education

Course number and name	Credits
ENG-1010 English Composition	3 credits English Composition
Arts General Education	3 credits Arts/Humanities
PHY-1010 Fundamentals of Physics I	3 credits Biological/Physical Sciences
MTH-1012 Mathematics for Technologies	3 credits Mathematics
POL-2020 International Relations	3 credits Social Behavioral Sciences
COM-1350 Intercultural Communication	3 credits Humanities
General Education Credit Total: 18	

Major requirements

	1 credit PHY-1010L Fundamentals of Physics I Lab 4 credits MTH-1011 Mathematics for Technologies I 3 credits COM-1450 Groups, Teams and Leadership 4 credits PHY-1020 Fundamentals of Physics II and PHY-1020L Fundamentals of Physics Lab, or ELT-1010 DC Electronics and ELT-1020 AC Electronics <p align="right">Major credit total: 12</p>
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Maritime Engineering Technology Concentration

Required courses offered at the Harry S. Lundeberg School of Seamanship

Credits for the technical courses will be transferred into the college based upon the recommendation of the American Council of Education as published in the current edition of the National Guide to Education Credit for Training Programs.

	Select 30 credits from the following course list: 1 credit MOT 1010* – Shipboard Sanitation 2 credits MOT 1015 – Vessel Familiarization 2 credits MOT 1020 – Basic Firefighting 2 credits MOT 1021 – Water Survival 2 credits MOT 1030 – Galley Familiarization 3 credits MOT 1040 – Tanker Familiarization 2 credits MOT 1050 – Vessel Maintenance and Operations 12 credits MOT 2310 – FOWT 9 credits MOT 2340 – Junior Engineer <p align="right">Concentration credit total: 30</p>
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Program credit total: 60

Program Description:

This program is offered through a partnership between the College of Southern Maryland, which provides the general education courses, and the Seafarers Harry Lundberg School of Seamanship (SHLSS) which provides the technical courses. Individuals must be members of the Seafarers International Union at the Harry Lundberg School of Seamanship. Successful students will be prepared for variety of [career opportunities](#) in a maritime career.

There are two options in this degree program: Nautical Science Technology Option and Marine Engineering Technology Option. The Nautical Sciences Option gives students the theoretical and practical background necessary to work on the deck and in the wheelhouse of today's modern vessels. The Marine Engineering Technology Option is designed to give students both the theoretical and practical background necessary to work in the engine rooms of today's modern vessels.

Technical courses adhere to United States Coast Guard regulations. In addition to the technical courses offered, students complete general education courses designed to develop skills in written and oral communication, managing personnel, and scientific and quantitative reasoning.

Students who choose this curriculum should recognize that some of the technical courses may not transfer to most four-year colleges. Credits for the technical courses will be transferred into the college based upon the recommendation of the American Council of Education as published in the current edition of the National Guide to Education Credit for Training Programs.

Students will need to apply to the Seafarers Union program and complete the Unlicensed Apprenticeship Program at SHLSS. Students can enter the CSM program upon completion of the technical training courses at SHLSS.

The maximum number of credits accepted in transfer from other institutions to this program is 45; however these 45 credits must include 30 of the technical training courses listed below for either of the two options.

PROGRAM OUTCOMES:

1. Provide seafarers with a deep sea and inland waterways maritime knowledge and skills.
2. Demonstrate the ability to repair, maintain, and service key systems on U.S. flag ships or tugs, and towboats.
3. Improve modern technical skills needed in today's water transport industries.
4. Determine how a system should work and how changes in conditions, operations and the environment will affect outcomes using scientific rules and methods to solve problems.
5. Generate or adapt equipment and technology to serve users' needs.
6. Plan, design, and present projects that include tasks performed within all areas of the maritime environment.

