



# The Apprentice School Catalog



The Apprentice School

NEWPORT NEWS SHIPBUILDING

A Division of Huntington Ingalls Industries

4101 Washington Avenue, Newport News, VA 23607

[www.as.edu](http://www.as.edu) • 757-380-3809

The State Council of Higher Education for Virginia has certified the school to operate in Virginia.

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# Introduction

Welcome to The Apprentice School at Newport News Shipbuilding-the place where careers are built. Our formal training program will allow you to receive thorough instruction and experience-both theoretical and practical-in the various aspects of a skilled trade. As you are acquiring these skills and knowledge, you will be well paid both on the waterfront and in the classroom.

This is an opportunity for you to experience the best educational program in our industry. The Apprentice School's curriculum will make available the latest techniques and information enabling you to be the best in your craft.

The Apprentice School is over 100 years old and you will stand in the tradition of a long line of journey workers and apprentices who have made us the standard for excellence in our industry.

Dr. Latitia McCane, Director of Education

# History

The Apprentice School and its leadership are structured within Newport News Shipbuilding, a division of Huntington Ingalls Industries. The Apprentice School is an operating department of Newport News Shipbuilding (NNS), through which it is funded and controlled. NNS builds, modifies, repairs, refuels, and overhauls nuclear-powered aircraft carriers and submarines for the United States Navy. Newport News Shipbuilding was founded in 1886 and originally incorporated as the Newport News Shipbuilding and Dry Dock Company.

Early in its history the company recognized the need to attract, train, and develop shipbuilders through apprenticeship. The first certificate of apprenticeship was awarded in 1894 to Machinist Norwood Jones. By 1919 the company had experienced significant increases in scope and complexity of work reinforcing the need for a strong internal training program. Consequently, company president Homer L. Ferguson organized The Apprentice School with many of the features that characterize it today. The school as currently structured was formalized in 1919, and the first class under the revised concept graduated in 1923.

Since 1894, more than 11,000 apprentices have received certificates of apprenticeship, including approximately 3,000 current employees of NNS who serve in capacities ranging from craftsmen to directors to vice presidents. Alumni comprise approximately 21 percent of salaried personnel and, when combined with active apprentices, make up approximately 11 percent of hourly personnel.

# Mission Statement

**The mission of The Apprentice School is:**

- To contribute to the profitability and growth of Newport News Shipbuilding by recruiting, training and developing men and women for careers in shipbuilding.
- To provide the company with a continuous supply of journeypersons who possess the skills, knowledge and pride of workmanship which have traditionally distinguished the shipbuilding craftsman.
- To develop core leadership principles in all students along with the character and technical competence that is required to fully meet the challenges of a shipbuilding career.

The Apprentice School provides quality training and education for Newport News Shipbuilding through the awarding of Associate of Applied Science Degrees as well as through partnering with other educational institutions.

The Apprentice School offers certificates of apprenticeship in 19 shipbuilding disciplines and nine Optional Advanced Programs and has 26 programs for which apprentices are awarded an Associate of Applied Science in Maritime Technology. Apprentices who complete one of eight Optional Advanced Programs also earn an associate degree from Thomas Nelson Community College or Tidewater Community College. Apprentices who complete the marine engineer Optional Advanced Program earn a bachelor's degree in engineering from Old Dominion University.

These 27 programs provide a critical pipeline of technically proficient graduates for all major areas of shipbuilding at NNS, including fabrication, production, quality control, design, and engineering. Through the academic curriculum, strategically timed job experiences, and on-the-job training, the school develops educated and highly skilled journeypersons who are well prepared for shipbuilding careers upon graduation and possess the potential to progress in leadership positions within the company.

All apprentices complete the required World Class Shipbuilder Curriculum (WCSC) and a minimum of 7,000 hours of on-the-job training in their shipbuilding discipline. Additionally, the school offers opportunities for personal growth and leadership development through participation in student athletics, student government, clubs, and professional societies. The culmination of the required academic coursework, on-the-job training, and extracurricular activities fulfills the school's mission to provide highly skilled, educated, and engaged employees for NNS.

## Our Campus

The Apprentice School has one campus, located at Newport News Shipbuilding, 4101 Washington Avenue, Newport News, Virginia. There are over 85,000 square feet of classrooms, labs and office space on this campus. Each classroom is equipped with state-of-the-art technology. Additional information can be found at [www.as.edu](http://www.as.edu).

## Accreditation and Licensure

State and federal certification and licensure are not requirements for employment with NNS, though apprentice employees must meet certain qualifications and certifications required to complete apprenticeships within their respective trades. All certification courses, practical exams, and tests are administered by NNS personnel.

The Apprentice School has registered standards of apprenticeship on file with the Virginia Department of Labor and Industry. Inquiries regarding this registration should be addressed to:

Department of Labor and Industry  
Interstate Corporate Center, Bldg. 6  
6363 Center Drive, Suite 101  
Norfolk, VA 23502 Phone: (757) 455-0891  
Fax: (757) 455-0899  
Email: [www.doli.virginia.gov](http://www.doli.virginia.gov)

The Apprentice School is accredited by the Commission of the Council on Occupational Education. Inquiries regarding this accreditation status should be addressed to:

Council on Occupational Education  
7840 Roswell Road  
Building 300, Suite 325  
Atlanta, Georgia 30350  
Telephone: 770-396-3898  
Fax: 770-396-3790  
Email: [www.council.org](http://www.council.org)

## Hours of Operation

The administrative office of The Apprentice School is open Monday-Friday 7 a.m. – 3:30 p.m. except for recognized holidays. Academic schedules for The Apprentice School are posted online at the beginning of each year. Classroom and trade hours are based on the same schedule and can vary by trade or season of the year.

# The Apprentice School Administrators:

Jennifer Boykin  
President  
Newport News Shipbuilding  
4101 Washington Ave.  
Newport News, VA 23607

Michael Allen  
Athletic Director  
The Apprentice School  
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Cynthia Lear  
Manager, Academics  
The Apprentice School  
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Mark Tomlin  
Manager, Business  
The Apprentice School  
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Regina McLean  
Manager, Academics, Admissions, and Student  
Services  
The Apprentice School  
Newport News Shipbuilding  
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# The Apprentice School Program Administrators:

Charles Beamon  
Lead Craft Instructor  
Coatings Specialist, Insulator, Pipefitter,  
The Apprentice School  
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4101 Washington Ave.  
Newport News, VA 23607

Chris Davis  
Lead Craft Instructor  
Electrician, HVAC Worker, Maintenance  
Electrician, Welding Equipment Repair  
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Nicholas Perry  
Lead Craft Instructor  
The Apprentice School  
Machinist, Millwright, Molder, Outside  
Machinist, Patternmaker, Maintenance  
Pipefitter  
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Garry Carter  
Training Manager  
The Apprentice School  
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David Blunt  
Lead Craft Instructor  
Heavy Metal Fabricator, Shipfitter, Welder  
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Linda McMillian  
Lead Craft Instructor  
Non-Destructive Tester, Rigger, Sheet Metal  
Worker  
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Newport News, VA 23607

Bruce White  
Lead Craft Instructor  
Cost Estimator, Marine Designer, Metrology  
Technician, Modeling and Simulation Program  
Analyst, Nuclear Test Technician, Production  
Planner, Supply Chain Management  
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Newport News Shipbuilding  
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Stan Best  
Training Manager  
The Apprentice School  
Business, Communications, Drafting, History,  
iDS, Psychology  
Newport News Shipbuilding  
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# Holiday

New Year's Eve  
New Year's Day  
Martin Luther King Jr. Day  
Memorial Day  
Independence Day  
Labor Day

Thanksgiving Day  
Day after Thanksgiving  
Floater Holiday  
Christmas Eve  
Christmas Day

## Emergency Procedures and Closing

**Fires:** All students are urged to acquaint themselves with the location of the exits, fire alarm switches, fire escapes, and available fire extinguishers throughout the school. In case of fire, call the emergency operator by selecting a line and dialing \*911 or by cell phone 757-380-2222 immediately. Give the operator the precise location of the fire and the fire department will be alerted by the operator.

**Emergency Evacuation:** When a fire alarm sounds, please proceed to the closest exit and assemble in the **PRIMARY ASSEMBLY AREA** which is across the courtyard, to far corner of parking garage. A designated **SECONDARY ASSEMBLY AREA** is across roadway to north side of Navy Parking Garage building if unsafe to proceed to the **PRIMARY ASSEMBLY**.

**Police:** To summon the police, select a line and dial \*911, 0-2222 or by cell phone 757-380-2222, and the operator will alert the police department.

**Accidents or Illness:** When there is doubt as to procedure in the case of a medical emergency, immediate medical advice should be secured by selecting a line and dialing 911. The NNS Occupational Health Clinic responds to the healthcare needs of The Apprentice School's administration, faculty, staff, and apprentices. The clinic provides a broad range of occupational medicine, health and wellness education, and occupational safety services.

All Injuries, Illnesses or accidents involving Apprentices, Employees, and Visitors shall be reported by the individual involved as soon as safely possible and before leaving the Training Center premises, either to his/her Instructor, Coordinator, Health and Safety Director, Education Director, Assistant Education Director or an authorized representative.

# Inclement Weather Policy

Liberal Leave is offered to NNS employees in times of inclement weather so that employees have the flexibility to make the safest decision for themselves and their families. Thus, apprentices can, and should, exercise this option in the event that travel is considered unsafe. Any class absences associated with Liberal Leave will be considered excused. This does not absolve apprentices from the responsibility of keeping up with class assignments; however, for apprentices in the optional advanced programs instructors at partnering institutions will be made aware of the company's Liberal Leave status and accommodations will be requested for those electing to miss class.

## Student Services

Student Services coordinates and monitors services for current apprentices and alumni. Many of the student services provided by the school are delivered through other functional areas of the school, including admissions, craft training, and academics. Student Services focuses on three major phases of apprentice life: (1) pre-employment through 4th term; (2) career development from 5th term through graduation; and (3) career resources post-graduation. Student services provided by The Apprentice School include: recruitment; registration; preadmission; admissions; housing assistance; career planning; counseling and assessment; student record maintenance; student activities; new hire and apprentice success orientation; tutoring and special learning needs support; and evaluation of services offered. Upon completion of the previously mentioned new hire and apprentice success orientation, apprentices are awarded a passing grade for Apprentice Success Skills which is reflected on apprentices' transcripts. Since all apprentices are full-time employees, upon graduating from The Apprentice School, apprentices retain their jobs at Newport News Shipbuilding and may apply for new positions within the company from the Huntington Ingalls Industries web site at [www.huntingtoningalls.com](http://www.huntingtoningalls.com). Although graduates are under no obligation to stay with the company, most do, and quickly move up the ranks within a variety of occupational areas.

