CALIFORNIA MARITIME ACADEMY

HONOR DUTY

TRADITION

General Catalogue

1958

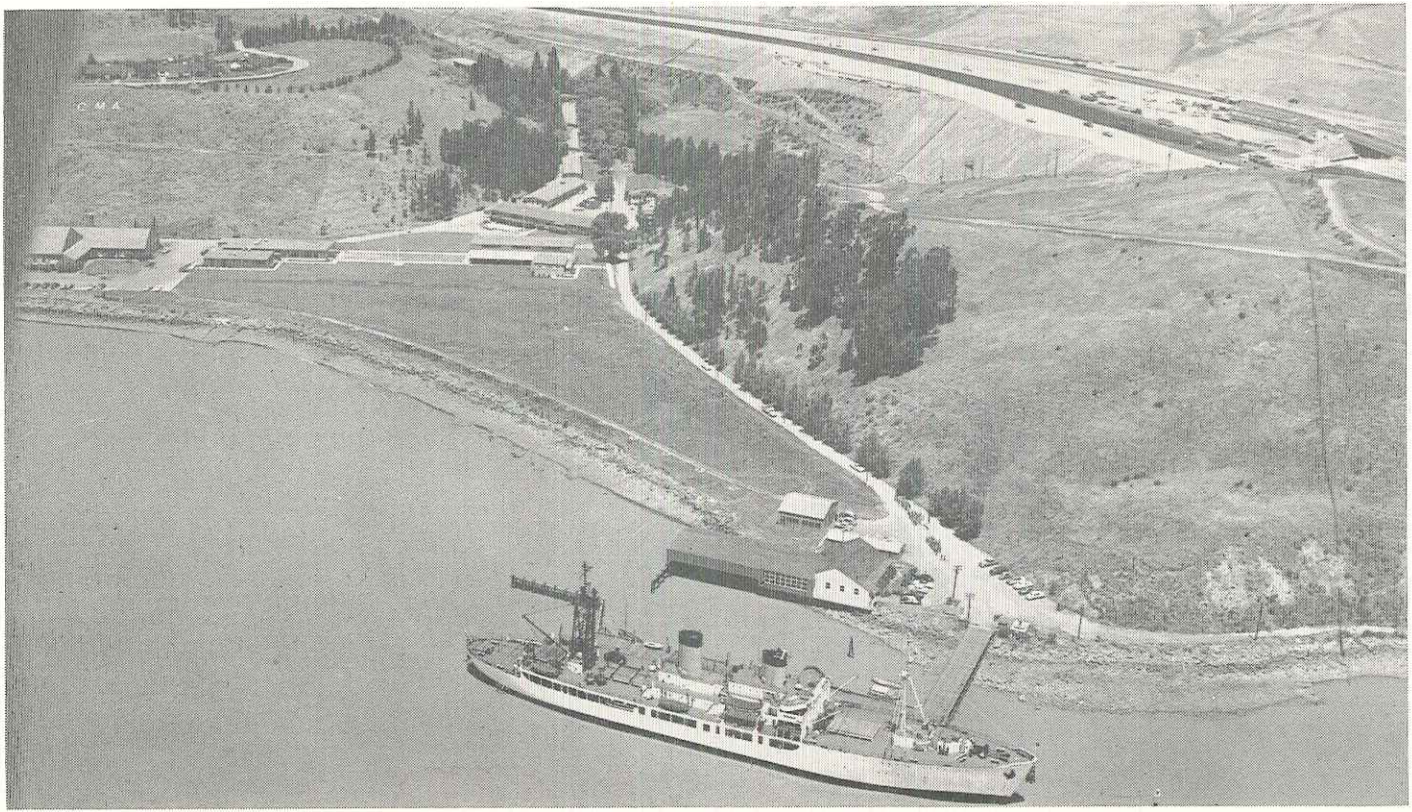
VALLEJO, CALIFORNIA

CALIFORNIA MARITIME ACADEMY

General Catalogue

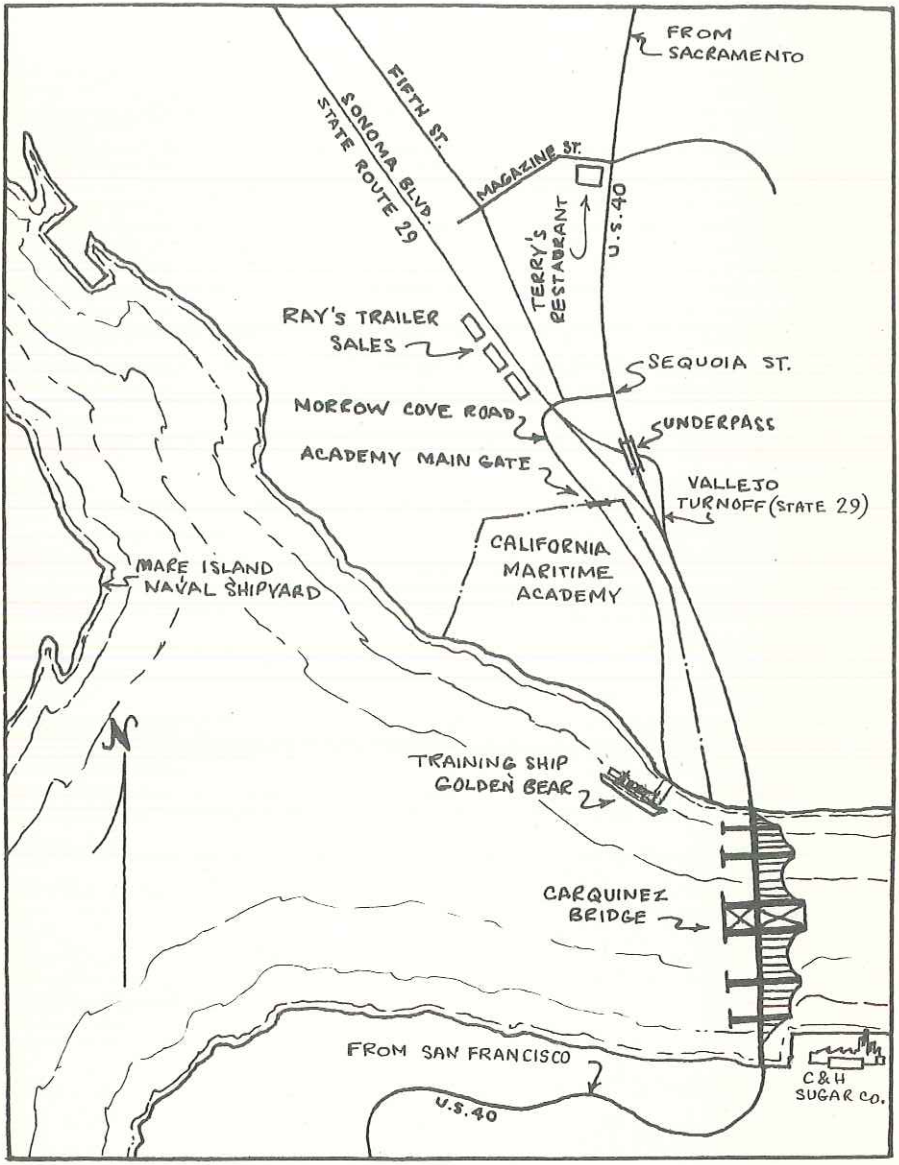
1958

VALLEJO, CALIFORNIA



AERIAL VIEW OF THE ACADEMY GROUNDS

TABLE OF CONTENTS



APPROACHES TO CALIFORNIA MARITIME ACADEMY

FOREWORD

The sea is a lovely lady, a capricious maiden, or a raging monster. Since the beginning of recorded time, man, under the urge of his venturesome spirit, has pitted his will, ingenuity, and skill against this vicious and explosive element of nature.