College of Southern Maryland Course Descriptions:

ENG-1010 - COMPOSITION AND RHETORIC* (3)

Prerequisite: ENG 0900; and RDG 0800 or FYS 1010T; or placement

Students in this course complete their first semester college-level composition course. Students focus on planning, organizing, and developing a variety of argumentative compositions. Students practice the conventions of written Standard American English, gain information literacy skills, and learn research and documentation techniques including conducting online and print research and documenting sources. By the end of the semester, students demonstrate their ability to write a unified and coherent argument-based essay of about one thousand words that incorporates research and is nearly free of grammatical, mechanical, and structural errors. Students should refer to the schedule of classes for sections of this course taught in a computer lab. Students must pay an additional lab fee when taking this course in a computer-assisted classroom. Students may earn credit for this course through CLEP or Advanced Placement Examination. A minimum grade of "C" is required to pass the course.

COM-1350 - INTERCULTURAL COMMUNICATION* (3)

Prerequisite: ENG 0900 and RDG 0800 or FYS 1010T

Students learn the theories of intercultural communication and the skills that allow for effective communication with diverse cultures. Units may include understanding diversity, perception, nonverbal communication, and intercultural communication in the workplace.

COM-1450 - GROUPS, TEAMS, AND LEADERSHIP* (3)

Prerequisite: ENG 0900 and RDG 0800 or FYS 1010T

Students learn leadership skills by working in teams to design and complete group projects. Students learn to plan, conduct, and participate in meetings. Student work includes working in groups outside of class, participating in service learning projects, and observing public groups and meetings.

MTH-1011 - MATHEMATICS FOR TECHNOLOGIES I* (4)

Prerequisite: MTH 0950 or higher

This is a course for Engineering Technology majors. Topics include solution of equations, formula transformations, systems of equations, coordinate geometry, and an introduction to trigonometry.

MTH-1012 - MATHEMATICS FOR TECHNOLOGIES II* (3)

Prerequisite: MTH 1011

This course is a continuation of MTH 1011. Topics include functions and graphs, vectors, oblique triangles, exponential and logarithmic functions, complex numbers and conic sections.

POL-2020 - INTERNATIONAL RELATIONS (3)

Students examine the major factors underlying international relations, the methods of conducting foreign relations, the foreign policies of the major powers, and the means of avoiding or alleviating international conflicts.

PHY-1010 - FUNDAMENTALS OF PHYSICS I* (3)

Prerequisite: MTH 0970

This algebra based physics course is the first of a two-semester sequence in general physics treating the fields of mechanics, heat, sound, electricity, magnetism, optics and modern physics. Together with PHY 1020 and PHY 1010L/PHY 1020L this generally satisfies the minimum requirement for medical and dental schools.

PHY-1010L - FUNDAMENTALS OF PHYSICS I - LAB* (1)

Co-requisite: PHY 1010

Lab work includes experiments on vectors, equilibrium forces, motion, energy, momentum, properties of materials, oscillating motion, and heat.

Course Fee: \$45

PHY-1020 - FUNDAMENTAL OF PHYSICS II* (3)

Prerequisite: PHY 1010 PHY 1010L

This algebra based physics course is a continuation of PHY 1010 which together with it and PHY 1010L/PHY 1020L generally satisfies the minimum requirement for medical and dental schools.

PHY-1020L - FUNDAMENTALS OF PHYSICS II - LAB* (1)

Co-requisite: PHY 1020

Lab work includes experiments on electricity, magnetism, optics and modern physics.

Course Fee: \$45

ENV-1300 - ENVIRONMENTAL SCIENCE* (3)

Prerequisite: RDG 0800 or FYS 1010T

Students apply concepts of matter, energy, and ecosystem science to understanding the impact of man on the global environment. Topics covered include air and water pollution, population growth, resource management, power generation, waste disposal, and species diversity.

ENV-1300L - ENVIRONMENTAL SCIENCE LAB* (1)

Co-requisite: ENV 1300

Students are provided with additional experience in topics covered in ENV 1300. Field trips, lab exercises, and special projects give the students first hand exposure to some environmental issues and problems. This course is web-based allowing the students a maximum of interactions and access to resources.