The Apprentice School provides apprentices assistance and activities designed to ease the transition into a postsecondary education and training environment. Unlike traditional academic institutions, student services offered by the school are also designed to give apprentices a safe and less intimidating transition into a manufacturing environment, minimizing the barriers to learning on the job and in the academic classroom. Student Services seeks to promote a campus community, provide connection to resources and opportunities for self-development, and provide assistance to alumni.

# Apprentice Interaction

The Apprentice School ensures interaction between apprentices and faculty and among apprentices. In addition to quality interaction in the classroom environment, academic, and craft instructors communicate with apprentices using Moodle, the Learning Management System used by the school. Moodle provides instructors and apprentices a platform to exchange information about assignment and course performance, course content, and supplemental resources, academic probation status, and other issues pertaining to apprentices' course participation. Faculty provide daily and weekly feedback to apprentices about their knowledge and skill development, conduct, leadership, and overall performance. Faculty provide timely, quality feedback to apprentices on an ongoing basis. Additionally, apprentices' lead craft instructors who oversee apprentices' program areas serve as apprentices' advisors. The names of these program advisors are published in the school catalog and also loaded into the apprentices' Moodle accounts.

The Apprentice School promotes interaction among apprentices. All apprentices automatically are members of the student association. The mission of the student association is to provide an organization for the promotion of student activities, to provide a means of support for such activities, to encourage and develop leadership skills in its members, to foster an atmosphere of community service, and to transact all other business of general interest to the Student Body not otherwise provided for. There are several other student organizations apprentices may join. This include Apprentice Alumni Association which is established to encourage the development of Apprentice School alumni through participation in civic, social, and charitable activities; Apprentice Jaycees Student Chapter which is established to create leadership development, business, skills, and personal growth opportunities for apprentices through participation in community service, networking, and social events; Apprentice School Society of Manufacturing Engineers (Chapter S354) which is established to share knowledge of manufacturing through learning, networking, guided tours, guest speakers, and interaction with parent chapter members; The Apprentice School Chapter of the Society of Naval Architects and Marine Engineers which is established to advance the disciplines of naval architecture and marine engineering by sharing information, sponsoring research, and offering educational and career guidance to apprentices; and The Apprentice School Athletic Club which is established to create social and networking opportunities to sponsor and advance Builder Athletics. The Apprentice School also has 6 athletic teams including: baseball, men's basketball, women's basketball, football, golf, and wrestling. In keeping with the excellence of the Apprentice School craft training and academic programs, the goal of the Apprentice School Athletic Program is to:

- **Enhance** the craft training, academic and leadership development of student-athletes.
- **Stimulate** a lasting attitude of leadership, discipline, sportsmanship, teamwork, ethical conduct, social responsibility and integrity.

- **Promote** student-athlete success in the Apprenticeship Program from start to finish and beyond in an environment that enables continuous learning, professional development, career preparation, the integration of personal and professional commitments, opportunities for advancement, and the attainment of maximum performance. These six athletic teams and six apprentice organizations help ensure interactions among apprentices.

The Engineering & Robotics Club of The Apprentice School, established in 2015, strives to do the following:

- Expand the horizons and provide a venue for all apprentices to explore the engineering profession outside of academic curricula
- Provide a social setting for apprentices to interact with engineering professionals from within NNS as well as local industry and educational institutions through guest speakers, seminars, and site tours
- Allow teams from The Apprentice School to more effectively participate in engineering and design competitions by establishing continuity, camaraderie, and focused efforts throughout the year
- Promote The Apprentice School, its students, and the achievements of the institution at the local and national levels through participation in conferences, competitions, etc.
- Provide service to the local community through partnerships with local schools to support engineering and STEM programs and activities

The Apprentice School also has a chapter of the National Society of Leadership and Success which was formally established in 2017. The organization's mission statement is "Building leaders who make a better world," and its vision statement is *"Be the benchmark by which all chapters operate and provide an effective platform for developing personal and corporate leadership."* In order to receive an invitation, candidates must meet the below minimum criteria; there is an academic and craft faculty review process as well:

#### ACCEPTANCE CRITERIA (Minimum)

- 3.0 GPA – WCSC & Trade Theory Combined
- Shop GPA = 80 (min)
- No D's (Academic or Theory)
- Minimal to no Disciplinary Issues

## Complaint Procedures

It is the policy of The Apprentice School to adhere to existing Company agreements and procedures in responding to apprentice grievances. These procedures include (1) Collective Bargaining Agreement (CBA) between Newport News Shipbuilding and the United Steelworkers, February 7, 2022 through February 7, 2027 for hourly associates, which governs the terms and conditions of hourly apprentice employment and (2) CO H103 Dispute Resolution Process for salaried apprentices. For grievances found to be not within

the CBA grievance process by an arbitrator or otherwise settled at the Company level, the apprentice may contact the Council on Occupational Education (COE is the accrediting agency for The Apprentice School), 7840 Roswell Road, Building 300, Suite 325, Atlanta, GA 30350 or may contact the State Council of Higher Education for Virginia (SCHEV), 101 N. 14th Street, 9th Floor, James Monroe Building, Richmond, VA 23219. The Apprentice School is certified to operate by the State Council of Higher Education for Virginia. Apprentices will not be subject to unfair actions as a result of initiating a complaint proceeding.

## Counseling Services

HII's HERO program (HII Employees Reach Out) offers professional referrals, counseling, resources and more. All HII employees and their household family members are eligible to use the program and it is free and confidential.

Apprentices may call HERO if they're looking for advice concerning: child care, elder care, special needs care, pet care, identity theft protection, family therapy, blended families, work issues, financial counseling and debt management.

HERO support is free to HII employees, dependents and household family members, regardless of the chosen medical plan or other benefits. All support is protected by HIPAA, the Health Insurance Portability and Accountability Act, and never shared with HII.

To learn more about HERO and reach out apprentices may call the 24/7 phone line at: 1-855-400-9185 or access the HERO secure website at: [www.hiihero.com](http://www.hiihero.com), code "Huntington Ingalls".

## Rights, Privileges, and Responsibilities

### Response to Sickness and Accidents

Apprentices who are injured or become ill while engaged in the educational program or while participating in an approved Apprentice School activity are treated by medical professionals through the company's clinic or athletic trainer or referred to outside specialists. The Apprentice School will respond quickly and appropriately to apprentice sickness and accident situations when they occur. Faculty and staff of The Apprentice School are obligated to make the best decision for the employee and the company. While the apprentice's perspective of his or her condition is a factor, there will be times when it is necessary for

faculty or staff to insist that an apprentice go to the NNS Occupational Clinic. When in doubt, faculty and staff will send the apprentice to the NNS Occupational Clinic.

Apprentices' work place accidents and injuries will be handled by Huntington Ingalls Industries worker's compensation policies. During periods of disability, for any other reason, apprentices are covered as indicated in Huntington Ingalls Industries disability policies and procedures.

#### Apprentice Records

Access to apprentice records by faculty and staff members is controlled and limited to those with a "need to know." Access to records by outside parties is granted only under subpoena or with the written permission of apprentices.

#### Apprentice Academic Status

Apprentices will routinely be kept informed of their academic status.

1. During regular classroom sessions, grades for all assignments will be provided preferably the next class meeting, but no later than two meetings following the class in which the assignment is due.
2. Notification of academic status will be made at the end of the academic quarter or period of instruction, whichever is applicable.
3. At the end of each quarter, apprentices enrolled in World Class Shipbuilder Curriculum (WCSC) and/or Trade Related Education Curriculum (TREC) courses; Advanced Shipyard Operations Curriculum (ASOC); or the Advanced Programs will be provided updated, unofficial copies of their academic transcripts.
4. Course grades are determined by evaluating apprentice performance on all course quizzes and tests. Individual grades are numerical.

<u>GRADE</u>	<u>AVERAGE</u>	<u>MEANING</u>
A	93-100	Excellent
B	85-92	Above average
C	77-84	Average
D	70-76	Below average
F	Below 70	Failure
I		Incomplete
P		Pass

5. An apprentice's Quality Point Average (QPA) will be computed by multiplying the quarter credits earned in each course by the quality point value of each assigned grade, summing quality points for all courses taken during the quarter, and dividing by the total number of quarter credits attempted.

Questions concerning grades can be addressed first with the course instructor and then with the Manager, Academics or Manager, Craft Training for WCSC and TREC courses respectively.

### Apprentice Special Learning Needs

New apprentices are provided the contact information of the special learning needs coordinator at orientation. Apprentices who wish to disclose a special learning need are encouraged to contact and meet with the coordinator to determine the significance and validity of the need. The special learning needs coordinator identifies suitable accommodations, provides apprentices with a meeting verification card, and directs apprentices to meet with their instructors, at the apprentices' discretion, to disclose and plan for implementing the accommodations. Similarly, apprentices with suspected, undisclosed, or undetermined special learning needs can be referred to the special learning needs coordinator for possible testing through Regent University.

## Tuition and Fees/Financial Aid

There is no tuition cost for apprentices who have been accepted into the program. Therefore, refunds are not applicable.

Apprentices are responsible for the costs of safety shoes, prescription safety glasses, personal computers, and certain tools/equipment depending on the program. Costs for safety shoes, prescription safety glasses, personal computers, and certain tools/equipment depending on the program are not refundable. Apprentices are required to have a computer prior to beginning academic classes; the computer must meet minimum computer requirements which are provided to students in their offer package. Costs for computers may vary.

There is no current financial aid available beyond free tuition.

Apprentices also are assessed an ASSA fee of 2 percent which is deducted from apprentices' earnings; this fee is charged by the ASSA and not by The Apprentice School. Membership in the ASSA shall include all apprentices enrolled in The Apprentice School. A change in the amount of activity fees may be proposed by a majority vote of the Student Council and submitted to The Student Services Administrator for review. An apprentice becomes a member at the time of his/her enrollment in The Apprentice School and remains a member until completion or termination of his/her apprenticeship and shall be required to pay all



activity fees as stated in this Constitution, Article VIII, Section 1. The activity fees are allocated between the ASSA and The Apprentice School Athletics Department, as well as other organizations as authorized by the Manager, Admissions, or the designee.