This unending battle has compelled man to extend his inventiveness to the utmost in the effort to develop ways and means to retain supremacy over the sea. No longer can the seafarer depend upon incantation, incense, and intuition to survive.

The professional mariner must have the ability to lead men and to utilize efficiently and effectively the tools of his trade. The application of nuclear power to the propulsion of the merchant ship adds but another science with which the mariner must be familiar.

It is the mission of the California Maritime Academy to prepare young men for a career at sea, an exacting and rigorous profession which at the same time is extremely fascinating and highly profitable.

Only those who are adequately prepared are capable of accepting the challenge!

CALIFORNIA MARITIME ACADEMY

APPROXIMATE ACADEMIC CALENDAR

1958

2 Sept.	First trimester begins.
9 Sept.	Admission Day holiday.
11 Nov.	Veteran's Day holiday.
27 Nov.	Thanksgiving Day.*
19 Dec.	Christmas holiday leave begins.

1959

5 Jan.	First trimester ends. Sea training trimester begins. Christmas holiday leave expires. Shipyard overhaul of Training Ship *Golden Bear* begins.
30 Jan.	Training Ship *Golden Bear* departs San Francisco for cruise.
1 Apr.	Training Ship *Golden Bear* returns to base. Sea training trimester ends. Leave begins.
13 Apr.	Leave ends. Third trimester begins.
22 May	National Maritime Day.
27 July	Final examination for first class.
3 Aug.	Final examination for second and third classes.
14 Aug.	Graduation exercises. Graduation leave begins.
24 Aug.	New class enters.
31 Aug.	Academic year begins. Graduation leave ends.

Slight variations in this calendar may be expected due to variation in duration of cruise trimester.

* The Friday after Thanksgiving is an academic holiday.

CALIFORNIA MARITIME ACADEMY

CALIFORNIA STATE DEPARTMENT OF EDUCATION

EXECUTIVE OFFICERS

ROY E. SIMPSON
State Superintendent of Public Instruction and
Director of Education

J. BURTON VASCHE
Associate Superintendent of Public Instruction and Chief,
Division of State Colleges and Teacher Education

BOARD OF GOVERNORS

Dr. Roy E. Simpson ..... Executive Member, Ex Officio
Mr. Hugh Gallagher, San Francisco ..... Chairman
Mr. Ralph D. Sweeney, Los Angeles ..... Vice Chairman
Dr. J. Burton Vasche, Sacramento ..... Member
Capt. Gene M. Harris, USNR (Ret.), Santa Barbara ..... Member
Mr. Ellis R. Randall, Vallejo ..... Member

ADMINISTRATIVE STAFF

Captain Henry E. Richter, USN (Ret.) ..... Superintendent
B.S., U. S. Naval Academy

Dr. Clyde L. Ogden ..... Dean of Instruction
A.B., M.A., Ed.D., University of California

Captain John W. Anderson, M.M.
Head of Department of Navigation and Seamanship
Master Training Ship *Golden Bear*

Commander Richard D. Heron, CMA, 1938 ..... Commandant of Midshipmen
Chief Officer Training Ship *Golden Bear*

Commander Frank Flanner, CMA, 1935 ..... Head of Department of Engineering
Chief Engineer Training Ship *Golden Bear*

Commander E. E. Keeley ..... Business Manager

Lieutenant Commander Louis K. Payne, USNR
Head of Department of Naval Science

INSTRUCTIONAL STAFF

Dr. Clyde L. Ogden—Dean of Instruction—B.A., M.A., D.Ed., University of California

DECK DEPARTMENT

CAPT. John W. Anderson, M.M., Federal license: Master, steam and motor vessels, ocean, unlimited.

CDR Richard D. Heron, B.S., CMA, 1938–LCDR USNR, Federal license: Chief Mate, steam and motor vessels, ocean, unlimited.

LCDR Noel B. Martin, B.S., CMA, 1942; M.A., San Francisco State, LT USNR, Federal license: Master, steam and motor vessels, ocean, unlimited.

LCDR Frederick A. Nied, B.S., CMA, 1942–Federal license: Master, steam and motor vessels, ocean, unilmited.

LT. Donald A. Pederson, CMA, 1934–Federal license: Chief Mate, steam and motor vessels, ocean, unlimited.

ENGINEERING DEPARTMENT

CDR Frank Flanner, CMA, 1935–CDR USNR, Federal license: Chief Engineer, steam vessels, ocean, unlimited.

LT. COMDR. Charles B. Dunham, CMA, 1945–LT USNR, Federal license: First Assistant Engineer, steam vessels, ocean, unlimited. Third Assistant Engineer, motor vessels, ocean, unlimited.

LT. Frank L. LaBombard, CMACH USNR. Federal license: Second Assistant Engineer, steam vessels, ocean, unlimited.

LT. Arthur S. Behm, Jr., B.S., CMA, 1942–LT USNR, Federal license: Second Assistant Engineer, steam vessels, ocean, unlimited.

LT. Donald L. Lipman, B.S., CMA, 1951–LTJG USNR, Federal license: Third Assistant Engineer, steam and motor vessels, ocean, unlimited.

LT. Otto J. Bruhn, B.A., University of California, Federal license: First Assistant Engineer, steam vessels, ocean, unlimited. Third Assistant Engineer, motor vessels.

LT. Thomas J. Beland, B.A., University of California, Federal license: Second Assistant Engineer, steam vessels, ocean, unlimited.

NAVAL SCIENCE DEPARTMENT

Louis K. Payne, LCDR USNR
Ernest Tennes, LT USN
Virgil G. Valentine, LT(j.g.) USNR
Wayne E. Stamper, GMC, USN
Lawrence J. Jeffers, FTI USN
Jerry Wion, YNI, USN

MEDICAL DEPARTMENT

Charles H. Pritchett, LT, Medical Service Corps, USN (Ret.)

PHYSICAL EDUCATION

LT. James L. Thwing, LT USNR, B.S., A.B., University of Washington

HISTORY

The California Maritime Academy was originally established in 1929 as the California Nautical School by act of the State Legislature and is a unit of the State Department of Education on the state college level.

Federal authority and encouragement for state nautical schools derives from an act of Congress passed in 1874. While it is distinctly an educational agency of the State of California, the Federal Maritime Administration has a strong interest in and extends considerable assistance to the academy.

Federal Maritime Administration interest stems directly from a mandate of the Congress, expressed in the Merchant Marine Act of 1936, which directs the maintenance of an adequate Merchant Marine to support American domestic and foreign commerce and to meet the requirements for national defense. The act provides that the Merchant Marine be "manned with a trained and efficient citizen personnel."

MISSION

The mission of the academy, as stated in the State Education Code, is to give instruction in the science and practice of navigation, seamanship, steam, diesel, and electrical engineering to male pupils who have the good moral character, education, and physical fitness required by the board of governors of the school.

The student enters the academy with the maritime profession as his definite and primary objective. The entire course, both academic and practical, is designed to prepare him for this objective. No elective subjects are provided. In addition to purely academic or practical instruction, the general experience acquired by the students living together on the base and aboard ship provides invaluable training for their future careers.

The students also receive instruction in naval science under the auspices of the Navy Department, the program thus providing both maritime and naval training which equips the graduate with both merchant and naval experience, a most valuable asset in time of national emergency.

LOCATION

The California Maritime Academy is located on the north shore of Carquinez Straits, just south of the City of Vallejo. It is about one hour's drive on U. S. Highway 40 from San Francisco. Main bus lines stop a few minutes walk of the entrance to the academy grounds. The Mare Island Naval Shipyard is in the immediate vicinity and is available for observation of dry-docking, heavy shop practice, ship repair procedures, and electronic developments. Oceangoing steamers and naval vessels pass through Carquinez Straits en route to and from Sacramento and San Joaquin River ports.

