

1973-74  
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MARITIME

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1973-74

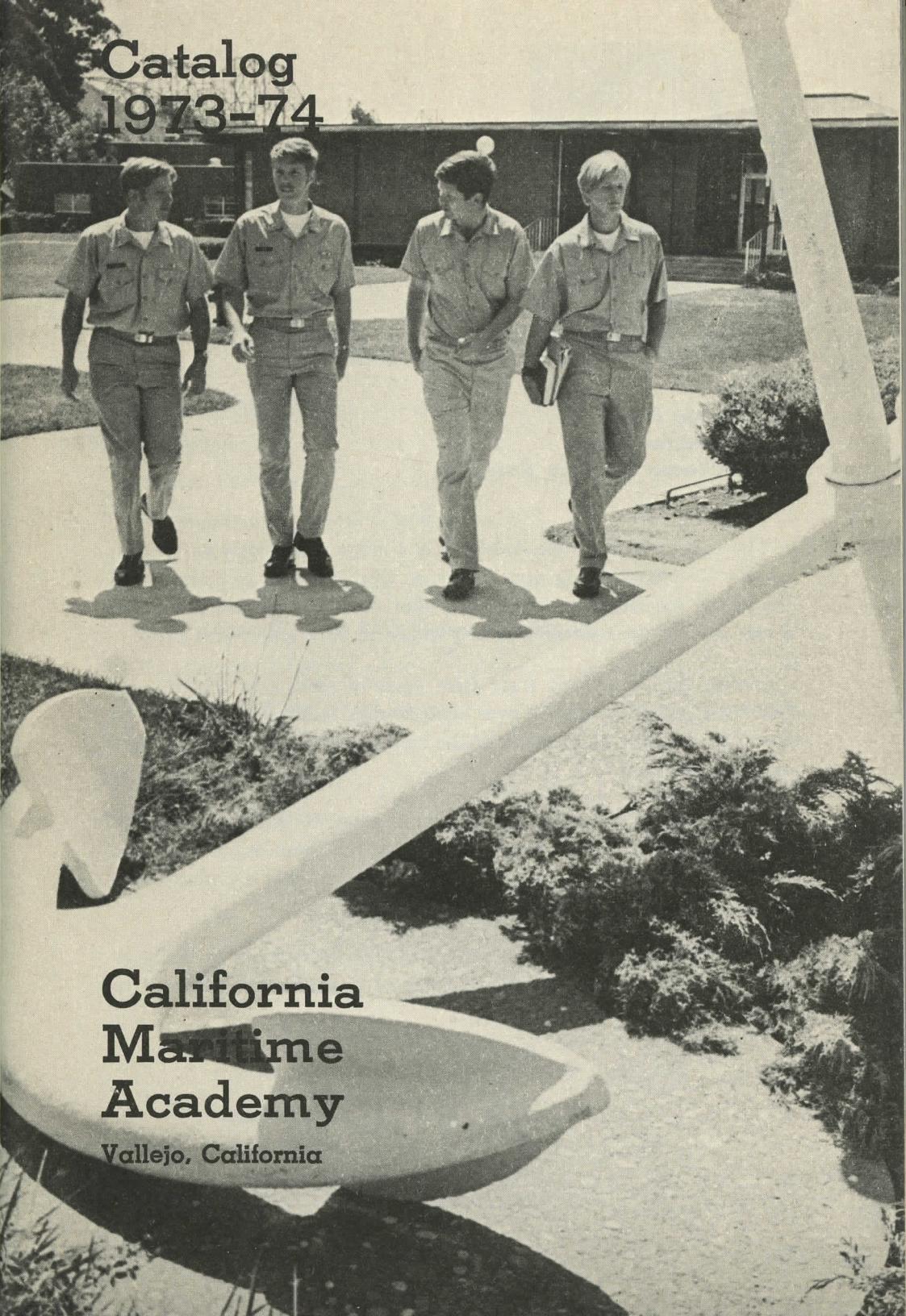
CALIFORNIA MARITIME ACADEMY  
VALLEJO, CALIFORNIA

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ADMISSIONS OFFICE  
CALIFORNIA MARITIME ACADEMY  
P.O. BOX 1392  
VALLEJO, CA 94590

# Catalog 1973-74





**A Message From  
The Superintendent of  
The California Maritime Academy**

The California Maritime Academy is a unique institution with much to offer to today's young man or woman who is willing to benefit from the highly specialized training given here. Academy graduates become a vital part of the modern maritime industry, both ashore and afloat.