For the Optional Advanced Programs offered by The Apprentice School for its apprentices, costs of tuition and fees for the community college and university courses offered in these programs are paid for by Newport News Shipbuilding on behalf of participating apprentices to the partnering institution. Participating apprentices are expected to satisfactorily complete the courses with a grade of A, B, or C, or 2.0 on a scale of 4.0 or higher.

However, for those Optional Advanced Program apprentices whose course grade results in a 'D' or 'F' or who drop a course(s) at a partnering institutions prior to completion but after the deadline to drop for a full refund may result in repayment of tuition fees. Prior to the beginning of each semester, apprentices who are enrolled at courses at a partnering institutions agree to repay Huntington Ingalls Incorporated by personal check or money order the costs of tuition and fees paid on apprentices' behalf by Huntington Ingalls Incorporated if (a) apprentices' performance in a course results in a D or F grade, or (b) apprentices drop the course(s) prior to completion, but after the deadline to drop for a full refund to be paid to Huntington Ingalls Incorporated. Such reimbursement payment will be made within 30 days of the community college or university issuance of course results or the date the course(s) was dropped, as applicable. In the event apprentices' employment with Huntington Ingalls Incorporated, Newport News Shipbuilding Division terminates prior to the completion of a course and after the deadline to drop for refund to be paid to Huntington Ingalls Incorporated, then apprentices must authorize the Payroll Department of Huntington Ingalls Incorporated to withhold from apprentices' final paychecks an amount equal to the cost of tuition and fees paid on their behalf. In the event apprentices' employment with Huntington Ingalls Incorporated, Newport News Shipbuilding Division is voluntarily terminated, then apprentices agree to repay the Company all the costs of tuition and fees paid on the apprentices' behalf within the prior 12 months. If the amount owed may not be fully deducted from apprentices' paychecks, such reimbursement amount shall constitute an unpaid debt, and Huntington Ingalls Incorporated may pursue any remedies available at law or equity for its collection. The Director of Education, may waive some or all reimbursement requirements in cases of hardship. Such determinations will be made on an individual, case-by-case basis, and shall be at the sole discretion of the Director of Education whose decision is final.

## Admissions

### Recruitment and Admissions Policy Document

It is the policy of The Apprentice School to solicit, evaluate and admit qualified applicants.

To qualify for admission to The Apprentice School —

1.1. An external applicant must:

- 1.1.1. Be at least 18 years of age to begin the apprenticeship. High school seniors may apply before reaching age 18.
- 1.1.2. Have a high school diploma or GED with a minimum of four units passed in any combination of the following subjects: Algebra, Algebra 2, Geometry, Advanced Mathematics, Chemistry, Physics, Mechanical Drawing, Vocational Technical Education, Computer Science and Principles of Technology.
  - 1.1.2.1. A 'unit' is considered to be one year of high school study or its equivalent.
- 1.1.3. Demonstrated college readiness in mathematics and English is preferred, required as of April 2020. Applicants must submit post-secondary (college/university) transcripts that indicate readiness in math and English in lieu of community college testing.
- 1.1.4. Be physically able to perform the duties required in the trade requested or assigned.
- 1.1.5. Be drug free and have a background that will allow the company to obtain the proper government-furnished security clearance. U.S. citizenship required.
- 1.1.6. An internal candidate must meet all academic qualifications of external candidates. An internal candidate also must show and maintain good attendance and performance on the job.

Admission to The Apprentice School is competitive and selective. Therefore, meeting the minimum requirements does not guarantee selection.

All applicants must submit an online application and pay a non-refundable \$45.00 processing fee. Applicants may apply online at [www.as.edu/apply-now](http://www.as.edu/apply-now). The processing fee is waived for current Newport News Shipbuilding employees, veterans, and reservists. Applicants must also request official transcripts from all high schools and post-secondary schools attended by mailed to the following address: The Apprentice School Admissions Office, 4101 Washington Avenue, Building 1919, Newport News, VA 23607.

# Attendance Policy

Hourly and salaried apprentices are subject to the same attendance guidelines as other hourly and salaried employees at NNS, respectively.

Apprentice attendance records (hourly and salaried) are kept using Systems, Applications & Products (SAP) software and monitored by apprentice craft instructors, managers, Product Training and the manager, Craft Training.

Vacation or personal time (PT) may be granted to apprentices during times in which academic or trade related classes are scheduled. Apprentices requesting vacation or PT during scheduled academic or trade related classes must complete a Vacation/PT Request Form and submit the form to their apprentice craft instructor or manager, Product Training in advance of the requested vacation or PT date(s). The manager, Craft Training is responsible for reviewing/approving vacation or PT requests.

Call-in vacation or PT will not be granted to apprentices during times in which academic or trade related classes are scheduled. The manager, Craft Training may consider exceptions based on extraordinary or extenuating circumstances.

The Manager, Academics, or his/her designee may temporarily drop an apprentice from scheduled classes for the following reasons:

1. The apprentice is unable to attend classes for *three or more* consecutive class days because of accident or illness.
2. The apprentice is required to perform active duty training for the armed forces reserve forces.
3. The apprentice needs time to resolve serious family, legal, or other severe personal problems.

No apprentice will be dropped from classes after the *6th* week of a quarter except for accident, illness, or an unanticipated emergency.

An apprentice or any of his instructors, who may be aware of a pending prolonged absence, should notify the Manager, Academics, or his/her designee when such information is firm.

Any apprentice who desires to be dropped from scheduled classes should:

1. Have a valid reason.
2. Discuss his reasons with his Apprentice Craft Instructor.
3. Make an appointment with the Manager, Academics or his/her designee to discuss the matter if dropping classes appears to be the best course of action, and submit a written request and statement of reasons for the request.

This option may be used only once during an apprenticeship except where there are extreme extenuating circumstances.

## Transfer Credit

Apprentices who attended an accredited post-secondary educational institution prior to admittance to The Apprentice School can obtain transfer credit and be exempted from certain courses.

1. Consideration for academic credit will be granted based on review of the official transcripts from an accredited post-secondary educational institution and having met any of the conditions specified below.
  - 1.1 Must have a grade of "C" or better in a post-secondary math course equivalent to, or higher than, a college algebra course to be exempt from Mathematics I.
  - 1.2 Must have a grade of "C" or better in a freshman level college writing course to be exempt from Communications I.
  - 1.3 Must have a grade of "C" or better in a General College or University Physics 1 course to be exempt from Physical Science I and Physical Science II.
  - 1.4 Must have a grade of "C" or better in a college level Computer Aided Design (CAD) course to be exempt from drafting.
2. Grade standard drafting exemption test.
  - 2.1 Exemption test only will be offered to apprentices who possess an AutoCAD certification.
  - 2.2 The drafting exemption test is optional.
  - 2.3 Apprentices who score a grade of 80% or higher on the exemption test will not be required to take the course concerned.
  - 2.4 Failure to pass an exemption test will not affect the subsequent grade earned in the course.
3. Standardized exemption tests, prepared by the course developer, will be used for drafting.

4. NNS employees (commonly referred to as transfers) admitted to The Apprentice School may be granted a maximum of 1,000 hours of credit toward completion of their apprenticeship based on prior work experience at the company.

Apprentices must complete a minimum of 30% of their course work at The Apprentice School to be granted a degree from The Apprentice School.

## Transfer Between Programs

Due to the company operating requirements and the lack of similarity among trades, apprentices may only transfer to a different program within the institution in unusual cases or extenuating circumstances. It is the policy of The Apprentice School not to consider transfers unless one of the following conditions exists:

1. The transfer is between departments that have like or similar skill sets. Example: pipefitter and maintenance pipefitter.
2. The transfer is to satisfy a Company need.
3. The transfer of an hourly apprentice to a salaried trade. Example: Foundry to Patternmaker.
4. The transfer would alleviate a medical problem that was detected early in apprenticeship.
5. An otherwise satisfactorily performing apprentice is unable to master a specific skill or demonstrate a trade-specific aptitude that is a requirement of the assigned trade.

An apprentice or any instructor who may be aware of condition (3) or (4) above should notify the Manager, Craft Training immediately. Recommendation for Transfer forms are completed for apprentices being considered for transfer to other programs. The cognizant craft instructor completes the form and makes a recommendation. The Manager, Craft Training and Director of Education review and sign the form.

## Transfer to Other Institutions

The Associate of Applied Science Degrees awarded by The Apprentice School are terminal technical programs and credits generally earned in an Associate of Applied Science Degree are not applicable to other degrees. Apprentices who wish to transfer credits for courses earned at The Apprentice School to other institutions should have their transcripts evaluated by the institution to which a transfer is being made. While The Apprentice School cannot guarantee that any credit earned at The Apprentice School will be accepted by any other institution, including credits for core curriculum academic courses, The

Apprentice School does work to establish articulation agreement guidelines which can be found online at [www.as.edu](http://www.as.edu) under the builders menu.

## Academic Assistance/Advisement

During an academic quarter, provisions are made for assisting and retesting apprentices Monday through Friday. Instructors will be available for extra help between 6:00 a.m. and 7:00 a.m. prior to the start of the apprentices' shift, and may be available by appointment during lunch. Additionally, The Manager, Academics, or his/her designee will assign instructors from 3:30 p.m. to 5:30 p.m. Monday through Thursday of the eleventh week to provide extra help and retesting, and a minimum of twice weekly to provide extra help beginning the 2nd week of the quarter. The specific days, exact location, and names of instructors will be provided to the apprentices by the academic instructors at the beginning of each quarter and posted on Moodle. Assistance will be provided first to apprentices who have scheduled appointments; other apprentices will be assisted on a first-come, first-served basis.

Once accepted to The Apprentice School, Student Services, faculty, and staff are involved in counseling and advising to help apprentices acclimate to the environment and program performance requirements, resolve performance problems, and, on request, provide personal advising.

Student Services specifically is tasked to assist apprentices in their transition to the program and provide guidance and assistance in the areas of career planning and continuing education throughout their apprenticeship and career with the company. In conjunction with their job responsibilities, administrative personnel periodically provide advising about the following topics: initial trade selection, discipline, special learning needs, career planning, and continuing education.