ELT-1010 - DC ELECTRONICS* (3)

Co-requisite: MTH 1011

This beginning course in electronics covers the topics of DC fundamentals, including Ohm's Law, series and parallel circuit analysis, circuit theorems and conversions, and DC generators and motors. The student uses the lab extensively to learn the operation of electronic test equipment including the oscilloscope, function generator and multimeter.

Course Fee: \$60

ELT-1020 - AC ELECTRONICS* (3)

Prerequisite: ELT 1010

Co-requisite: MTH 1012

This course is a continuation of the topics of basic electronics covering topics of AC fundamentals including capacitors, inductors, transformers, tuned circuits, passive filters, and AC circuit theorems. The student uses the lab extensively to complete hands-on lab activities in the study of AC electronics.

Course Fee: \$60

Harry S. Lundberg School of Seamanship Course Descriptions:

Shipboard Sanitation

FSM 101

1 Credit

This course is a module within the Unlicensed Apprentice Program and provides basic sanitation knowledge and the skills required for an entry position. Emphasis is placed on awareness of hazards, shipboard sanitation products and equipment, and duties of the steward department.

Length of Course: 20 Hours

CSM will award transfer credit for MOT-1010 Shipboard Sanitation

Galley Familiarization

FSM 103

1 Credit

This course provides awareness and familiarization with galley equipment and utensils in preparation for shipboard operations in the steward department. This course is in the Unlicensed Apprentice Program.

Length of Course: 20 Hours

CSM will award transfer credit for MOT-1030 Gallery Familiarization

First Aid and Cardio-Pulmonary Resuscitation (CPR)

HTS 103

1 Credit

SHLSOS – 197

The object of the First Aid and Cardio-Pulmonary Resuscitation course is to provide students with general understanding and basic knowledge of the immediate actions required when encountering an accident or medical emergency. Those satisfactorily completing the course and examination are awarded the American Safety and Health Institute First Aid and Cardio-Pulmonary Resuscitation (CPR) Certificate.

Topics covered in the course include responding to an emergency, emergency planning, breathing emergencies, heart attacks, adult CPR and first aid. This course meets CFR and STCW standards for elementary first aid as set forth in Table A-VI/1-3.

Length of Course: 21 Hours

CSM will award transfer credit for MOT-1031 First Aid and CPR

Basic Firefighting

HTS 102

2 Credits

SHLSOS – 57

The object of this course is to familiarize the student with chemical process of fire, its behavior and the various methods and equipment used to combat it. It meets the requirements of STCW, Table A-VI/1-2, 46 CFR 10.205 (1) (2), 46CFR 10.205 (g) and CFR requirements for

firefighting-tankerman. The curriculum includes the theory of fire, fire prevention, heat transfer, types and sources of ignition, spread of fire, classification of fire, fire detection systems, fire extinguishing agents and methods, and fire extinguishing systems. Instruction also including firefighting tools, personal equipment, breathing apparatus, organization of the fire parties, and emergency procedures. A moderate amount of physical exertion is required during this course. Instruction is held at the Joseph Sacco Firefighting and Safety School.

Length of Course: 35 Hours

CSM will award transfer credit for MOT-1020 Basic Firefighting

Water Survival

MST 102

2 Credits

SHLSOS – 549

Water Survival is a 10-day course that provides the knowledge and skills for water survival, including launch, use and recovery of survival craft, the proper use of survival equipment and procedures necessary to take charge of the maintain a survival craft and protect embark personnel. This course satisfies the training requirements of STCW, Table A-VI/2-1 and 46 CFR 12.407(b)(3) and 12.409(a)(5) when required sea-time is met. A moderate amount of physical exertion is required during this course.

Length of Course: 60 Hours

CSM will award transfer credit for MOT-1021 Water Survival

Vessel Maintenance and Operations

NST 105

2 Credits

SHLSOS – 732

The Vessel Maintenance and Operations module is a part of the UA Program. The objectives of the course are to provide the knowledge and skills required for the entry-level ordinary seaman, wiper or steward assistant. In this module, emphasis is placed on vessel safety, basic marlinespike seamanship, basic deck operations and maintenance, tools and equipment, basic engine operation and maintenance, fueling operations, painting and coating, and bridge operations and watchkeeping.