FEDERAL ASSISTANCE

Because of its historic interest in the development of an adequate Merchant Marine and the preparation of licensed officers therefor, the Federal Government has provided assistance to Maritime Academies in various forms. The Training Ship *Golden Bear* has been loaned to the State of California through the Department of Commerce and its agent, the Maritime Administration. The annual overhaul of this ship is paid for from federal funds. In addition, an outright grant of $25,000 per annum is paid to the State from this same source. An allowance is paid the State for each out-of-state student enrolled and a program for granting a textbook and uniform allowance to a total of 150 students has also been established. The Federal Government's contribution each year amounts to approximately $100,000.

GENERAL

Responsibility for immediate management and operation of the academy is vested by state law in the Superintendent who is appointed by and responsible to the board of governors. The Superintendent is a retired naval officer with long experience at sea. His appointment is approved by the Federal Maritime Administration, the Navy Department, and the California State Department of Education.

The instructors are also the officers of the Training Ship *Golden Bear,* insuring sound continuity and relationship between studies during the academic trimesters and practical experience on the annual training cruise. Every member of the faculty has a creditable record of service in the Merchant Marine or in the Navy, and most have experience in both. The Navy Department assigns three officers and several chief petty officers as instructors in naval science.

For purposes of organizational management and to develop a high spirit of morale and a sense of discipline, the student body is organized as a corps of midshipmen.

A military routine is followed. Midshipmen are required to be provided with and wear uniforms, similar in design to those worn at the U. S. Naval Academy. A schedule for classes, drills, meals, study hours, physical training, reveille, and taps is prescribed. Military etiquette is observed as a matter of gentlemanly courtesy between associates.

While major emphasis is placed on preparing the midshipmen to perform the duties required in connection with operating and maintaining a ship, the qualities of leadership are also stressed.

Midshipmen are required to adhere to a high standard of discipline. Infractions of prescribed rules and regulations are punishable by the assignment of demerits. These demerits determine the Conduct Grade the individual receives. Those who have a failing Conduct Grade may be dropped from the academy or may be denied re-enrollment for the succeeding academic year. Anyone dropped or denied re-enrollment may be re-admitted only after representation to and with the authority of the board of governors.

Midshipmen may be dismissed from the academy by the board of governors at any time for a serious disciplinary infraction or may be dropped for academic failure or inaptitude. A remission of fees cannot be made when dismissed or dropped from the academy for any of these reasons.

Midshipmen are normally granted liberty on weekends and holidays. Liberty may also be granted at anytime under special circumstances when requested by parents or guardians. Absence from scheduled classes impairs the individual's academic progress and special requests for such absences should therefore be held to a minimum.

Midshipmen may be placed on academic or conduct restrictions, resulting in loss of liberty, for failure to maintain a satisfactory record in either category. An accumulation of a designated number of demerits may also result in conduct restrictions. When a midshipman receives a failing grade, either academic or conduct, his parents or guardian will be notified.

The wearing of civilian clothing on leave or liberty, except while on the annual training cruise, is optional. Civilian clothing may be kept in midshipman quarters but may not be taken on the training cruise.

Licensed and insured private automobiles may be kept on the academy grounds.

Midshipmen receiving the federal uniform and textbook allowance will be required to maintain a minimum of $50 to their account in the Academy Uniform Fund.

ACADEMIC PROGRAM

Students at the California Maritime Academy receive three years of college education. Since the academy is in session for 11 months of each year, this approximates four years of instruction in regular sessions or three regular sessions and three summer sessions in most colleges. The bachelor of science degree is conferred upon graduation.

The Deck Department courses provide a knowledge of ship design and operation which fits the graduate for the duties of a deck officer.

The courses in the Engineering Department prepare the graduate to perform the duties of an engineer officer afloat.

The Naval Science Department provides instruction in naval procedures and practices.

Each academic year is divided into trimesters. The two academic trimesters of approximately 17½ weeks each, are separated by the cruise trimester of 13 weeks. There is a 10-day vacation at the end of each trimester.

During the academic trimesters, the forenoon is devoted to classroom work and the afternoon to practical instruction in shop practice, boat handling, and shipboard procedures. The cruise trimester includes a shipyard overhaul period and a cruise of about 17,000 miles to foreign and United States ports. By operating their own ship, under the supervision of the officer-instructors, the midshipmen learn at first hand the duties

and responsibilities of officers of the Merchant Marine and put into practice the theoretical knowledge learned in the classrooms ashore. They are thus fully qualified to assume the responsibility of ships officers.

Upon admission, the student selects either the deck or engineering course and follows the program so selected throughout the three years of his enrollment. Available facilities may sometimes limit the number who select a particular course.

TYPICAL DAILY ROUTINE

MONDAY THROUGH FRIDAY

The following is an example of the schedule normally followed at the academy. Circumstances arise from time to time which necessitate deviation from this routine.

0600—Reveille.

0620-0715—Clean up living quarters, prepare for breakfast and classes.

0715—Breakfast.

0800—Formation for colors.

0805-0855—First period class.

0900-0950—Second period class.

1000-1050—Third period class.

1055-1145—Fourth period class.

1200—Noon meal.

1300-1600—Practical instruction.

1330-1430—Infantry drill (Wednesday only).

1600-1800—Recreation.

1800—Evening meal.

1900—Call to evening study.

2130—Recall from study.

2200—Taps.

STUDENT ORGANIZATIONS AND ACTIVITIES

PROPELLER CLUB

The Propeller Club of the United States is a national organization interested in promoting public knowledge of the American Merchant Marine as a vital factor in our national economy and the national defense.

Student ports of this club are chartered in various colleges and universities to promote interest and student activity in matters pertaining to the maritime industry.

In 1938 the Propeller Club of the United States inaugurated the Pi Sigma Phi award for Propeller Club students ports. The objectives of this award are to encourage scholastic achievement in the field of shipping and transportation and to give to students with distinguished records in such studies recognition similar to that accorded in other fields of study, such as engineering, chemistry, law, medicine, etc. Members of the Academy Propeller Club compete for this award annually.

STUDENT COUNCIL

A student council, composed of the elected officers of each of the three classes meets at least monthly with the superintendent to discuss student projects and problems.

SAILING CLUB

The Sailing Club of the California Maritime Academy is composed of midshipmen of the academy who are interested in practicing the art of handling and racing boats under sail.

CAMERA CLUB

The California Maritime Academy Camera Club is an organization composed of students who have a mutual interest in the art of photography. The club has the use of darkrooms aboard the training ship, well equipped to handle all phases of photographic processing.

GUN CLUB

The Gun Club is organized to provide an activity for those midshipmen interested in the use of firearms and competitive matches in this field.

RADIO CLUB

Midshipmen who are interested in building, maintaining, and operating amateur radio equipment have formed a Radio Club which was organized in 1955. Facilities and equipment for carrying on work in this field are provided at the academy.

HAWSEPIPE

This publication is the academy annual which is prepared and issued by the senior class. The editorial and business staffs are elected by the midshipmen of the first class. A member of the faculty serves as adviser to provide general guidance and continuity to the effort.

FACULTY ADVISERS

In order to provide a positive point of contact for each midshipman, a system of faculty advisers has been established. The advisers meet with their assigned midshipmen individually or in groups in order to work out personal problems. This gives the midshipmen an opportunity to obtain advice and counsel with the assurance that the matters discussed will be held in strictest confidence.

AWARDS AND HONORS

The highest ranking midshipmen in scholarship in the deck and engineering courses are designated honor graduates. They are awarded prizes in recognition of their outstanding performance in the academic and leadership fields.

In addition, certain other prizes are awarded for outstanding merit in specific aspects of the academic course.