During the Academy's forty-four years of service to the State of California, it has developed over 2000 licensed graduates who may be found in virtually every phase of the maritime industry, from management to operations.

The Academy is justifiably proud of its graduates and the reputation they have earned for the school. Because of the rigorous and extensive training received while at the Academy, our graduates are in constant demand by the maritime and related industries.

As we begin our forty-fifth year, we offer the rewarding challenge of a career-oriented profession to those of you who are prepared to accept it.

Sincerely,

REAR ADMIRAL JOSEPH P. RIZZA, U.S.M.S.  
*Superintendent*

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### THE MISSION OF THE CALIFORNIA MARITIME ACADEMY

To provide instruction in the nautical sciences, marine engineering and related fields, including all of those necessary to provide the highest quality officer for the American Merchant Marine and California maritime industries and licensing therein.

Inherent in this mission are the following objectives:

To educate each Midshipman in an accredited college program in nautical sciences, marine engineering and related fields;

To train each midshipman in the skills and knowledge essential to licensing in the American Merchant Marine;

To develop in each Midshipman a strong sense of duty, honor, and service to country and instill in him a pride in his profession; and

To develop in each Midshipman a sound body and the physical attributes necessary to successfully meeting the rigors of the sea.

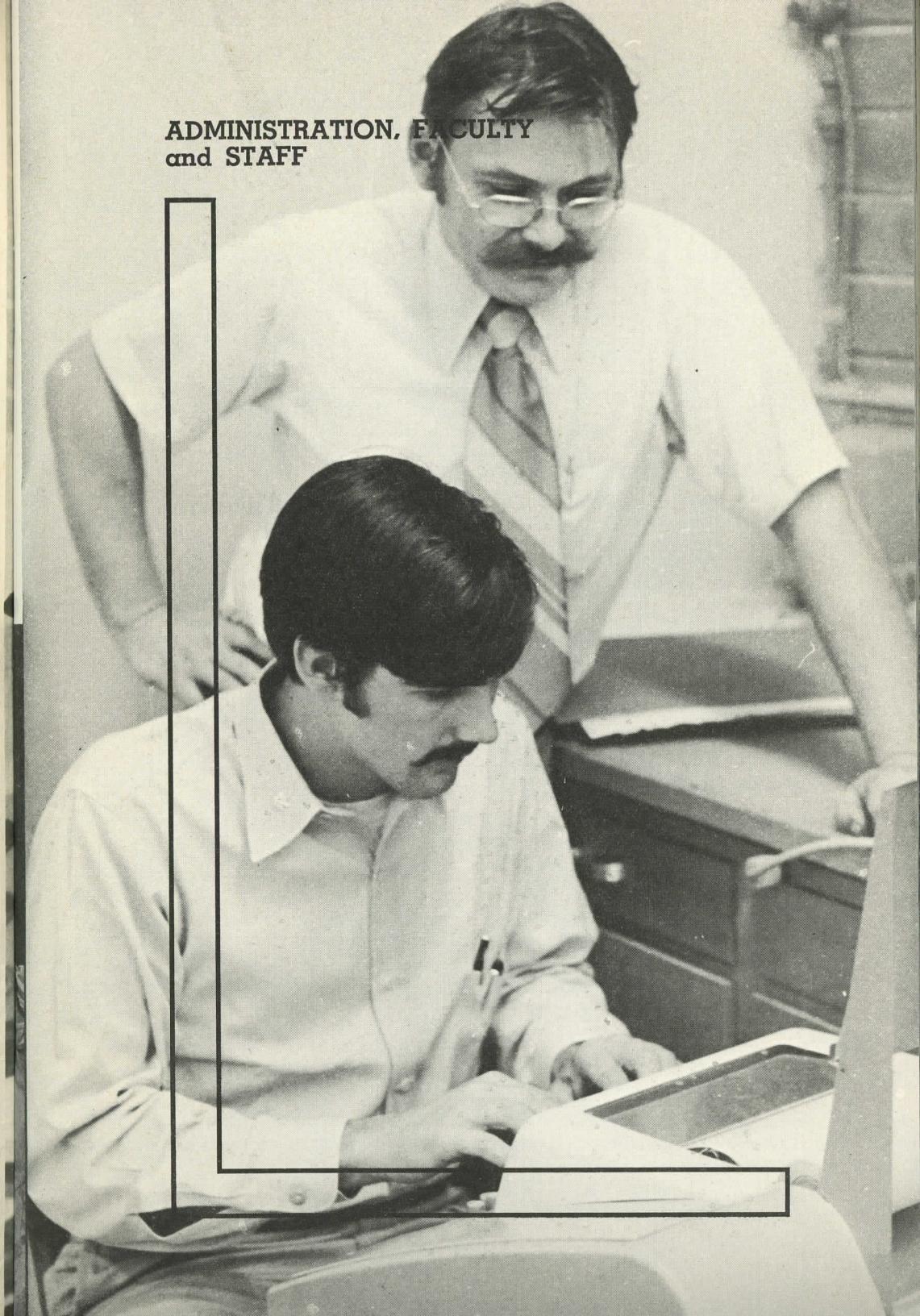




## ACADEMIC CALENDAR 1973-1974

Fall Trimester	August 13-December 21, 1973
Sea Training Trimester	January 3-March 23, 1974
Spring Trimester	April 1-July 19, 1974
August 7-10, 1973	Orientation Week for Class of 1976
August 13, 1973	Registration for Returning Students
August 14, 1973	First Day of Classes
September 1-3, 1973	Labor Day Holiday Weekend
September 4, 1973	Last Day to Validate Classes for Fall Trimester
September 10, 1973	Last Day to Withdraw from Elective Course
October 6-8, 1973	Columbus Day Holiday Weekend
October 20-22, 1973	Veterans' Day Holiday Weekend
November 21-25, 1973	Thanksgiving Recess
December 10-14, 1973	Final Examinations, Fall Trimester
December 17-21, 1973	Dockside Steaming and Other Preparations for Sea Training Period