Length of Course: 47 Hours

CSM will award transfer credit for MOT-1050 Vessel Maintenance and Operations

Physical Education

PED 101

1 Credit

*PED 1011 Physical Education
or Exercise and Nutrition*

Physical Education for UAs prepares students for the physically demanding work environment aboard ship. It emphasizes calisthenics, cardiovascular and strength training, nutrition, training safety, and personal performance improvements.

Length of Course: 30 Hours

CSM will award transfer credit for MOT-1032 Physical Conditioning for the Mariner

Vessel Familiarization

NST 10

2 Credits

SHLSOS – 540

The Vessel Familiarization course provides students with the required knowledge, understanding, and skills for the entry-level ordinary seaman, wiper, and steward assistant. The course emphasizes shipboard and industry organization, safety, departmental responsibilities, basic seamanship, and vessel familiarization.

Topics in the course include the shipping industry, basic seamanship, shipboard organization, personal safety and responsibility, vessel operations and maintenance, and emergency and disaster planning. Meets regulations of 46 CFR 15.1105(a) and Regulations I/1 and VIII/1 of STCW.

Length of Course: 61 Hours

CSM will award transfer credit for MOT-1015 Vessel Familiarization

Able Seafarer-Deck

NST 223

4 Credits

SHLSOS – 731

Length of Course: 120 hours

Students will be able to perform functions at the support level as specified in table A-II/5: contribute to navigation, cargo handling and stowage, controlling the operation of the ship and care for persons on board, and contribute to maintenance as well as repair, all at the support level. Meets competency requirements of 46 CFR 12.603(a)(4).

Prerequisites:

Must hold Rating Forming Part of a Navigational Watch (RFPNW), Lifeboatman and have 540 days sailing in the deck department.

CSM will award transfer credit for MOT-2300 Able Seafarer- Deck

Automatic Radar Plotting Aids (ARPA)

NST 234

1 Credit

SHLSOS – 37

Length of Course: 32 hours

This course satisfies the ARPA training requirements for certification as Officer in Charge of a Navigational Watch of 500 GT or more. Students use ARPA simulation equipment to operate, observe, and use the radar plotting aids. In this course students gain an understanding of the limitations of the aids as well as their performance factors, sensor inputs and malfunctions, and gain knowledge of tracking capabilities, processing, operational warnings, and target acquisition.

Prerequisite:

Radar Observer

CSM will award transfer credit for MOT-2100 Automatic Radar Plotting Aids

Global Maritime Distress & Safety System

NST 236

2 Credits

SHLSOS – 210

Length of Course: 70 hours

This course includes topics on the principles of the global marine distress and safety system communications, distress alerting, and operational procedures for VHF DSC, INMARST, MF/HF, NAVTEX, EPIRB, SART, and VHF (SCT). The course blends classroom instruction and practical exercises. Meets requirements of STCW Table A-IV/2.

Prerequisites:

Deck and engine officers or someone who intends to become an officer with the qualifying seetime or AB with one year seetime. QMED-Any Rating with seetime as an electrician

CSM will award transfer credit for MOT-2400 Global Maritime Distress and Safety System

Radar Observer Unlimited

NST 231

2 Credits

SHLSOS – 399

Length of Course: 10 days

This course features hands-on training and classroom work, including radar theory, observation, operation and use, interpretation and plotting, advanced radar plotting, collision avoidance and navigational exercise. Students operate modern audio-visual and radar simulation gear as they practice controlling and maneuvering a vessel, plotting courses and safely guiding a ship without jeopardizing the safety of other vessels. Also included are practical exercises and lectures covering inland waterway and river navigation and piloting. Meets radar training requirements of STCW Table A-II/1.