The Propeller Club of the United States awards membership in the honor society of Pi Sigma Phi to those students who meet the scholastic standards established for admission to this society.

SOCIAL ACTIVITIES

There are three scheduled dances each year, each one sponsored and managed by a specific class. In addition, groups of midshipmen are encouraged to arrange social functions at the academy on weekends.

ATHLETIC PROGRAM

An extensive program of intramural sports is carried on at the academy. Intercompany competition in tennis, basketball, softball, swimming, water polo, modified football, and golf is scheduled throughout the year.

In addition, academy teams are entered in such sports as softball, basketball, and water polo where competition is available in the local area.

The athletic program, as an adjunct to the physical education feature of the curriculum, is considered of vital importance and all midshipmen are encouraged to participate in one or more sports.

FACILITIES

The academy grounds cover an area of 67 acres. A deep water pier provides berthing space for the training ship *Golden Bear* and encloses a boat basin for power, sailing, and rowing boats. Permanent buildings include the gymnasium and natatorium, messhall, classroom building, seamanship building, and boat shed. The replacement of the temporary structures is presently in progress with a new residence hall scheduled for completion in the summer of 1958. Tennis and handball courts, and an athletic field provide ample outdoor recreational facilities.

The Federal Maritime Administration has provided the California Maritime Academy with a modern, 7,040-ton, twin-screw, turboelectric drive, 16-knot vessel for the purpose of conducting the annual sea training period of approximately three months each year. The training ship *Golden Bear* is operated entirely by the officers of the academy staff, except in the commissary department, and by the midshipmen under training. The *Golden Bear* provides a modern training vessel for the actual exercise of deck and engineering practice at sea. The ship is fitted with classrooms, a machine shop, and the most modern equipment, including steam and diesel-powered auxiliaries, as well as turboelectric propulsion. Reading and recreation rooms provide the necessary facilities for off-duty activities.

HEALTH SERVICE

The academy employs a male hospital technician-nurse, who is qualified to administer dispensary treatment and first aid and to make preliminary diagnosis. In cases requiring the services of a physician or hospitalization, the students are sent to the U. S. Public Health Service hospital in San Francisco. There is no cost involved in this service.

The hospital technician is assigned duty on the Training Ship *Golden Bear* and acts as an assistant to the medical officer, who is employed for the sea training period.

ADMISSION

GENERAL INFORMATION

Admission requirements established by the Board of Governors are as follows:

> "The candidate for admission must be of good repute, must provide three letters of recommendation, preferably from school officials or employers, must be a citizen of the United States, unmarried, and have a high school education or its equivalent. Upon entry to the academy he must be not less than 17 years of age and not yet 23 years of age (27 years for veterans). Applicant must be of normal size and weight, sound and robust in body and free from physical defects. He must meet the physical standards prescribed for licensing in the Merchant Marine."

A recent State Senate concurrent resolution provides for a system of appointments to the academy on the basis of a statewide competitive examination.

A specified number of qualified appointees will be designated according to senatorial and assembly districts, with an additional number to be designated by the Governor.

Information concerning admission may be obtained by contacting the Dean of Instruction, California Maritime Academy, Vallejo, California.

ELIGIBILITY

Any male citizen of the United States who meets the prescribed moral, scholastic, and physical requirements is eligible to enter the California Maritime Academy. He is not required to be a resident of the State of California in order to be admitted. Applicants are accepted from any part of the United States and its territories within the capacity limitations of the academy.

All students must be unmarried at time of admission. A student marrying prior to graduation will be considered as having resigned from the academy.

SCHOLASTIC REQUIREMENTS

Prior to admission (but not necessarily prior to taking the entrance or college board examinations) applicants must have graduated from a secondary school or have established evidence of equivalent education. Transcripts of secondary school records or evidence of equivalent education must be submitted to indicate satisfactory completion of courses of study which should include English, elementary and intermediate algebra, plane geometry, and physics or chemistry.

All candidates for admission, except transfer students from another maritime academy, must take an entrance examination designed to demonstrate their ability to undertake college-level work. Two ways of meeting this requirement are available: by taking an examination administered by the academy or by taking the College Entrance Examination Board's Scholastic Aptitude Test (SAT).

Entrance examinations are held at the academy at 9 a.m. on the first Saturday of each month January through May. Special examinations will also be given in other cities.

The college board tests are held nationwide, including 38 places in California. The test dates for 1957-58 are 7 December, 1957, 11 January, 8 February, 15 March, and 17 May, 1958. The deadline for registration is three weeks before each testing date. It is recommended that out-of-state applicants for admission arrange to take the college board SAT not later than March. Information regarding these tests may be obtained from school counselors or by writing to College Entrance Examination Board, P. O. Box 27896, Los Angeles 27, California, or P. O. Box 592, Princeton, New Jersey.

PHYSICAL REQUIREMENTS

Candidates for admission must be mentally and physically sound, well formed and of robust constitution.

While it is desirable that all students meet the U. S. Navy physical standards for officer candidates so that they may qualify for commissions in the U. S. Naval Reserve upon graduation, it is not necessary to do so to gain admission to the Academy. It is, however, necessary that all students be able to pass the physical requirements for licensed officers in the U. S. Merchant Marine, as set forth below:

Physical requirements for license as deck and engineering officers as stated in "Rules and Regulations for Licensing and Certificating of Merchant Marine Personnel," CG 191, June 15, 1953, issued by the United States Coast Guard, Treasury Department:

10.02-5(e)(2) Epilepsy, insanity, senility, acute venereal disease or neurosyphilis, badly impaired hearing, or other defect that would render the applicant incompetent to perform the ordinary duties of an officer at sea are causes for certification as incompetent.

10.02-5(e)(3) For an original license as master, mate or pilot, the applicant must have either with or without glasses, at least 20/20 vision in one eye and at least 20/40 in the other. The applicant who wears glasses, however, must also be able to pass a test without glasses of at least 20/40 in one eye and at least 20/70 in the other. The color sense will be tested by means of the "Stillings" test, but any applicants who fail this test will be eligible if they can pass the "Williams" lantern test.

10.02-5(e)(4) Applicants for original engineers' license shall be examined only as to their ability to distinguish the colors red, blue, green, and yellow. No applicant for original license as engineer shall be disqualified for failure to distinguish colors if any of his required experience is served prior to the effective date of the regulations in this part. The current criterion for determining color perception in this category is the "Williams" lantern test.

10.02-5(e)(5) For original license as engineer the applicant must have, either with or without glasses, at least 20/30 vision in one eye and at

least 20/50 in the other. The applicant who wears glasses, however, must also be able to pass a test without glasses of at least 20/50 in one eye and at least 20/70 in the other.

EDUCATIONAL LOANS

There is a limited number of financial assistance programs available to worthy and qualified students under which funds may be borrowed to meet the necessary expenses for matriculation. Repayment is deferred until after graduation, permitting the student to complete his education and refund the cost thereof after employment is obtained. For further information regarding these funding programs, contact the Dean of Instruction.

MARITIME ADMINISTRATION REGULATIONS

The following relevant excerpts from the Maritime Administration Regulations are quoted as follows:

"§ 310.2. *Federal aid and finances.* (iii) Per capita costs for out-of-state students shall be paid by the Maritime Administration, and shall be computed annually by using the cost figures of the State Maritime Academies for the preceding fiscal year. To determine this cost the total average number of state cadets for the preceding fiscal year will be divided into the net operating cost of operating the Academy for such fiscal year that was paid from funds supplied by the State Government. Vouchers, Standard Form 1034, covering per capita costs of such students will be submitted monthly, after the determination of the per capita costs, and shall be accompanied by a list of the cadets who have been nominated.