## Library/Media Services

The network of Newport News Shipbuilding (NNS) divisions and departments provides the necessary support to acquire and develop learning resources, and The Apprentice School's access to library media services, equipment, and supplies is more than sufficient. As an operational department of NNS, The Apprentice School has the benefit of full access to Newport News Shipbuilding Information Technology (NNS IT), the Technical Library, and Training Services departments. The school's library media services plan ensures relevant educational materials, audio-visual equipment, internet access, and other materials are readily available and easily accessible for faculty, staff, and apprentices. Due to the nature and scope of work performed at NNS by apprentices and the role they play in waterfront production, access to training resources and materials exclusively developed by NNS for use at The Apprentice School enables apprentices' development as highly technically skilled workers and a sizable portion of the NNS workforce.

The WCSC, TREC, and all facets of on-the-job training for apprenticeships in shipbuilding disciplines and Optional Advanced Programs are supported by a library media services plan. This plan provides for library media products and services from the NNS annual subscription to IHS Markit, the Training Services department, the Technical Library, and The Apprentice School Library. A brief description of each as follows:

1. IHS Markit provides technical information to assist in research and problem-solve. This subscription provides employees with access to the Engineering Workbench (industry standards and military/government documents), Haystack Gold (manufacturers parts and logistics information), McGraw Hill-Access Engineering (engineering reference books), and CatalogXpress (product and component information).
2. Apprentices and faculty also can access presentations, videos, books, and classes through SkillSoft Powered by Percipio by using their company assigned personnel number PERN.
3. Training Services is a department staffed by professionals with expertise in instructional media and media production and responsible for assisting with the development of learning materials used at NNS, including computer-based training and shipyard-specific course curricula.
4. The Technical Library provides access to technical publications, periodicals, reference materials, textbooks, and standards and coordinates the acquisition of textbooks for The Apprentice School. Resources available through the Technical Library may be accessed by all NNS employees including apprentices. The Technical Library staff maintains circulation of publications, periodicals, reference materials, and textbooks. The library is located in Building 903-1.
5. The Apprentice School Library is located on the 4th floor of Building 1919. This library provides access to a physical collection of reference materials and textbooks. The reference materials are categorized by subjects covering Business/Economics, Communications, History, Leadership, Information Technology/AutoCAD, Mathematics/Statistics, Physics/Chemistry, and Maritime. Apprentices check out material on the honor system by completing the check-out/check-in sheet when removing and returning items. A designated academic instructor is responsible for updating the library check-out/check-in sheet and maintenance of the room bi-weekly, and updating the library content sheet with additions or deletions of reference materials and textbooks. The Apprentice School manager, Academics, is responsible for evaluating individual requests and the need for updates to the library content annually.

The Apprentice School requires apprentices to bring their own device, however, the school also has computer labs available. NNS IT provides an administrative function, including the purchase, repair, maintenance, and replacement of all computer hardware and software associated with the company's

network. Media equipment is requested electronically and processed through the company's department. NNS IT also provides AV/IT support for the company's network and the school's educational network, as.edu.

In addition, a variety of materials and equipment provided by NNS is readily available and easily accessible to help fulfill the school's purpose while supporting its educational programs.

## Internship Opportunities

The Apprentice School provides internship opportunities to all of its apprentices through Newport News Shipbuilding, a division of Huntington Ingalls Industries. These opportunities are clearly defined in the course catalog. The Manager, Craft Training oversees scheduling these internships with trade management to ensure each apprentice receives the necessary training. This work experience will enable the apprentice to be proficient in the trade when they graduate and become a craftsman of the company. The Apprentice School provides qualified craft instructors in each degree field to administer training. Monthly craft evaluations are performed by the craft instructors to ensure proficiency in trade training.

1. Work experience will be documented on a craft documentation record for each apprentice as they change work areas. The minimum time spent in each area is defined on the craft documentation record and the program curriculum card. Program reviews are conducted yearly by the cognizant craft training manager and craft instructors to maintain operational relevance.
2. Skills in each program will be tracked on apprentice task evaluations at the end of each internship. A majority of the skills are required while some are optional. This criteria is set and reviewed yearly by the cognizant craft training manager and craft instructors.
3. An apprentice only will be eligible to receive an Associate's Degree in their curriculum if a certificate of completion of apprenticeship is received from the Commonwealth of Virginia.

## Distance Education

Online hybrid program courses within the World Class Shipbuilder Curriculum are identical in content, are taught by the same faculty, and utilize comparable resources to those taught on campus. The Apprentice School received final approval for institutional distance education in 2013 from the school's accrediting agency Council on Occupational Education (COE) and was granted programmatic distance education approval in 2021.



**I. Telecommunication/distance education programs and courses adhere to the following:**

**1. Educational Objectives Related to Telecommunications/Distance Education.**

The educational objectives for each program or course are clearly defined, simply stated, and achievable through telecommunications/distance education. All programs at The Apprentice School have clearly stated objectives and content relative to the business needs of NNS. Required academic course objectives are defined based on the learning needs of apprentices within each program of study and outlined in syllabi for the World Class Shipbuilder Curriculum (WCSC) and Trade Related Education Curriculum (TREC). Apprentices are given an opportunity to provide feedback on the relevance of courses, the clarity of stated objectives, and quality of instruction in the WCSC and TREC at the completion of each academic quarter.

**2. Instructional Materials and Technology Methods**

Instructional materials and technology methods are appropriate to meet the stated objectives of the program or course.

**a. Moodle**

The Apprentice School uses the Learning Management System (LMS), Moodle. It was implemented approximately eleven years ago in conjunction with face-to-face learning and is a component of hybrid program instruction.

Online classes are synchronous. Instructors use Moodle's question banks to create quizzes and tests with a variety of question types, as well as to upload course content and resources including videos, website links, online textbooks, PowerPoint slides, and course syllabi. Instructors use warm-ups to assess prior instruction, classwork to reinforce newly learned concepts, peer reviews to create opportunities for apprentices to provide feedback, and writing projects such as papers, journals, and forums to encourage the assimilation of ideas.

Apprentice interaction is facilitated with peer review of assignments, discussion board topics where apprentices are required to reply and comment on apprentices' responses, and through group work in collaboration forums. However, most team projects are conducted inside MS Teams, which will be discussed later in this document. Apprentices may use the internal messaging system within Moodle, may communicate using Microsoft Teams, or through as.edu email accounts.

In addition to quality interaction in the classroom environment, World Class Shipbuilder Curriculum and Trade Related Education Curriculum instructors communicate regularly with apprentices using Moodle, which provides instructors and apprentices a platform to exchange information about assignment and course performance, academic probation status, and other issues pertaining to apprentices' course participation. Apprentice grades are posted in Moodle's gradebook, and apprentices upload files for grading within the LMS. Furthermore, instructors and apprentices also may use the internal messaging system within Moodle, may communicate using Microsoft Teams, or through as.edu email accounts.

Graded quizzes and tests may be conducted fully online through Moodle or launched directly from Moodle. In both instances, apprentices often are asked to upload their written work to verify answers. Weekly grade reports are compiled from Moodle and shared with student services and apprentices' advisors to help identify apprentices who are struggling academically, and to provide guidance to these apprentices to encourage their success. All apprentices' academic statuses are handled as outlined in The Apprentice School Catalog.

#### **b. MS Teams**

In addition to the Learning Management System, Moodle, The Apprentice School utilizes Microsoft Teams to deliver synchronous instruction. Faculty began using Microsoft Teams in April 2020. Apprentices are required actively to be online in the Microsoft Teams class during the scheduled class timeframe. At the beginning of each session, instructors verbally verify attendance, and apprentices are monitored during online courses by responding to instructors' questions, posting responses in a chat window, and through digital repositories of individual apprentice class activity. All apprentices must abide by the attendance policy as outlined in The Apprentice School Catalog.

Instructors deliver courses and enhance content within MS Teams by using live lectures, group discussion, PowerPoint presentations, document camera projections, and video links. Instructors use warm ups to assess prior instruction, classwork to reinforce newly learned concepts, peer reviews to create opportunities for apprentices to provide feedback, and writing projects such as papers, journals, and forums to encourage the assimilation of ideas.

Within Microsoft Teams breakout rooms, apprentice interaction is facilitated with peer review of assignments, through group projects, and guided reflection time. Apprentices may collaborate through verbal communication, the chat board inside Microsoft Teams, by using Moodle, or through emailing as.edu accounts.

Graded quizzes and tests are conducted synchronously online through Microsoft Teams and launched primarily through Moodle. Apprentices often are required to upload their written work either to Microsoft OneNote or Moodle to verify answers. In addition, Microsoft Assignments has been used by instructors to review and verify assigned classwork during workshop time.

#### **c. Instructional Materials**

For course specific instructional materials, The Apprentice School utilizes Moodle for a central location. Course specific materials may include apps for practicing math facts or ship construction/business concepts, pdf textbooks/workbooks, Open Educational Resources (OER), YouTube videos, and different activities developed within the online platforms Moodle or MS Teams.

Library resources are available to apprentices enrolled in either face-to-face or hybrid programs. Further information regarding Library/Media Services is outlined in The Apprentice School Catalog.

#### **d. Online Navigation of a Course or Program**

Moodle is the central location for instructional material for each course or program. Online classes are delivered through MS Teams synchronously. The first day of class for each quarter, instructors review the course content within Moodle. The content for each course includes standard resources such as instructor information, syllabus, schedule, pdf textbook/workbook, and online resources. In addition, videos have been created to give instructions on how to complete certain tasks, i.e. using OneDrive to create a pdf of work for submission.

Course materials and assignments are in chronological order based on the class day and the content that will be covered. This is consistent for each course and maintains a consistent experience for the apprentice. Direct links for course information are labeled easily to access materials such as files or videos. Instructors also assist apprentices with where to find course content due to the synchronous delivery of the course.

#### **e. Attendance**

Attendance in an online class is just as important as attendance on the jobsite. To learn and be successful, apprentices will need to login and participate during class. Apprentices are required to spend the time allotted to each class as indicated in each course as indicated on the schedule for a total of 8 hours of class time (transfer credit may reduce the total in class time) with a 30 minute lunch break included.

Apprentices must log in at the predetermined class time each day for guided instruction to ensure they are counted as being present at the beginning of class. Mischarging time will result in disciplinary action, up to and including discharge. All apprentices must abide by the attendance policy as outlined in The Apprentice School Catalog.