Prerequisites:

Must be rated with one year as Able Seaman

CSM will award transfer credit for MOT-2380 Radar Observer

Ratings Forming Part of a Navigational Watch

NST 220

4 Credits

SHLSOS – 408

Length of Course: 20 days

The objective of this course is to train students involved in navigation at the support level. To prepare for this role, they will learn to steer the ship and also comply with helm orders in the English language. They will learn to keep a proper look-out by sight and hearing, contribute to monitoring and controlling a safe watch, learn Rules of the Road, operate emergency equipment, apply emergency procedures, and contribute to the handling of cargo and stores. Meets requirements of STCW Table A-II/4.

Prerequisites:

**Completion of Phase II of UA program or 360 days
of sea service in deck department and Lifeboat**

CSM will award transfer credit for MOT-2200 Ratings Forming Part of a Navigational Watch

Advanced Fire Fighting

HTS 104

2 Credits

SHLSOS – 15

Length of Course: 35 hours

During this course, students learn to read a blueprint of a vessel and organize emergency squads for firefighting. The class covers effective communication between crew members and land-based fire units, leadership roles and responsibilities, documentation of crew training, and emergency squad training. Students also learn to inspect and service personal shipboard fire extinguishing equipment before going through shipboard simulations and actual firefighting drills. Meets training requirements of STCW A-VI/3 and 46 CFR 11.303 and 11.205(d).

Prerequisite:

Must be rated

CSM will award transfer credit for MOT-2320 Advanced Fire Fighting

Tank Ship Familiarization (DL/LG)

MST 104

3 Credits

SHLSOS – 506

Length of Course: 67 hours

This course applies to officers and ratings assigned specific duties and responsibilities related to cargo or cargo equipment on liquefied gas tankers and/or oil or chemical tankers. This course also applies to officers, ratings and other personnel on ships subject to the IGC/IGF code. Satisfies 46 CFR 13.401(c)(1) for endorsement as Tankerman Assistant-DL and STCW A-V/1-1-1 for endorsement for Basic Oil and Chemical Tanker Cargo Operations.

Prerequisite:

Basic Firefighting within 5 years

CSM will award transfer credit for MOT-1040 Tanker Familiarization

Basic Electricity

MTE 3401

SHLSOS – 52

Length of Course: 70 hours

This course provides the mariner with basic electrical skills required of a rated member of the engine department. Topics include the fundamentals of electricity, electrical safety, batteries, direct current circuits, alternating current theory, D.C. machines, A.C. machines, motor controllers, distribution systems, propulsion systems and communication systems.

Prerequisites:

Must hold RFPEW. If have AS-E must show 120 days sailing in engine department after FOWT. If don't hold AS-E must show 180 days sailing after FOWT in engine department. This course is part of the JE class.

CSM will award transfer credit for MOT-2340 Junior Engineer

Basic Refrigeration & Heating, Ventilation, and Air Conditioning (HVAC)

MTE 3402

SHLSOS – 64

Length of Course: 70 hours

This course provides the mariner the cognitive and practical mechanical skills required of rated engine department personnel in the area of Basic Refrigeration and HVAC as they sail in the capacity of Junior Engineer. Proficiency and competency assessments are conducted through knowledge-based written tests and practical demonstrations of skills. Areas covered are electrical and refrigeration safety, refrigeration theory, an introduction to the refrigeration cycle and systems, troubleshooting, and an introduction to HVAC systems.

Prerequisites:

Must hold RFPEW. If have AS-E must show 120 days sailing in engine department after FOWT. If don't hold AS-E must show 180 days sailing after FOWT in engine department. This course is part of the JE class.

CSM will award transfer credit for MOT-2340 Junior Engineer

Basic Auxiliary Plant Operations

MTE 2311

SHLSOS – 51

Length of Course: 140 hours

This course provides students with knowledge and practical operational skills required of rated engine department watchstanders as they sail in the capacity of FOWT. Areas covered are basic mechanics, thermodynamics, piping system hardware, hydraulics and pneumatics, basic electricity, engineering materials, basic machinery, fire protection systems and miscellaneous systems.