§ 310.6. *Entrance standards.* (a) A candidate for admission to a State Maritime Academy or College must be a male citizen of the United States and qualify as a Merchant Marine student, as set forth in Department of the Navy, Bureau of Naval Personnel Recruiting Note 199-56, dated August 3, 1956, and after December 31, 1956, as incorporated in the Recruiting Service Manual. Such Merchant Marine student shall also agree in writing to apply, at an appropriate time, prior to graduation, for a commission as Ensign in the U. S. Naval Reserve and to accept such commission if tendered; *provided*, however, that a waiver of this requirement may be made by the Maritime Administrator, if the physical defects noted in the Navy examination are not such as to disqualify the candidate physically for a license in the Merchant Marine, in accordance with the regulations prescribed by the United States Coast Guard, and *provided further*, that all cadets who have been granted a waiver by the Maritime Administrator and who have received the uniform, textbook and subsistence allowance, must agree in writing to apply, at an appropriate time, prior to graduation, for a commission as Ensign in the U. S. Naval Reserve and accept the commission if tendered. Students appointed to the State Maritime Academies or

College who receive a Federal subsistence and uniform and textbook allowance, shall not be less than 17 years of age and they shall not have reached their 22nd birthday on the year appointed to the State Maritime Academy or College. The State may fix the age limits of students not receiving the subsistence, uniform and textbook allowance. However, the physical and other requirements in the case of these students shall not be less than required by the U. S. Coast Guard for licensing as a Merchant Marine Officer.

§ 310.7. *Enrollment.* To be eligible, a candidate who has qualified under the provisions of Section 310.6 for the uniform, textbook and subsistence allowance will be enrolled in the United States Maritime Service. Upon enrollment, he shall be required to take an oath or affirmation of allegiance to the United States of America, and submit to fingerprinting and a copy of form MA-2016 shall be furnished to the Administrator.

§ 310.8. *Uniforms, textbooks and subsistence.* (a) Each Cadet who has been admitted to a State Maritime Academy or State Maritime College, who has qualified as a Merchant Marine Student as set forth in Section 310.6 or has been granted a waiver by the Maritime Administrator and has been enrolled in the U. S. Martime Service, may upon recommendation to the Administrator, by the Superintendent of the Academy or President of the College, be granted a uniform, textbook and subsistence allowance at the rate provided therefor in the applicable appropriation act for each fiscal year (currently $200 per year), payable monthly. The subsistence allowance will be paid directly to the Cadet concerned or, if approval is granted by the Administrator, to the State Maritime Academy or College upon presentation of a statement, containing the names of the cadets for whom subsistence has been furnished during that month and such other information as may be required by the Administrator. The uniform and textbook allowances will be paid either directly to the cadet concerned or, with the approval of the Administrator, to the State Maritime Academy or College upon certification by the Superintendent or President thereof, respectively, that such allowances will be credited to the account of each cadet. No cadet will be granted a uniform, textbook, or subsistence allowance for any time during which he is absent without leave for a condition not in line of duty.

§ 310.10. *Medical attention and injury claims.* (a) *Compensation claims of Cadets.* Compensation claims for personal injuries or death sustained by a Cadet enrolled in the Maritime Service in performance of duty shall be forwarded to the Administrator for transmission to the Bureau of Employees' Compensation."

As noted previously, the total number of midshipmen at the California Maritime Academy who may receive the $200 per year uniform and textbook allowance is limited to 150. Since the total enrollment at the academy exceeds this number, certification for receipt of this allowance

is governed by academic and conduct performance. The Board of Governors have ruled that applicants accepted for admission and who qualify must agree to enroll in the U. S. Maritime Service.

SELECTIVE SERVICE

Students at the academy are considered for deferment under the general provisions of selective service regulations in the same manner as students attending other colleges or universities with the exception that their class standing has no significance. This means that as long as a student is enrolled at the academy he is considered eligible for deferment.

MILITARY SERVICE

The Secretary of the Navy has approved a plan developed in concert with the Secretary of Commerce for students who entered in the fall of 1956 and for future students who will attend the Merchant Marine Academies. The Secretary of Defense has fully concurred with this mutual agreement. Pertinent points of the program thus established are as follows:

1. The Navy will perform the screening and physical examinations of students who enter Merchant Marine Academies.

2. Students will retain civilian status.

3. The Director of Selective Service has provided for the deferment of these students.

4. Navy will continue to offer Naval Science courses.

5. After graduation, those who obtain employment at sea in the Merchant Marine and who so request shall be tendered Naval Reserve commissions, if eligible.

6. After graduation, those who through no fault of their own, are unable to obtain employment at sea in the Merchant Marine and who volunteer for active Navy duty may be commissioned, if eligible, and placed on active duty if there is an actual need for their services.

FEES

SCHEDULE OF PAYMENTS

	First year			Second year			Third year		
		At beginning			At beginning			At beginning	
	At entrance	2d trimester	3d trimester	At entrance	2d trimester	3d trimester	At entrance	2d trimester	3d trimester
Clothing and books	$375	--	--	$50	--	--	$50	--	--
Tuition	*135	*$135	*$135	*135	*$135	*$135	*135	*$135	*$135
Student activities	15	--	--	15	--	--	15	--	--
Insurance	**10	--	--	**10	--	--	**10	--	--
Total	$535	$135	$135	$210	$135	$135	$210	$135	$135

NOTES: * Tuition fee for out-of-state students is $225 per trimester (tuition fee includes room and board). Those students receiving G. I. or War Orphan benefits will be required to pay a sum of $240 per year in addition to other fees, as reimbursement to the academy for loss of the subsistence allowance included under provisions of Maritime Administration General Order 22. This fee may be paid in equal installments of $80 per trimester.

** Insurance charge is for a group policy covering loss of life or limb. Listed cost is approximate. Actual cost 1956-57 was $10.40.

DESCRIPTION OF COURSES

NUMBERING AND CLASSIFICATION

Courses are numbered as follows: those given in the first year are numbered 1-49; second year are numbered 100-149; third year are numbered 150-199. Courses given in the first trimester are assigned odd numbers; courses given only in the third trimester are assigned even numbers. To the numbers of the full year courses the letter "A" has been appended to indicate first trimester of the sequence; the letter "B" to indicate second trimester. (Example: G1-A–G1-B English.)

Courses in the Department of Navigation and Seamanship are classified as Deck Courses and are indicated by the prefix "D." Those in the Department of Marine Engineering are classified as Engineering Courses, and have the prefix "E." General Courses required of all midshipmen are prefixed "G." Naval Science Courses have the prefix "NS."

CREDIT VALUE

In the following list of courses, the credit value of each course in semester units is indicated by a number in parentheses after the title. A unit consists of one hour of the midshipman's time each week in lecture or recitation during one trimester (17½ weeks), or a longer time in laboratory or other work not requiring preparation.