If there are issues in connecting, the apprentices are required to call The Apprentice School's IT department prior to the start of class to ensure not being counted as absent or late to class. The IT department is available from 6:00 a.m. – 5:00 p.m. Monday through Thursday and from 6:00 a.m. – 2:00 p.m. Friday.

#### **f. Assignment Submission**

Apprentices often are required to upload their written work either to Microsoft OneNote or Moodle to verify answers depending on the assessment or class assignment. In addition, Microsoft Assignments has been used by instructors to review and verify assigned classwork during workshop time.

Apprentices must show all work, including the appropriate equations, any necessary unit conversions, the values for the variables in the equations, and the answer with the correct units in order to receive credit for problems involving math calculations. Apprentices must provide adequate math work to justify his or her final answers to the satisfaction of the grading instructor.

Apprentices are assigned classwork regularly to provide the essential practice necessary to reinforce learning and to sharpen skills. Completed classwork assignments are due the date and time indicated by the instructor. Classwork may be collected and graded in lieu of, or in addition to, quizzes. If classwork is graded, the apprentices must turn in the material at the beginning of class on the assigned date or receive a zero. In the case where an apprentice is absent the day a classwork assignment is due, the apprentice must turn in the assignment at the beginning of the next class attended or receive a zero. Should an apprentice be absent the day classwork is assigned, the instructor may excuse the completion of that assignment.

#### **g. Passing Grades**

Course grades are determined as outlined in The Apprentice School Catalog.

#### **h. Plagiarism Policy**

The Apprentice School and its leadership are structured within Newport News Shipbuilding, a division of Huntington Ingalls Industries (HII). As such, The Apprentice School sets high ethical standards and upholds the HII values. Integrity is one of the core company values.

The Apprentice School ensures the quality of distance education in several ways. All apprentices receive both a copy of The Apprentice School's honor pledge and academic ethics guidelines during orientation the first week of school. Any breach of the honor pledge is considered a violation of the company's Yard Regulation #10 Falsification of Company Records. "Providing false or misleading information to the company" is expressly prohibited and will subject the offending employee to discharge or other discipline. The Apprentice School implements multiple deterrents to ensure the quality of distance education. Assessments generated from Moodle's question banks can be designed so that questions are randomized and shuffled throughout the apprentices' assessment. Instructors hide test-related instructional materials contained in Moodle, while Java Script eliminates the navigation blocks within Moodle. Instructors also monitor apprentices' logs in Moodle for indications of academic dishonesty. Moreover, instructors conduct open book/open note tests in classes in which this form of testing supports the overall learning outcomes (e.g. Physical Science I and II); this is the same practice for face-to-face courses. In this way, The Apprentice School can discourage academic dishonesty. The school also currently is evaluating software to enhance monitoring of online assessments.

Should an instructor have evidence of apparent cheating by an apprentice on an assignment, test, retest, or other classroom evaluation instrument, the incident will be addressed. The instructor will document the suspected cheating incident in an email which will contain the details of the incident. The email will be sent to the manager, Academics; manager, Craft Training; and the cognizant manager, Product Training. The cognizant manager, Product Training will refer the matter to the cognizant Supervisor of Employee Relations or Human Resources Representatives, who will investigate the incident, determine if cheating has occurred, and recommend disciplinary action, if appropriate. If it is determined that cheating occurred then the apprentice will receive an 'F' for the course letter grade and a '0' for the course numeric grade.

As mentioned previously, The Apprentice School sets high ethical standards, and integrity is one of the core values. The Apprentice School ensures the quality of distance education by multiple means.

Instructors use Microsoft Teams in conjunction with Moodle to deliver classes effectively. In this way Microsoft Teams adds an additional level of quality and security for instructors' ability to give instructions, share screens, show where to access

assessments, monitor the classroom, and answer any questions or assist with technical issues. Microsoft Teams enables the interaction needed between instructors and apprentices necessary to conduct online synchronous classes.

**i. Minimum Technology Specification for Apprentices**

Apprentices are required to have a laptop computer prior to beginning academic classes; the laptop computer must meet minimum computer requirements which are provided to students in their offer package. Costs for computers may vary.

**j. Privacy, Safety, and Security of Data Contained within Institutional Networks and Technical Infrastructure Capabilities**

The Apprentice School provides for the technical infrastructure to meet the demands of the programs being offered and provides for the privacy, safety, and security of information exchange and data. Moreover, the Information Technology (IT) division, onsite network administrators, Microsoft and Moodle hosting company ensure the privacy, safety, and security of data contained within the technical infrastructure of The Apprentice School's networks. NNS IT division provides IT solutions and services across the company, including for The Apprentice School. Key products and services include. Information Technology & Digital Transformation Division; Product Lifecycle Management & Application Solutions; Strategy, Architecture & Innovation; Cybersecurity, Compliance & Quality; Infrastructure & Operations; Business Transformation Office; Technology Business Management; and Enterprise Resource Planning Solutions.

To ensure the privacy, safety, and security of Microsoft data on as.edu, MS Exchange Center handles mail flow, protection, and compliance. MS SharePoint handles access control and sharing policy; MS Teams handles meeting policy, live event policy, and is restricted to only within the organization.

The Apprentice School has on-site as.edu network administrators. The administrators are in the school and are available to assist faculty, staff, and apprentices for extended hours before and after the school day. For Microsoft on as.edu (Administration, Exchange, SharePoint, MS Teams, and Azure AD), the backup system and reliable delivery services are done via Microsoft support services.

The school's onsite administrators are responsible for the privacy, safety, and security of data contained on The Apprentice School's educational network. As a contractor, they ultimately are under the direction of the IT division and must uphold all IT requirements with respect to privacy, safety, and security of data. Privacy of apprentice data is maintained through individual access to the as.edu network. To access the as.edu

network, apprentices must log on using an individual username and a unique password established by the school's onsite administrators.

The hosting company for Moodle ensures the safety of data contained in Moodle by backing up the server frequently. If the site goes offline, the hosting company is contacted for immediate support to restore the site. If an assignment or other course content is accidentally deleted from a course, the course can be restored to the most recent backup to recover the data. The hosting company protects the integrity of Moodle from security breaches, virus attacks, spam, or other unforeseen circumstances.

Apprentice privacy is maintained as they must log on to Moodle using a unique username and password to access course content. Social Security, credit card, and checking account numbers and home addresses are not entered in Moodle. The user's work email is entered, and the user may enter a telephone number.

In addition, NNS Standard Shipyard Procedures governs physical and environmental protection procedures for the company's network. The procedure's purpose is to ensure NNS has a comprehensive access control strategy. This strategy is a part of the defense-in-depth strategy implemented by Cybersecurity to protect the confidentiality, integrity, and availability of the NNS classified information system.

Specifically, the Cybersecurity department is responsible for the protection of NNS unclassified IT assets and computing infrastructure. Cybersecurity promotes effective security strategies in alignment with the company's goals and business drivers and offers guidance to position the company in gaining new business opportunities while adapting to the challenges of increasing external threats and vulnerabilities.

Cybersecurity is promoted as a collaborative effort among all NNS employees with access to information assets and company information networks. Furthermore, Cybersecurity protects the confidentiality, availability, and integrity of company data, networks, computing systems, and users.

Privacy of apprentice data is maintained through individual access to NNSCORP, the company network. To access NNSCORP, apprentices must log on using an individual username generated through the IT division and a unique password.

### **3. Apprentices and Faculty Interaction**

The Apprentice School shall provide for methods for timely interaction between apprentices and faculty.

- a. Clear communication of expectations from instructors:** Instructors will convey their expectations at the start of the course. Expectations will differ depending on the class and on the instructor.

- b. Availability of instructors:** Instructors will be available and responsive to apprentices. Each instructor will: (a) respond in a timely fashion and (b) make clear, at the start of the course or when they begin working with apprentices, when and how often they can typically expect a response.

Additionally, apprentices can email administrators/faculty to ask questions or let them know of a problem. For forgotten passwords, apprentices can click on the “forgot password” link and receive an email instructing them on how to reset their password without contacting an administrator directly. Moodle inquiries are answered within 24 hours.

- c. Extra help:** Extra help will be available both online and at the school.
- d. Computer, telephone, email, or face-to-face meetings:** Instructors regularly communicate with apprentices by several means. During class time, within Microsoft Teams, they may verbally call on specific apprentices for feedback or post announcements in the chat window. Alternatively, for more private topics instructors also may text apprentices through the chat feature or contact apprentices using the call function in Microsoft Teams. Instructors conduct office hours in Microsoft Teams as well as face-to-face. Furthermore, instructors and apprentices also may use the internal messaging system within Moodle, may communicate using Microsoft Teams, or through as.edu email accounts.

#### **4. Faculty Distance Education Training and Support Services**

Several faculty members currently on staff have worked with Moodle since its inception at The Apprentice School in 2010. Academic faculty share best instructional practices both informally and formally during monthly faculty meetings, in-house professional development meetings, and course reviews. Additionally, academic faculty routinely attend professional development training opportunities where attendees share best practices and advance their Moodle skills.

Though Microsoft Teams only has been used formally by school faculty since April 2020, there is a wealth of training available on this platform. The Apprentice School has an IT department that provides information and ongoing support on Microsoft Teams use, best practices, and app integration. Additionally, several instructors either hold degrees in computer related areas or have familiarity through prior instruction. Faculty share best instructional practices both informally and formally during monthly faculty meetings, in-house professional development meeting, and course reviews; IT staff have joined faculty meetings as well.



## **5. Student Distance Education Training and Support Services**

Apprentices are provided an opportunity to access both their Microsoft account and as.edu email accounts during orientation, which all apprentices attend their first week enrolled at the school. The school's Moodle administrators, who are full time academic faculty, establish apprentices' Moodle accounts. Faculty and staff facilitate apprentices' initial log-in during orientation and are available to provide support as needed. Apprentices experiencing difficulties with Moodle also may contact the school's Moodle administrators either by email or phone.

Prior to the start of online classes, apprentices are emailed a technology communication that outlines the steps for registering for Microsoft Teams. If apprentices have issues accessing Microsoft Teams, they should call The Apprentice School's IT department prior to the start of class to ensure they are not being counted as being absent or late to class. The IT department is available from 6:00 a.m. – 5:00 p.m. Monday through Thursday and from 6:00 a.m. – 2:00 p.m. Friday.