Prerequisites:

90 days seetime in engine department

CSM will award transfer credit for MOT-2310 FOWT

Basic Steam Plant Operations

MTE 2312

SHLSOS – 73

Length of Course: 70 hours

Areas covered are the steam and water cycle, steam thermodynamics, and boiler water chemistry and treatment. Additionally, steam plant simulator operations, casualty control procedures, burner atomizer maintenance, manual light-off of non-automated boilers, and watch keeping and conducting machinery space rounds are covered.

Prerequisites:

Must have BAPO within the past year or RFPEW and 180 days engine seatime. This is part of the FOWT class and must be taken in conjunction with Basic Motor Plant.

CSM will award transfer credit for MOT-2310 FOWT

H. Adequacy of any articulation;

Currently, there are no articulation agreements for this program. The general education courses will transfer within the state; however, some of the technical courses may not transfer to most four-year colleges. There are related four-year bachelor’s degree programs outside the state – Northwestern Michigan College, SUNY Maritime College, College of the Atlantic (ME), Memorial University of Newfoundland (Canada) and several colleges in California.

I. Adequacy of faculty resources consistent with Regulation .11 of this chapter;

Faculty in the mathematics and science departments all have significant professional and instructional experience. From semester to semester, the exact courses each faculty member teaches may change. In addition, a pool of adjunct faculty supplement those teaching in many areas of general education.

Name	Degree	Rank	Discipline
James Cleary	MA	Associate Professor	Mathematics
Joshua Grosek	MA	Assistant Professor	Mathematics
Sarah Hand	MS	Assistant Professor	Mathematics
Steven Hundert	MA	Professor	Mathematics
Stephanie McCaslin	PhD	Professor	Mathematics
Sandra Poinsett	M Ed	Professor	Mathematics
Elizabeth Rourke	M Ed	Professor	Mathematics
Fred Russell	MS	Professor	Mathematics
Eleazer Ekwue	PhD	Professor	Physics
Donald Smith	MS	Professor	Physics
Byron Brezina	MS	Assistant Professor	Engineering Technology
Dale Rausch	MS	Adjunct Faculty	Maritime Operations
Michael Loughran	MS	Adjunct Faculty	Maritime Operations

J. Adequacy of library resources consistent with regulation .12 of this chapter

No new library holdings will need to be purchased for this program. Currently, the library loan mechanisms and electronic data retrieval methods can be utilized. The library exceeds state and national standard for community, junior, and technical college learning resource programs. There are several librarians who may be contacted for bibliographical searches and for the purchase of discipline-specific material.

**K. Adequacy of physical facilities, infrastructure, and instructional equipment
consistent with Regulation .13 of this chapter;**

Classrooms, facilities, and laboratories on campus currently support all of the courses for the proposed program and no additional facilities are needed. Some technical courses will be offered at the Seafarers Harry Lundberg School of Seamanship.

**L. Adequacy of financial resources with documentation consistent with
Regulation .14 of this chapter;**

Resources Reallocated Funds -No college funds are being reallocated for this program.

Tuition and fee revenue is based upon the in-county combined tuition/fee rate of \$153.75 per credit hour for part-time students and an annual tuition/fee rate of \$3690 for full-time students with an annual average increase of 2.4% for both part-time and full-time students. Full-time students are taking, on average, 12 credits per semester and part-time students are taking, on average, 6 credits per semester.

Grants, Contracts, and Other External Resources - none

Faculty – No additional faculty will be needed

Administrative & Support Staff – No additional staff will be needed

Equipment -No additional equipment will be needed.

Library-No additional Library costs will be needed.

New or revised space -No new or revised space will be needed.