ACADEMIC CURRICULUM

DEPARTMENT OF NAVIGATION AND SEAMANSHIP

FIRST YEAR

First trimester	*Class hours*	*Third trimester*	*Class hours*
G1-A. English	2	G1-B. English	3
G11-A. Engineering Drawing	2	G11-B. Engineering Drawing	2
NS1. Naval Orientation	2	NS2. Naval History	3
G3. Basic Mathematics	4	D2. Mathematics for Navigation	4
G5. Seamanship Orientation	3	D12. Navigation (Basic)	3
G7. Engineering Orientation	3	D22. Seamanship (Basic)	1
	16		16

SECOND YEAR

First trimester		*Third trimester*	
NS101-A. Naval Weapons	3	NS101-B. Naval Weapons	3
D101-A. Physics	3	D101-B. Physics	2
D111-A. Navigation (Intermediate)	3	D111-B. Navigation (Intermediate)	3
D123-A. Cargo	2	G122. Maritime History	2
D131-A. Marine Rules and Regulations	2	D123-B. Cargo	3
D122. Seamanship (Intermediate)	3	D131-D. Marine Rules and Regulations	3
	16		16

THIRD YEAR

First trimester	*Class hours*	*Third trimester*	*Class hours*
Subject		*Subject*	
G181. Ship's Medical Practice	1	NS152. Leadership and Naval Justice	2
G191. Ship's Construction and Damage Control	3	D152. Ship's Business	3
NS151. Advanced Naval Orientation	3	D154. License Seminar	2
D151. Meteorology	3	D161-B. Navigation (Advanced)	3
D161-A. Navigation (Advanced)	3	D172. Seamanship (Advanced)	3
D181-A. Maritime Law	3	D181-B. Maritime Law	3
	16		16

DEPARTMENT OF MARINE ENGINEERING

FIRST YEAR

First trimester	*Class hours*	*Third trimester*	*Class hours*
Subject		*Subject*	
G1-A. English	2	G1-B. English	3
G11-A. Engineering Drawing	2	G11-B. Engineering Drawing	2
NS1. Naval Orientation	2	NS2. Naval History	3
G3. Basic Mathematics	4	E4. Engineering Mathematics	4
G5. Seamanship Orientation	3	E12. Marine Boilers	2
G7. Engineering Orientation	3	E6. Machine Shop Theory	2
	16		16

SECOND YEAR

NS101-A. Naval Weapons	3	NS101-B. Naval Weapons	3
E101-A. Physics	3	E101-B. Physics	2
E103. Engineering Chemistry	2	G121. Maritime History	2
E115-A. Auxiliary Machinery	2	E115-B. Auxiliary Machinery	2
E105. Engineering Materials	2	E122. Marine Reciprocating Engines	3
E141-A. Electrical Engineering	4	E141-B. Electrical Engineering	4
	16		16

THIRD YEAR

G181. Ship's Medical Practice	1	NS152. Leadership and Naval Justice	2
G191. Ship Construction and Damage Control	3	E152. License Seminar	2
NS151. Advanced Naval Orientation	3	E154. General Rules and Regulations	5
E151. Engineering Administration	1	E162. Refrigeration and Air Conditioning	2
E153. Thermodynamics	3	E171-B. Marine Steam Turbines	2
E171-A. Marine Steam Turbines	2	E181-B. Diesel Engineering	3
E181-A. Diesel Engineering	3		
	16		16

DECK COURSES REQUIRED FOR MIDSHIPMEN IN THE DEPARTMENT OF NAVIGATION AND SEAMANSHIP

D2. Mathematics for Navigation (4)

Plane and spherical trigonometry stressing concepts and operations fundamental to the science of navigation. This course was listed in the 1956 catalog as D1-B.

D12. Navigation (Basic) (3)

Fundamental navigational topics including basic definitions, rudimentary knowledge of the instruments used by the navigator, charts, piloting, and dead reckoning.

D22. Seamanship (Basic) (1)

Instruction in lifeboats, davits, lifeboat equipment, emergency drills, sea terms, ship nomenclature, ground tackle, knotting and splicing, blocks and tackles, ship's rigging, and hull maintenance. This course was listed in the 1956 catalog as D21-B.

D101-A. Physics (3)

Elementary physics and its application to shipboard operations and shipboard equipment; composition and resolution of forces, statics, moments and center of gravity, rectilinear motion, Newton's laws, work and energy, simple machines, impulse and momentum, rotation, elasticity, hydrostatics, temperature and expansion, quality of heat, heat transfer, wave motion.

D101-B. Physics (2)

The fundamental principles of electricity concentrating upon the relation of these principles to practical applications which will be encountered by the deck officer in ship operation.

D111-A—D111-B. Navigation (Intermediate) (3-3)

The basic concepts of celestial navigation and nautical astronomy stressing definitions and mathematical solutions of the astronomical triangle; the theory of plotting and advancing a completed line of position.

D121. Seamanship (Intermediate) (3)

Hull maintenance, the operation and maintenance of deck machinery and cargo gear, watchstanding and bridge routine, theory of small-boat handling, use of ground tackle, rescue operations, and fuel conservation. This course was listed in the 1956 catalog as D122.

D123-A—D123-B. Cargo (2-3)

The handling, stowage and safeguarding of cargo aboard ship and the duties of ship's officers in connection therewith.

D131-A. Marine Rules and Regulations (2)

The provisions and applications of the Code of Federal Regulations which implement the International Conventions for Safety of Life at Sea as they pertain to passenger vessels and to cargo and miscellaneous vessels.

D131-B. Marine Rules and Regulations (3)

The essentials of the stowage and carriage of bulk liquid cargo, USCG Rules and Regulations for tank vessels; rules to prevent collisions of vessels on inland waters.

D151. Meteorology (3)

Meteorology for the mariner covering the making of weather observations, preparation of a weather map; weather prediction; weather problems at sea.

D152. Ship's Business (3)

Administrative details of steamship operation including steamship company organization, government agencies, agents and charter parties, insurance, union contracts, safety codes, surveys, duties of masters.

D154. License Seminar (2)

Lecture and discussion in preparation for mates' and masters' license examinations before the Merchant Marine Examiners, United States Coast Guard.

D161-A—D161-B. Navigation (Advanced) (3-3)

Modern tabular methods for solution of the astronomical triangle, advanced plotting, great circle sailing, electronic navigation.

D172. Seamanship (Advanced) (3)

Skills essential for safe operation and efficient maintenance of the deck department of all types of vessels; ship handling, maneuvering, rescue operations, collisions, stranding, hydrostatics, drydocking.

D181-A—D181-B. Maritime Law (3-3)

The rights, obligations and responsibilities of seamen, masters and pilots as prescribed by the laws and regulations of the United States.

ENGINEERING COURSES REQUIRED FORMIDSHIPMEN IN THE DEPARTMENT OF MARINE ENGINEERING

E4. Engineering Mathematics (4)

A comprehensive presentation of advanced algebra, trigonometry, logarithms, and graphic methods for the specialized engineering curriculum.

E6. Machine Shop Theory (2)

Nomenclature and proper use of hand tools used in bench work; nomenclature, use and care of precision measuring instruments; detailed instruction dealing with engine lathes and milling machines, their construction and the procedures and methods used to accomplish operations with these machines; the computations involved in machine operations; the derivation of all formulas used.

E12. Marine Boilers (2)

Detailed coverage of construction, types and operating principles associated with marine steam generating equipment.

E101-A—E101-B. Physics (3-2)

First semester course covers mechanics—composition and resolution of forces and velocities, statics, moments of force, rectilinear motion, rotational motion, work, energy, power, friction, simple machines, elasticity, fluids at rest, fluids in motion. Second semester course covers heat—temperature, expansion of solids, liquids and gases, transfer of heat, heat and work, measurement of heat and change of state, first and second laws of thermodynamics.

E103. Engineering Chemistry (2)

Basic chemistry including atomic and molecular structure, Law of Guy-Lussac, Avogadro's Law, acids, bases, salts, chemical equations; feed water treatment including cause and prevention of scale, corrosion, caustic embrittlement, foaming and priming, and methods used in treating and testing water for alkalinity, salinity, hardness, dissolved oxygen, phosphate, sulphite; fuels and combustion including chemistry of combustion, Orsat determination, combustion calculations.

E105. Engineering Materials (2)

The materials commonly used in a marine engineering plant, their occurrence in nature, the reduction of ore, the production and refining of metal, the structure and alloying of metals, properties and control of properties of metals, casting and mechanical working of metals; petroleum products and plastics; welding and its application.