To ensure apprentices' success in online hybrid program courses, The Apprentice School conducts synchronous courses, requires daily attendance, communicates regularly, and provides both initial training and ongoing support while upholding a high ethical standard which re-enforces HII values.

# 2022 ACADEMIC CALENDAR

## WINTER QUARTER

Wednesday, January 5 through  
Thursday, March 10

WCSC in Session<sup>1</sup>  
(10-week Schedule)

## SPRING QUARTER

Monday, April 4 through  
Thursday, June 9

WCSC in Session<sup>2</sup>  
(10-week Schedule)

## SUMMER QUARTER

Wednesday, July 6 through  
Tuesday, September 13

WCSC in Session<sup>3</sup>  
(10-week Schedule)

## FALL QUARTER

Wednesday, September 28 through  
Tuesday, December 6

WCSC in Session<sup>4</sup>  
(10-week Schedule)

## 2022 ACADEMIC CALENDAR KEY DATES

### WCSC Winter QUARTER

<sup>1</sup>No classes will be held on Monday, January 17. The makeup day for these classes is Friday, January 21.

### WCSC Spring QUARTER

<sup>2</sup>No classes will be held on Monday, May 30 and Tuesday, May 31.

### WCSC Summer QUARTER

<sup>3</sup>No classes will be held on Monday, September 5 and Tuesday, September 6.

### WCSC Fall QUARTER

<sup>4</sup>No classes will be held on Wednesday, November 23 and Thursday, November 24.



# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology – Coatings Specialist

Nearly every component or structural element on a ship requires specific coatings. Coatings specialist apprentices are trained to properly apply a variety of marine coating systems. Coatings protect the steel and other surfaces from rust and corrosion, protect the underwater hull from marine life attachment and enhance the general appearance of the ship. Coatings specialist apprentices prepare the surfaces, cover areas that do not require paint, sandblast surfaces, apply the proper coating, and ensure suitable drying and curing conditions.

**\* The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
<b>QUARTER TOTAL</b>		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

<b>WCSC TOTAL</b>	<b>52.5</b>
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## Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at various times during the apprenticeship.*

### Coatings Specialist

Course No.	Course Title	Credits	Prerequisites
X33C 111	Paint and Surface Preparation	5.5	None
X33C 112	Blueprint Reading for Painters	1	None
X33C 135	Surface Preparation	12	None
X33C 136	Coating and Finishing	10	None
X33C 137	Inspection and Instrumentation	10	None
<b>TOTAL</b>		<b>38.5</b>	

**Total Credits    91**



# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology - Electrician

Naval ships require several miles of cable to supply power, from its source, throughout the ship. Electrician apprentices learn to install, operate and test electrical systems on board ships. These systems include lighting, power distribution, machinery, interior communications, fire control/weapons systems, testing, and nuclear plant work. They will work with drawings to devise a plan for their jobs, so they can lay off equipment location and cable runs. Electricians construct and install various electrical components and are required to complete a rigorous series of electrical theory courses to complement on-the-job training.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
<b>QUARTER TOTAL</b>		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

<b>WCSC TOTAL</b>	<b>52.5</b>
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## Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

### Electrician

Course No.	Course Title	Credits	Prerequisites
X31 111	Applied Theory I: DC Concepts	7.5	None
X31 112	Applied Theory II: AC Concepts	7.5	X31 111
X31 137	Electrical Installation – Surface Ships	6	None
X31 139	Electrical Installation – Submarines	6	None
X31 212	Applied Theory III: Polyphase Systems and Controls	8	X31 112
X31 214	Programmable Logic Controllers	3	X31 212
<b>TOTAL</b>		<b>38</b>	

**Total Credits    90.5**



# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology – Heating and Air Conditioning

The shipyard's large facility requires a maintenance group to service heating, ventilation and air conditioning units. Heating and air conditioning apprentices learn to install, repair and maintain a wide variety of systems throughout the shipyard. These systems include water fountains, window air conditioners, heating units, air driers, chilled water systems, and 3- to 60-ton air conditioning systems. Apprentices also perform routine preventative maintenance on all systems to ensure they function properly. Heating and air conditioning apprentices will take detailed theory courses to prepare them for the field.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
<b>QUARTER TOTAL</b>		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

**WCSC TOTAL**

**52.5**

## Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

### Heating and Air Conditioning

Course No.	Course Title	Credits	Prerequisites
X31 111	Applied Theory I: DC Concepts	7.5	None
X31 112	Applied Theory II: AC Concepts	7.5	X31 111
O43H 145	Heating Ventilation and Air Conditioning	12	None
X31 212	Applied Theory III: Polyphase Systems and Controls	8	X31 112
X31 214	Programmable Logic Controllers	3	X31 212
<b>TOTAL</b>		<b>38</b>	

**Total Credits    90.5**





# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology – Heavy Metal Fabricator

There are many unique shapes that must be formed from massive pieces of steel to construct the several sections of a ship. Heavy metal fabricator apprentices learn the processes and procedures of the shipyard's Steel Fabrication Shop. They learn to use a variety of tools and machines that cut, burn, bend, move and press steel into shapes needed for ship construction. Apprentices also learn how to lay their work out to validate the shape prior to extracting it. They create a large portion of the parts and plates needed to build aircraft carriers and submarines.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
QUARTER TOTAL		13.5	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
QUARTER TOTAL		12.5	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
QUARTER TOTAL		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
QUARTER TOTAL		<b>13.5</b>	

**WCSC TOTAL**

**52.5**

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## Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

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### Heavy Metal Fabricator

Course No.	Course Title	Credits	Prerequisites
X11 111	Hull Construction I	1.5	None
X15 112	Fundamentals of Fabrication	1.5	None
X15 135	Burning	12	None
X15 137	Small Forming	12	None
X15 139	Large Forming	12	None
TOTAL		<b>39</b>	

**Total Credits    91.5**



# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology - Insulator

Insulation ensures efficient operation of equipment, minimizes energy loss, reduces or eliminates noise transmission and prevents injury. Insulator apprentices learn to fabricate, manufacture and install various kinds of insulating materials. Apprentices cut and form insulation materials, make molded plastic forms, laminate fiberglass cloth and mix bonding materials such as cement, epoxies, and resins. They also learn to apply these skills through a variety of work experiences encompassing product lines, such as submarines, aircraft carriers, commercial ship construction and repair.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
<b>QUARTER TOTAL</b>		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

**WCSC TOTAL**

**52.5**

## Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

### Insulator

Course No.	Course Title	Credits	Prerequisites
X33I 111	Theory of Insulation	4.5	None
X33I 112	Blueprint Reading for Insulators	1	None
X33I 135	Sound Damping	12	None
X33I 136	Piping Insulation	10	None
X33I 137	Bulkhead Insulation	10	None
<b>TOTAL</b>		<b>37.5</b>	

**Total Credits    90**



# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology - Machinist

Several core components on naval vessels must be produced from metal with a high degree of accuracy. Machinist apprentices learn to operate all major types of manual and Computer Numerically Controlled (CNC) machine tools in the shipyard's machine shops. Some of the equipment includes: boring mills, lathes and milling machines of all sizes. After apprentices display competency in manual machine tools, they progress to CNC equipment to learn modern processes and programming with CAD/CAM software systems. They work a wide variety of metals to produce brackets, bolts, shafts, bushings, and other machined parts.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
QUARTER TOTAL		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
QUARTER TOTAL		<b>13.5</b>	

**WCSC TOTAL**

**52.5**

## Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

### Machinist

Course No.	Course Title	Credits	Prerequisites
M53 111	Machinist Shop Theory	3	None
M53 125	Machinist Fundamentals	12	None
M53 137	Machinist Practical – Milling	8	M53 125
M53 139	Machinist Practical – Turning	8	M53 125
M53 222	CNC Programming/Lab	6	M53 111
M53 223	Advanced Programming Lab	1	M53 222
TOTAL		<b>38</b>	

**Total Credits    90.5**



# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology – Maintenance Electrician

The shipyard's numerous facilities require installation, maintenance and repair of all electrical systems and components. Maintenance electrician apprentices learn to provide power for new equipment and lighting. They also learn to maintain and troubleshoot virtually every electrical and electronic component in the shipyard. The work may take apprentices anywhere, from an underground transmission line to the top of a 23- story crane. They will take several theory courses to learn the importance of electrical safety. Work assignments can vary from installing a simple electrical outlet to repairing and maintaining complex numerically controlled equipment.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
QUARTER TOTAL		13	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
QUARTER TOTAL		13.5	

**WCSC TOTAL**

**52.5**

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## Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

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### Maintenance Electrician

Course No.	Course Title	Credits	Prerequisites
X31 111	Applied Theory I: DC Concepts	7.5	None
X31 112	Applied Theory II: AC Concepts	7.5	X31 111
O43E 125	Electrical Maintenance Construction	12	None
X31 212	Applied Theory III: Polyphase Systems and Controls	8	X31 112
X31 214	Programmable Logic Controllers	3	X31 212
TOTAL		38	

**Total Credits    90.5**





# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## **Associate of Applied Science: Maritime Technology – Maintenance Pipefitter**

There are piping systems throughout the entire shipyard that serve the facilities with water, gas and air. Maintenance pipefitter apprentices learn to maintain the various piping systems throughout the shipyard's 550- acre facility. Maintaining these piping systems and facilities is critical to shipyard operations. Apprentices in this trade become proficient in many skills and processes, including bending, threading, brazing and welding. They also learn how to overhaul valves and repair piping systems of various materials such as: steel, copper and PVC.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## **World Class Shipbuilder Curriculum (WCSC)**

### **QUARTER 1**

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### **QUARTER 2**

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
<b>QUARTER TOTAL</b>		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

**WCSC TOTAL**

**52.5**

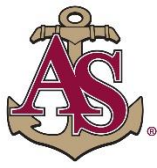
## Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

### Maintenance Pipefitter

Course No.	Course Title	Credits	Prerequisites
X42 111	Introduction to Pipefitting	2	None
X42 113	Blueprint Reading Fundamentals and Procedures	2	X42 111
X42 121	Sketching and Bending Fundamentals	3.5	X42 113
X42 125	Pipefitting Fundamentals	2	None
O43P 140	Piping Facilities	15	X42 125
O43P 141	Shipyard Utilities	14	X42 125
<b>TOTAL</b>		<b>38.5</b>	