TABLE 1: RESOURCES:

Resource Categories	Year 1	Year 2	Year 3	Year 4	Year 5
1. Reallocated Funds	0	0	0	0	0
2. Tuition/Fee Revenue (c + g below)	46125	51247	56461	61768	67186
a. Number of F/T Students	10	11	12	13	14
b. Annual Tuition/Fee Rate	3690	3727	3764	3801	3839
c. Total F/T Revenue (a x b)	36900	40997	45168	49413	53746
d. Number of P/T Students	10	11	12	13	14
e. Credit Hour Rate	153.75	155.30	156.85	158.40	160
f. Annual Credit Hour Rate	6	6	6	6	6
g. Total P/T Revenue (d x e x f)	9225	10250	11293	12355	13440
3. Grants, Contracts & Other External Sources	0	0	0	0	0
4. Other Sources	0	0	0	0	0
TOTAL (Add 1 – 4)	46125	51247	56461	61768	67186

TABLE 2: EXPENDITURES:

Expenditure Categories	Year 1	Year 2	Year 3	Year 4	Year 5
1. Faculty (b + c below)	0	0	0	0	0
a. # FTE	0	0	0	0	0
b. Total Salary	21000	21500	22000	22500	23000
c. Total Benefits	0	0	0	0	0
2. Admin. Staff (b + c below)	0	0	0	0	0
a. # FTE	0	0	0	0	0
b. Total Salary	0	0	0	0	0
c. Total Benefits	0	0	0	0	0
3. Support Staff (b + c below)	0	0	0	0	0
a. # FTE	0	0	0	0	0
b. Total Salary	0	0	0	0	0
c. Total Benefits	0	0	0	0	0
4. Equipment	0	0	0	0	0
5. Library	0	0	0	0	0
6. New or Renovated Space	0	0	0	0	0
7. Other Expenses	0	0	0	0	0
TOTAL (Add 1 – 7)	21000	21500	22000	22500	23000

M. Adequacy of provisions for evaluation of program consistent with Regulation .15 of this chapter;

The Associate Vice-President of Academic Affairs assisted by the chairs of the Business and Technology division will oversee this degree, including a formal extensive program review that will take place every five years in accordance with college policy. The primary purpose of the periodic comprehensive review is for faculty to self-reflect upon, evaluate, and improve the education provided by this program. The review process provides a framework within which to make program improvements and also provides an opportunity for programs to showcase successes.

The chairs evaluate full-time faculty annually in the form of a written performance appraisal. Part-time faculty teaching is observed by chairs (more often when they are new or teaching a new course), and student evaluation of faculty happens every semester.

Student Learning Outcomes assessment is a faculty-driven process and the logistics of this process are guided by the Academic Planning and Assessment Director. This program's student learning outcomes are assessed as part of the five-year program review. Academic departments choose a high-enrollment course to undergo a rigorous assessment for a three-year cycle.

The college has a clearly defined leadership structure to maximize faculty's support. The Academic Planning and Assessment Director assists with outcomes assessment projects, meets with faculty, processes data and authors concise analysis reports. The office of Planning, Institutional Effectiveness, and Research also provides guidance during these processes. The Academic Learning Assessment Committee meets monthly to discuss project status and results.

A spring 2014 site visit by the Middle States Commission on Higher Education found the college to be in compliance with all Middle States standards – including those dealing with course, faculty, and student learning outcomes.

N. Consistency with the Commission's minority student achievement goals; and

CSM has long been committed to the recruitment and retention of minority students and will expand its services and policies to include this program. Data on minority enrollment will be monitored by the chairs to see how underrepresented minority enrollment reflects the college-wide data. The college has several programs designed to introduce these students to STEM fields in general: Women + STEM day, Engineer Like a Girl, and several mentoring programs for African-American male students.

Currently the demographics of the college closely match the demographics of each county. Through the college's Student Success and Goal Completion plan, various strategies will be used to help students learn strategies to be successful and to assign mentors for students if needed. The college is also instituting a First Year Experience program in the fall of 2017 and the seminar course (FYS 1010) is required of all students in this program. It is hoped this will increase retention rates of all students, including those of underrepresented groups.

O. Relationship to low productivity programs identified by the Commission.

Currently there are no low-productivity programs at CSM which can be redirected.

P. If proposing a distance education program, please provide evidence of the Principles of Good Practice (as outlined in COMAR 13B.02.03.22C)

This program is not designed as distance education program.