E115-A—E115-B. Auxiliary Machinery (2-2)

Deals with most auxiliary units attached to main propulsion plants and with units or systems which in themselves are single systems but, in the complete picture, are auxiliary to the main plant; piping systems, packing, valves, governors, insulation, pumps, refrigerating systems, condensers, evaporators, compressed air systems, feed systems.

E122. Marine Reciprocating Engines (3)

Design, construction, operation, care and repair of marine reciprocating engines for propulsion and auxiliary purposes.

E141-A. Electrical Engineering (4)

The fundamentals of electric circuits and machines giving primary importance to the design, operation, and maintenance of equipment in the marine field; basic concepts of electricity and magnetism, direct current circuits and machines.

E141-B. Electrical Engineering (4)

A continuation of E141-A; alternating current circuits, machines, and control systems, and marine electrical propulsion.

E151. Engineering Administration (1)

An outline and discussion of typical merchant ship engineering organization, emphasizing duties and responsibilities of personnel; the office of the Port Engineer, the functions of the American Bureau of Shipping and the U. S. Coast Guard.

E152. License Seminar (2)

Lecture and discussion in preparation for engineers' license examinations before the Merchant Marine Examiners, U. S. Coast Guard.

E153. Thermodynamics (3)

Basic laws of energy and thermodynamics and their application to heat-power machinery employed on shipboard; heat power plants, principles of thermodynamics, steam and steam calorimetry, steam generators and boilers, feed water heating, reciprocating steam engines, steam engine power and economy, steam and gas turbines, steam condensing equipment, internal combustion engines.

E154. General Rules and Regulations (5)

United States laws and regulations governing construction, repair, operation, inspections, and safety of all American flag vessels.

E162. Refrigeration and Air Conditioning (2)

Review of direct and indirect refrigeration cycles. Basic refrigeration principles and equipment. Basic air conditioning, comfort, and air drying for prevention of cargo damage.

E171-A—E171-B. Marine Steam Turbines (2-2)

The construction of marine steam turbines and their operating principles as applied to main propulsion and auxiliary uses aboard ship.

E181-A—E181-B. Diesel Engineering (3-3)

The development, design, construction, and operating procedures of marine diesel engines and auxiliary machinery and systems employed in the modern marine diesel power plant.

NAVAL SCIENCE COURSES REQUIRED FOR ALL MIDSHIPMEN

NS1. Naval Orientation (2)

General: Students at maritime academies enter upon this course with varied backgrounds of education and experience. Few of them know anything about the Navy. Many have never previously seen either a ship or an ocean. The intent of

the NS1 course is to introduce the Navy to the student and develop within the student the interest and enthusiasm which are prerequisites to the acquisition and retention of knowledge of the specific subjects which follow in the second and third year. (BuPers Curriculum NS11)

NS2. Naval History (3)

Objective: Through a study of the influence of sea power upon global history, to stimulate living interest in the Navy and appreciation of the important role of sea power in the past, present and future security of the United States.

Naval History and Sea Power (BuPers Curriculum NS12).

NS101-A. Naval Weapons (3)

Objective: To afford the student a basic understanding of the principles of naval weapons and their application in control of the seas.

Naval Ordnance and Gunnery, elementary-fire control (BuPers Curriculum NS21).

NS101-B. Naval Weapons (3)

Continuation of NS101-A.

Advanced fire-control, radar, anti-submarine warfare, combat information center. (BuPers Curriculum NS22.)

NS151. Naval Operations (3)

Naval Operations, Maneuvering Board, and Communications (BuPers Curriculum NS31).

NS152. Naval Administration (3)

Objectives: 1. To develop in the prospective junior officer a personal confidence by instilling in him an appreciation of the importance of his place in the naval structure.

2. To examine with him the principles of good personnel management, the elements of military law, and those areas of personal relations pertinent to the naval service.

3. To develop in him a strong sense of responsibility and a loyalty to the idea of service to his country by examining simultaneously the basic reasons and thinking underlying these factors.

4. To prepare the prospective junior officer for integration into a ship's organization as a Junior Division officer.

Shipboard Administrative Procedures, Military Law, Naval Leadership (BuPers Curriculum NS32).

GENERAL COURSES REQUIRED FOR ALL MIDSHIPMEN

G1-A. English (2)

A complete review of functional English including sentence structure, punctuation, and usage and a practical treatment of English composition—the English language as an instrument indispensable to professional accomplishment. Composition topics include the theory of communication, characteristics of a factual message, the factual talk, the expanded definition, the objective description, the explanation of a process, the investigation report, the business letter.

G1-B. English (3)

A course in reading, thinking, and writing built around the assignment of reading selections arranged topically, the discussion of these topics, and creative composition developing ideas gained from the reading and discussion. An approach to language as a concomitant of clear and logical thinking.

G3. Basic Mathematics (4)

Intensive drill in fundamental mathematical operations from arithmetic through algebra with emphasis on rapid and accurate performance of calculations. Instruction in basic operation with the slide rule is included.

G5. Seamanship Orientation (3)

A course offering a broad introduction to the life and living conditions aboard a modern merchant vessel. A general coverage of Deck Department routine including basic seamanship, navigation, and rules of the road.

G7. Engineering Orientation (3)

Fundamentals of the operation of a marine power plant; basic steam cycle, auxiliary steam cycle, fuel oil service systems, evaporators.

G11-A—G11-B. Engineering Drawing (1-1)

A general course in engineering drawing meeting the needs of both the deck and engineering curriculums; material covered includes lettering, applied geometry, use of instruments, orthographic projection, freehand and isometric sketching, isometric and oblique drawing, sections, threads and fasteners, dimensioning, piping drawings, and blueprint reading. Practical projects applying to the marine field are encouraged for advanced students.

G122. U. S. Maritime History (2)

A survey of the development of the United States with concentration upon its maritime aspects. This course is designed to meet graduation requirements in American history, institutions and ideals, the United States Constitution, and California state and local government. This course was listed in the 1956 catalog as G121.

G181. Ship's Medical Practice (1)

The practical application of the principles of first aid and the use of the ship's medicine chest at sea; anatomy, shock, unconsciousness, bleeding, wounds, bandaging, artificial respiration, burns, poisoning, fractures, moving the injured, exposure; diagnosis and treatment of ailments; radio aid.

G191. Ship Construction and Damage Control (3)

An introduction to ship's structure; compartmentation of ships, hull piping systems, the principles of buoyancy and stability, inclining experiments, coefficients and rules of mensuration.

DESCRIPTION OF PRACTICAL TRAINING

An important aspect of the educational process of the California Maritime Academy is the co-ordination of the academic program with practical training on board the *T. S. Golden Bear*. This co-ordination begins as soon as the midshipman enters the academy and continues until he graduates. Direct personal experience is thus an integral part of the academy's educational program and takes many forms. It follows a planned continuity from the initial, closely supervised tasks of the third classman to the highly technical and virtually independently performed duty assignments of the first classman.

As the midshipman matures and learns, his responsibilities grow, until, on his first class cruise, he performs those duties on the training ship which will be expected of him as a ship's officer on deck or in the engine room. Thus he graduates with a background of experience which is balanced between academic instruction in the classroom and practical training on board ship. Every step in his development has been carefully guided by the members of the faculty, who are his instructors both in the classroom and aboard ship.

DEPARTMENT OF NAVIGATION AND SEAMANSHIP

SEAMANSHIP

Watchstanding

Midshipmen are assigned duties in all Deck Department billets found aboard a ship, each such assignment increasing in importance as the midshipman advances through the academy course. The purpose of this type of training is to develop in

the midshipman a sense of responsibility for the security and safety of life and property and so prepare him for the assumption of the responsibilities with which he will be burdened in his future career. In addition, he also becomes familiar with the duty requirements of these assignments and thus is able to train and direct others.