**Total Credits    91**



# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology - Millwright

The shipyard is equipped with many cranes, machinery and vehicles that require maintenance. Millwright apprentices install, maintain, repair, and overhaul shipyard machinery. Apprentices learn to operate a number of machine tools including lathes, milling machines and drill presses in manufacturing parts used to repair production equipment. They also inspect and maintain cranes throughout the entire shipyard and repair machinery in the various waterfront shops. Apprentices will work in an automotive shop to repair company vehicles and other transportation equipment.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
<b>QUARTER TOTAL</b>		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

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<b>WCSC TOTAL</b>	<b>52.5</b>
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### Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

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### Millwright

Course No.	Course Title	Credits	Prerequisites
M53 111	Machinist Shop Theory	3	None
M53 125	Machinist Fundamentals	12	None
O43M 137	Millwright Practical – Crane Maintenance	10	M53 125
O43M 139	Millwright Practical – Equipment	12	M53 125
O43M 221	Introduction to Hydraulics	2	M53 111
<b>TOTAL</b>		<b>39</b>	

**Total Credits    91.5**



# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology - Molder

Many components are cast from molten metal because the unique shapes can be obtained easier than machining them from a solid piece. Molder apprentices work in the shipyard's foundry, one of the few foundries in the United States capable of pouring a large variety of ferrous and nonferrous metals. They receive an overview of each foundry operation and learn necessary processes to produce a finished casting from raw materials. Apprentices are exposed to everything from building the mold, pouring the molten metal into the form and cleaning up the castings with grinders to drawing specifications once they have cooled.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
<b>QUARTER TOTAL</b>		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

<b>WCSC TOTAL</b>	<b>52.5</b>
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### Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

### Molder

Course No.	Course Title	Credits	Prerequisites
A572 111	Foundry Processes	3	None
A572 112	Blueprint Reading for Molders	1.5	None
A572 137	Foundry Molding	12	None
A572 138	Foundry Melting Operations	12	None
A572 139	Foundry Finishing and Inspection	10	None
<b>TOTAL</b>		<b>38.5</b>	

**Total Credits    91**



# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology – Non-Destructive Tester

All critical components on a ship must be tested to verify their integrity to ensure they will uphold to designed stresses. Non-Destructive Tester apprentices operate a variety of equipment which typically involve calibrating equipment, conducting the actual test, evaluating the results and writing an inspection report. They gain experience in radiographic, magnetic particle, liquid penetrant, ultrasonic and eddy current inspection methods. Apprentice training also provides experience in visual inspection, quality, planning, technical applications, quality standards, and codes interpretation.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
QUARTER TOTAL		13.5	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
QUARTER TOTAL		12.5	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
QUARTER TOTAL		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
QUARTER TOTAL		<b>13.5</b>	

**WCSC TOTAL**

**52.5**

### Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

### Non-Destructive Tester

Course No.	Course Title	Credits	Prerequisites
X11 111	Hull Construction I	1.5	None
O38 137	Magnetic Particle Inspection	12	None
O38 139	Liquid Penetrant Inspection	14	None
O38 141	Ultrasonic Testing	10	None
TOTAL		<b>37.5</b>	

**Total Credits    90**





# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology – Outside Machinist

Once all mechanical components are manufactured, purchased and obtained, they must be installed on board the ship. Outside machinist apprentices install, repair and test a ship's major machinery and other mechanical components. Many of these systems are responsible for the ships' propulsion, steering and weapons systems. They learn the safe operation of shop machines and hand and power tools to install and test systems on nuclear reactors, turbines, generators, pumps, propellers, rudders, elevators, periscopes and armaments. Apprentices also learn the function and operation of motors, pumps and valves.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
<b>QUARTER TOTAL</b>		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

**WCSC TOTAL**

**52.5**

## Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

### Outside Machinist

Course No.	Course Title	Credits	Prerequisites
X43 111	Machinery Installation Theory	4	None
X43 125	Outside Machinist Fundamentals	8	None
X43 137	Machinery Installation – Submarines	10	X43 125
X43 139	Machinery Installation – Surface Ships	12	X43 125
X43 212	Ships Systems	4	X43 111
<b>TOTAL</b>		<b>38</b>	

**Total Credits    90.5**



# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology - Patternmaker

Foundry castings are dependent on the wooden pattern made in the shape of the finished part. Patternmaker apprentices learn the fundamentals of wood and tool selection and shaping, forming and joining techniques. They lay out and construct simple patterns before training progresses to more complex jobs, including collapsible, unusually shaped and large patterns. The quality of the casting weighs heavily on the quality of the pattern. Apprentices learn a variety of machines including: wood lathes, jointers, routers, planers and saws. They also will be exposed to CAD/CAM software systems that control modern processes and toolpaths.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
QUARTER TOTAL		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
QUARTER TOTAL		<b>13.5</b>	

**WCSC TOTAL**

**52.5**

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### Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

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### Patternmaker

Course No.	Course Title	Credits	Prerequisites
M71 111	Patternmaker's Theory	1.5	None
A572 111	Foundry Processes	3	None
A572 112	Blueprint Reading for Molders	1.5	None
M71 136	Woodworking	10	None
M71 137	Pattern Construction	12	None
M71 139	Foundry Operations	10	None
TOTAL		<b>38</b>	

**Total Credits    90.5**



# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology - Pipefitter

A ship's pipes carry vital fluids and gases necessary for the ship and its crew to function. Pipefitter apprentices learn how to install, inspect, and test the many piping systems on board aircraft carriers and submarines. They go through pipe theory, learn how to tack weld and braze and learn the basic skills necessary to function as a pipefitter. Pipefitter apprentices help to put the complex piping network together by cutting, bending, prepping and hanging piping runs on ships. They are required to install valves and make up flanges where required by the drawings. Testing crews operate and inspect the systems for leaks or flaws.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
<b>QUARTER TOTAL</b>		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

**WCSC TOTAL**

**52.5**

## Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

### Pipefitter

Course No.	Course Title	Credits	Prerequisites
X42 111	Introduction to Pipefitting	2	None
X42 113	Blueprint Reading Fundamentals and Procedures	2	X42 111
X42 121	Sketching and Bending Fundamentals	3.5	X42 113
X42 125	Pipefitting Fundamentals	2	None
X42 137	Pipefitting – Surface Ships	14	X42 125
X42 139	Pipefitting - Submarines	14	X42 125
<b>TOTAL</b>		<b>37.5</b>	

**Total Credits    90.0**



# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology - Rigger

There is always an apparent need to move material, equipment, and machinery to support all other trades. Rigger apprentices learn basic rigging fundamentals, how to properly hook up loads and how to signal to crane operators for movement. In addition, they learn to fabricate wire rope pendants for rigging aboard ships, install temporary services and work in the tool room. Apprentices are a part of large ship section lifts, blocking and shoring that supports the initial ship's construction, and they erect and assemble a variety of staging platforms to support the needs for the trades to safely accomplish their jobs.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
QUARTER TOTAL		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
QUARTER TOTAL		<b>13.5</b>	

**WCSC TOTAL**

**52.5**

### Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

### Rigger

Course No.	Course Title	Credits	Prerequisites
X36 135	Stagebuilding and Safety	8	None
X36 137	Lifting and Handling - Ship	10	None
X36 139	Lifting and Handling - Cranes	12	None
X36 211	Stagebuilding, Blocking, and Shoring	3	None
X36 212	Lifting and Handling Equipment	3	None
X36 213	Mooring and Ventilation	3	None
TOTAL		<b>39</b>	

**Total Credits    91.5**





# The Apprentice School

## Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

### Associate of Applied Science: Maritime Technology – Sheet Metal Worker

The majority of a ship is fabricated from large pieces of steel, but a lot of the interior components are assembled from light gauge metal. Sheet metal apprentices learn to construct items, such as lockers, foundations, stowage bins and racks, workbenches, galley furniture, bulkheads, terminals, and ventilation duct work. They install all of these and many additional items, such as ventilation equipment, furniture, doors, ladders, handrails, and trim work on board ships. Additionally, apprentices learn to weld, develop patterns, interpret a wide range of trade drawings and use layout techniques for fabricating and installing a variety of sheet metal work.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

### World Class Shipbuilder Curriculum (WCSC)

#### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

#### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
QUARTER TOTAL		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
QUARTER TOTAL		<b>13.5</b>	

**WCSC TOTAL**

**52.5**

## Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

### Sheet Metal Worker

Course No.	Course Title	Credits	Prerequisites
X32 111	Sheet Metal Print Reading	4.5	None
X32 112	Materials and Machine Processes Theory	2	X32 111
X32 113	Sheet Metal Layout Theory	2	X32 112
X32 125	Fundamentals of Sheet Metal	4	None
X32 135	Sheet Metal Shop Work	6	X32 125
X32 137	Ventilation Installation	10	X32 125
X32 139	Equipment Installation	10	X32 137
TOTAL		<b>38.5</b>	

**Total Credits    91**



# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology - Shipfitter

The ship's internal and external frame is constructed of large pieces of plate and then fitted with decks and bulkheads. Shipfitter apprentices contribute to all structural phases of the ship's hull construction including fabrication, assembly, and alignment of the ships structures. They position and fit steel together so that the pieces can be permanently welded in place. Apprentices learn to tack weld to prevent their assemblies from moving. They also install other structural components, such as hatches, doors and foundations to complete the steel work of the ship and gain experience in submarine and aircraft carrier construction and aircraft carrier overhaul.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
<b>QUARTER TOTAL</b>		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

**WCSC TOTAL**

**52.5**

## Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

### Shipfitter

Course No.	Course Title	Credits	Prerequisites
X11 111	Hull Construction I	1.5	None
X11 112	Hull Construction II CVN Drawings and Work Packages	1	X11 111
X11 113	Hull Construction II VCS Drawings and Work Packages	1	X11 111
X11 137	Shipfitting Practical – Shops	10	None
X11 138	Shipfitting Practical – Submarines	12	None
X11 139	Shipfitting Practical – Surface Ships	12	None
<b>TOTAL</b>		<b>37.5</b>	

**Total Credits    90**



# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology - Welder

Ships today are joined by weld in all areas, such as hull, bulkheads, decks, foundations, piping, and machinery. Welder apprentices will learn a range of manual, semiautomatic, and automatic welding processes in the shipyard's welding school. They learn how to check for metal preparation and how to interpret the many different types of weld symbols. Apprentices use a wide range of metals and welding processes to perform structural and pipe welds in all phases of submarine and aircraft carrier construction and overhaul. Welder apprentices also learn to safely use torches to preheat areas before they are welded.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
QUARTER TOTAL		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
QUARTER TOTAL		<b>13.5</b>	