Examples of these duty assignments are listed below:

At the base	*On the cruise*
Midshipman Junior Officer of the Deck	Helmsman
Gangway Quartermaster	Lookout
Midshipman Officer of the Deck	Gangway Quartermaster
	Junior Watch Officer
	Midshipman Officer of the Deck
	Midshipman Watch Officer

Basic Skills and Duties

Practical instruction classes are held on board the ship to familiarize the midshipman with the duties they will be required to perform aboard ship both during their training and in their careers after graduation. Topics covered in such classes include signals, small boats, mooring, marlinspike, seamanship, machinery operation, emergency drills, fire-fighting equipment, and engine room observation.

Special Schools

Fire-Fighting School. Third classmen acquire experience in the operation of all types of marine fire and rescue equipment used in fighting fire aboard ship. This training is provided by the U. S. Naval Fire-Fighting School, Treasure Island, California (16 hours).

Cargo School. Second classmen receive indoctrination in the basic principles of handling cargo aboard ship, including winch driving, hatch tending, rigging, and safety. Students attend the U. S. Naval School, Freight Transportation, Naval Supply Center, Oakland, California (33 hours).

Cruise Notebook

As a bridge between academic instruction in the classroom and practical training aboard ship, midshipmen are assigned written projects to perform during the cruise trimester. Topics assigned include location of fire-fighting equipment, drydocking, ship's compartmentation, rigging, ground tackle, steering gear, displacement problems, safe working load of deck gear, lifeboat launching, fuel consumption, ship handling and maneuvering, and meteorology.

Ship Maintenance

The midshipmen obtain training and experience in the proper maintenance of ship's equipment, rigging, and running gear to insure optimum operational performance for safety of life and property. The student learns to handle paint, tools, tackle, and preservative materials and equipment, and the maintenance of fire-fighting and lifesaving equipment.

NAVIGATION

Basic Skills

Special instruction classes are held on board ship to instruct students in all aspects of practical navigation. Topics covered include charts and publications, navigational instruments and equipment, and compensation of magnetic compasses.

Cruise Navigation

At sea on the training cruise deck midshipmen are assigned to study groups to perform practical assignments in navigation. The culmination of this sequence occurs on the final cruise when the midshipman performs all phases of the navigator's day's work.

Special Schools

Loran School. The midshipman becomes familiar with the theory, operation and minor maintenance of loran equipment at the San Francisco Marine School of the Sperry Gyroscope Company (40 hours).

Gyro School. The student learns the theory, operation and minor maintenance of gyro compass equipment at the San Francisco Marine School of the Sperry Gyroscope Company (80 hours).

Radar School. The student learns to operate and maintain marine, navigational radar equipment in instruction carried out at the academy, jointly by faculty and Sperry Gyroscope Company personnel.

DEPARTMENT OF MARINE ENGINEERING

Watchstanding

The propulsion plant of the *Golden Bear* is especially well suited for training. It is a modern, twin screw, turbo electric drive installation of 6,600 shaft horsepower. Engineering midshipmen are assigned duties in all billets necessary for the operation of such a power plant. The assignments increase in importance as the midshipmen advance through the course. This training develops a sense of responsibility for the safety of life and property and the midshipmen to train and direct others. Typical watchstanding assignments are listed below:

At the Base	*On the Cruise*
Midshipman Junior Officer of the Deck	Boat Engineer
Midshipman Officer of the Deck	Fireman
Fireman	Evaporator Operator
Midshipman Engineer	Water Tender
	Oiler
	Electrician
	Midshipman Watch Engineer
	Midshipman Assistant to Chief Engineer

Basic Skills, Shop Work

The academy has two well equipped shops, one ashore and one on the training ship. The shoreside shop has approximately 2,400 square feet of floor space and includes the following equipment: eight lathes, three shapers, one milling machine, two drill presses, one surface grinder, two pedestal grinders, two electric arc welders, one oxygen-acetylene gas welding and cutting outfit, two metal cutting power saws, one gas fired heat treating furnace, one gas fired crucible, one power driven forging hammer and one hydraulic press.

The shipboard shop has even more equipment including a metal spraying outfit used for building up machinery parts such as worn shafts, etc.

In the shoreside shop the midshipmen are taught machine tool operations such as turning to a specified diameter, boring, knurling, taper turning, surface grinding, gear cutting, and shaping. They also are given basic training in electric arc welding, oxygen-acetylene flame cutting and heat treatment of metals. The primary purpose of the shoreside shop training is to give the midshipmen sufficient skill to use the equipment found in the usual shipboard shop and thus be able to supervise and effect necessary repairs.

The work performed in the shipboard shop is of a more advanced nature and consists of carrying out maintenance and alteration projects on turbines, pumps, pipelines, boilers, electric motors, blowers, diesel engines and refrigeration machinery.

Special Schools

Firefighting School (Same as Deck Department).

Gyro School (Same as Deck Department).

Cruise Notebook

Midshipmen are assigned written projects to perform during the cruise time at sea. These include description of drydocking and shipyard work at beginning of cruise, location of firefighting equipment and its use, boiler water testing and operation of boilers, evaporators, auxiliary machinery, and the main propulsion machinery. They also cover the loading of fuel, fuel transfer systems, keeping of engine room logs and records, computing of daily fuel and water consumption, lifeboat launching and operation, and the care of boat engines.

Ship Maintenance

Shipboard maintenance training is carried out under the following divisions: boilers, electrical, auxiliaries, diesel engines and main propulsion under supervision of the same instructors they had at the base.

Boiler maintenance includes cleaning of the fire and water sides of boilers, overhaul of forced draft blowers, application of hydrostatic tests, overhauling feed pumps and other related boiler auxiliary machinery.

In electrical maintenance, the midshipmen assist in taking insulation tests on main propulsion generators and motors, auxiliary generators, and perform servicing operation on the many smaller auxiliary electric motors throughout the ship. They also conduct routine maintenance and repair on controllers, starters, brush rigging and commutators, motor armatures, and wiring circuits. The ship has both AC and DC electrical equipment which provides experience in both types of power.

Auxiliary maintenance involves work in repacking reciprocating and centrifugal pumps, repairing and replacing worn parts in centrifugal pumps, making up flange joints, renewal of pipe sections, scaling evaporator tubes, and maintenance of heating systems and galley equipment.

Diesel engine operation and maintenance is also an important part of the shipboard training. Repair work, such as grinding valves and renewing piston rings, is performed on the numerous engines aboard the ship.

Main propulsion maintenance work includes lubricating oil purification, and inspection and repair of lubricating oil pumps, main shaft bearings, turbines and motors, condensers, and circulating pumps.

PORTS VISITED BY TRAINING SHIP "GOLDEN BEAR"—1947-1956

United States and Possessions

Alameda, California
Balboa, Canal Zone
Cristobal, Canal Zone
Hilo, Territory Hawaii
Honolulu, Territory Hawaii
Houston, Texas
Lahaini, Territory Hawaii
Long Beach, California
Monterey, California
New Orleans, Louisiana
Oakland, California
Pago Pago, Samoa
Portland, Oregon
St. Thomas, Virgin Islands
San Diego, California
San Francisco, California
San Pedro, California
Santa Barbara, California
Seattle, Washington
Stockton, California
Wilmington, California

Foreign Ports

Acapulco, Mexico
Algiers, Algeria
Callao, Peru
Curacao, Netherlands, West Indies
Funchal, Maderia
Genoa, Italy
Gibraltar
Kingston, Jamaica
Magdalena Bay, Mexico
Manzanillo, Mexico
Marseilles, France
Naples, Italy
Papette, Tahiti
Piraeus, Greece
San Jose, Guatemala
Valparaiso, Chile
Vancouver, British Columbia
Vera Cruz, Mexico

o

67026 12-57 3500 *printed in* CALIFORNIA STATE PRINTING OFFICE