**WCSC TOTAL**

**52.5**

## Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

### Welder

Course No.	Course Title	Credits	Prerequisites
X11 111	Hull Construction I	1.5	None
X18 112	Welding Fundamentals: SMAW and GMAW	1	None
X18 137	Welding – Submarines	17	None
X18 139	Welding – Surface Ships	17	None
X18 212	Introduction to Non-Destructive Testing	1	None
TOTAL		<b>37.5</b>	

**Total Credits    90**



# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology – Welding Equipment Repairer

The shipyard maintains welding equipment of all forms and sizes. Welding equipment repair apprentices receive training on the electrical system that provides power to the welding equipment before they move into learning to test, troubleshoot, repair, and maintain welding and burning equipment. As part of the training, apprentices are required to complete an extensive series of electrical theory courses to complement the mechanical and electronic on-the-job training needed when servicing a wide range of welding and burning equipment. Their training includes shop maintenance, as well as service calls to various areas in the yard and onboard ship.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
QUARTER TOTAL		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
QUARTER TOTAL		<b>13.5</b>	

**WCSC TOTAL**

**52.5**

## Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

### Welding Equipment Repairer

Course No.	Course Title	Credits	Prerequisites
X31 111	Applied Theory I: DC Concepts	7.5	None
X31 112	Applied Theory II: AC Concepts	7.5	X31 111
O43W 142	Welding Equipment Repair	12	None
X31 212	Applied Theory III: Polyphase Systems and Controls	8	X31 112
X31 214	Programmable Logic Controllers	3	X31 212
TOTAL		<b>38</b>	

**Total Credits    90.5**





# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology – Cost Estimator

Cost Estimators perform an important role within the Contracts and Pricing section of the Business Management organization. Cost Estimators develop material and man-hour estimates, analyze and compare cost information for proposal variances, project funding progress, and compile estimate documentation to support contract negotiations. Estimating apprentices will evaluate customer requirement documents, participate in job scope development and budget distribution, assist with planning workflow for trades departments, and analyze performance to budget.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
QUARTER TOTAL		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
QUARTER TOTAL		<b>13.5</b>	

**WCSC TOTAL**

**52.5**

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### Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

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### Cost Estimator

Course No.	Course Title	Credits	Prerequisites
X06C 111	Fundamentals of Cost Estimation	10	None
X06C 137	Cost Estimation – Initial Proposals	14	X06C 111
X06C 139	Cost Estimation – Change Proposals	14	X06C 111
TOTAL		<b>38</b>	

**Total Credits    90.5**



# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology – Marine Designer

Apprentices selected for this program will prepare a variety of engineering documents including drawings, liaison and discrepancy reports. Students will utilize PC based design software including computer aided drafting and specification/technical libraries. Design students will take courses specifically developed for the Marine Design apprenticeship including computer aided design and parametric solid modeling.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
<b>QUARTER TOTAL</b>		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

**WCSC TOTAL**

**52.5**

## Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

### Marine Designer

Course No.	Course Title	Credits	Prerequisites
E06 125	Marine Design Fundamentals	14	None
E06 137	Marine Design – Submarines	12	E06 125
E06 139	Marine Design – Surface Ships	12	E06 125
<b>TOTAL</b>		<b>38</b>	

**Total Credits    90.5**



# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology – Metrology Technician

Apprentices selected for this program will perform comprehensive industrial measurement surveys of the ship and in-process manufactured structures and components. Metrology technician apprentices will utilize industrial measurement equipment for precision setting, alignment, and calibration of structures, weapon systems, machinery, and propulsion systems. Metrology technology apprentices also will develop accuracy control plans to predict and reduce the variability of fabricated, machined, and assembled products through the interim stages of the shipbuilding and manufacturing process.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
<b>QUARTER TOTAL</b>		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

**WCSC TOTAL**

**52.5**

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### Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

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### Metrology Technician

Course No.	Course Title	Credits	Prerequisites
O68 111	Industrial Measurement - Instrumentation	5.5	None
O68 125	Metrology Fundamentals	12	None
O68 137	Metrology Technician Practical – Submarines	10	O68 111
O68 139	Metrology Technician Practical – Surface Ships	10	O68 111
<b>TOTAL</b>		<b>37.5</b>	

**Total Credits    90**



# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology – Modeling & Simulation Program Analyst

Modeling and Simulation (M&S) is an advanced process that allows analysis of data to assess designs, improve processes, and make critical business decisions. Modeling and simulation program analyst apprentices work and learn in every stage of M&S study including conceptual modeling, software development, technical artistry and animation, data collection, simulation construction and output analysis. Modeling & simulation program analyst apprentices design and build computer simulations, identify problems and improve operations in a real-world environment. Modeling & simulation program analyst apprentices participate in a three-year rotation plan where they learn to apply innovative simulation practices in the area of ship construction and Research & Development projects.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
<b>QUARTER TOTAL</b>		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

**WCSC TOTAL**

**52.5**

### Trade Related Education Curriculum (TREC)

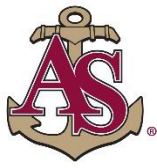
*\* Trades courses can be taken at varying times during an apprenticeship.*

### Modeling & Simulation Program Analyst

Course No.	Course Title	Credits	Prerequisites
X06M 125	Modeling and Simulation – Fundamentals	14	None
X06M 137	Modeling and Simulation – Development	12	X06M 125
X06M 139	Modeling and Simulation – Analysis	12	X06M 125
<b>TOTAL</b>		<b>38</b>	

**Total Credits    90.5**





# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology – Nuclear Test Technician

Nuclear Test Technicians (NTTs) perform an important role in the new construction and overhaul of naval nuclear ships. The NTT functions as the on-site representative of the Shift Test Engineer (STE) to oversee all elements of reactor plant testing, mechanical and electrical, as well as to coordinate testing with Trades, Inspection, Radiological Control, and Navy personnel. NTT apprentices participate in a three-year rotation plan that provides a variety of experience across various shipboard platforms as well as in procedure writing, planning, technical support and nuclear engineering training groups. NTT apprentices complete the program in an excellent position to enter the STE Qualification Program.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
<b>QUARTER TOTAL</b>		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

**WCSC TOTAL**

**52.5**

## Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

### Nuclear Test Technician

Course No.	Course Title	Credits	Prerequisites
E06T 111	Nuclear Test Technician Fundamentals	10	None
E06T 137	Nuclear Testing and Work Control – Submarines	14	E06T 111
E06T 139	Nuclear Testing and Work Control – Surface Ships	14	E06T 111
<b>TOTAL</b>		<b>38</b>	

**Total Credits    90.5**



# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology – Production Planner

Apprentices selected for this program will become proficient in the use of various computer systems that are used for planning and controlling work on various product lines. They will rotate through related work areas to become experienced in program planning and scheduling, work breakdown structure, operational planning, and shop floor planning.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology (General Education)	4	None
QUARTER TOTAL		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (Technical Core)	4.5	None
QUARTER TOTAL		<b>13.5</b>	

**WCSC TOTAL**

**52.5**

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### Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

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### Production Planner

Course No.	Course Title	Credits	Prerequisites
X06P 135	Production Planning – Scheduling	14	None
X06P 137	Production Planning – Build Management	16	None
X06P 139	Production Planning – Production Control	8	None
TOTAL		<b>38</b>	

**Total Credits    90.5**



# The Apprentice School Official Curriculum Guide

*Craftsmanship, Scholarship, Leadership*

Name: \_\_\_\_\_

Start Date: \_\_\_\_\_

## Associate of Applied Science: Maritime Technology – Supply Chain Specialist

The Supply Chain Specialist apprentice will be developing and managing purchase orders as well as building relationships with suppliers for both Navy contract work and purchasing for various areas in the company (Operations, Facilities and Maintenance, Construction, Manufacturing, etc.). Apprentices will also gain experience in the compliance office focusing on Purchasing, Property and Material Management and Accounting Systems. Apprentices will participate in the storage and movement of material, and utilize the practices, procedures and requirements associated with material management. This experience is gained by job rotations in various shipyard warehouses, storage facilities and working with the company's transportation department.

**\*The Commonwealth of Virginia issued certification of completion of apprenticeship is required prior to conferring this degree.\***

## World Class Shipbuilder Curriculum (WCSC)

### QUARTER 1

Course No.	Course Title	Credits	Prerequisites
MATH 111	Mathematics I (General Education)	4.5	None
COMM 111	Communications I (General Education)	4.5	None
HIST 111	History (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

### QUARTER 2

Course No.	Course Title	Credits	Prerequisites
MATH 112	Mathematics II (General Education)	4.5	MATH 111
DRFT 111	Drafting (Technical Core)	4.5	None
SHCN 111	Ship Construction I (Technical Core)	3.5	None
<b>QUARTER TOTAL</b>		<b>12.5</b>	

### QUARTER 3

Course No.	Course Title	Credits	Prerequisites
SHCN 222	Ship Construction II (Technical Core)	3.5	SHCN 111
PHYS 221	Physical Science I (General Education)	4.5	None
SITE 211	Digital Shipbuilding & Technology (Technical Core)	1	None
PSYC 221	Psychology of Safety in the Workplace (General Education)	4	None
<b>QUARTER TOTAL</b>		<b>13</b>	

### QUARTER 4

Course No.	Course Title	Credits	Prerequisites
MECH 222	Mechanics (Technical Core)	4.5	None
PHYS 222	Physical Science II (General Education)	4.5	PHYS 221
BUSI 222	Business Operations and Leadership (General Education)	4.5	None
<b>QUARTER TOTAL</b>		<b>13.5</b>	

**WCSC TOTAL**

**52.5**

## Trade Related Education Curriculum (TREC)

*\* Trades courses can be taken at varying times during an apprenticeship.*

### Supply Chain Specialist

Course No.	Course Title	Credits	Prerequisites
X06S 111	Fundamentals of Supply Chain Management	10	None
X06S 137	Supply Chain Management – Direct Procurement	14	X06S 111
X06S 139	Supply Chain Management – Indirect Procurement	14	X06S 111
<b>TOTAL</b>		<b>38</b>	

**Total Credits    90.5**