December 22, 1973-January 3, 1974	Christmas Recess
January 3, 1974	Sea Training Trimester Begins
February 16-18, 1974	Washington's Birthday Holiday Weekend
March 23-April 1, 1974	Spring Recess
April 1, 1974	Registration for Spring Trimester
April 2, 1974	First Day of Classes
April 23, 1974	Last Day to Validate Classes for Spring Trimester
April 30, 1974	Last Day to Withdraw from Elective Course
May 25-27, 1974	Memorial Day Holiday Weekend
July 5-7, 1974	Independence Day Holiday Weekend
July 8-11, 1974	Final Examinations, Class of 1974
July 15-18, 1974	Final Examinations, Classes of 1975-76
July 15-19, 1974	License Examinations, Class of 1974
July 20, 1974	Graduation Exercises, Class of 1974
July 20-August 12, 1974	Summer Recess

## ADMINISTRATION, FACULTY and STAFF



## CALIFORNIA MARITIME ACADEMY

### BOARD OF GOVERNORS

Lt. Gen. Garrison H. Davidson, USA (Ret.)  
Chairman

William H. McPherson  
Vice Chairman

Capt. Edward E. Kerr, USN (Ret.) Dr. Owen A. Knorr Capt. Paul S. Mead  
William F. Schill George J. Vukasin

Thomas J. Patterson, Jr.  
Maritime Administration  
Representative

### ADMINISTRATION

Superintendent: Rear Admiral Joseph P. Rizza, USMS. Pennsylvania Maritime Academy, 1936; B.S., University of Washington, 1951; M.A., Boston University, 1958; Naval War College, Command and Staff Course, Naval Warfare Course; National War College; Master Mariner, Oceans, Unlimited. (1972)

Academic Dean: C. William Barber, B.A., 1938, M.S., 1939, University of Southern California; General Administrative Credential. (1966)

Commanding Officer, *Training Ship Golden Bear*: William H. Aguilar, B.S., California Maritime Academy, 1934; Master Mariner, Oceans, Unlimited. (1959)

Commandant of Midshipmen: Richard D. Heron, San Diego State College; U.S. Coast Guard Academy; B.S., California Maritime Academy, 1938; Chief Mate, Oceans, Unlimited. (1946)

Business Manager: M. G. Saladin, B.S., Indiana University, 1941; Lieutenant Commander, SC, USN-Ret. (1971)

### NAUTICAL SCIENCE DEPARTMENT

Chairman: William H. Aguilar, B.S., California Maritime Academy, 1934; Master Mariner, Oceans, Unlimited. (1959)

Senior Instructor: William B. Hayler, B.S., U.S. Naval Academy, 1944; M.A., George Washington University, 1964; Naval War College, Command and Staff Course, Naval Warfare Course; Master Mariner, Oceans, Unlimited; Captain, USN-Ret. (1970)

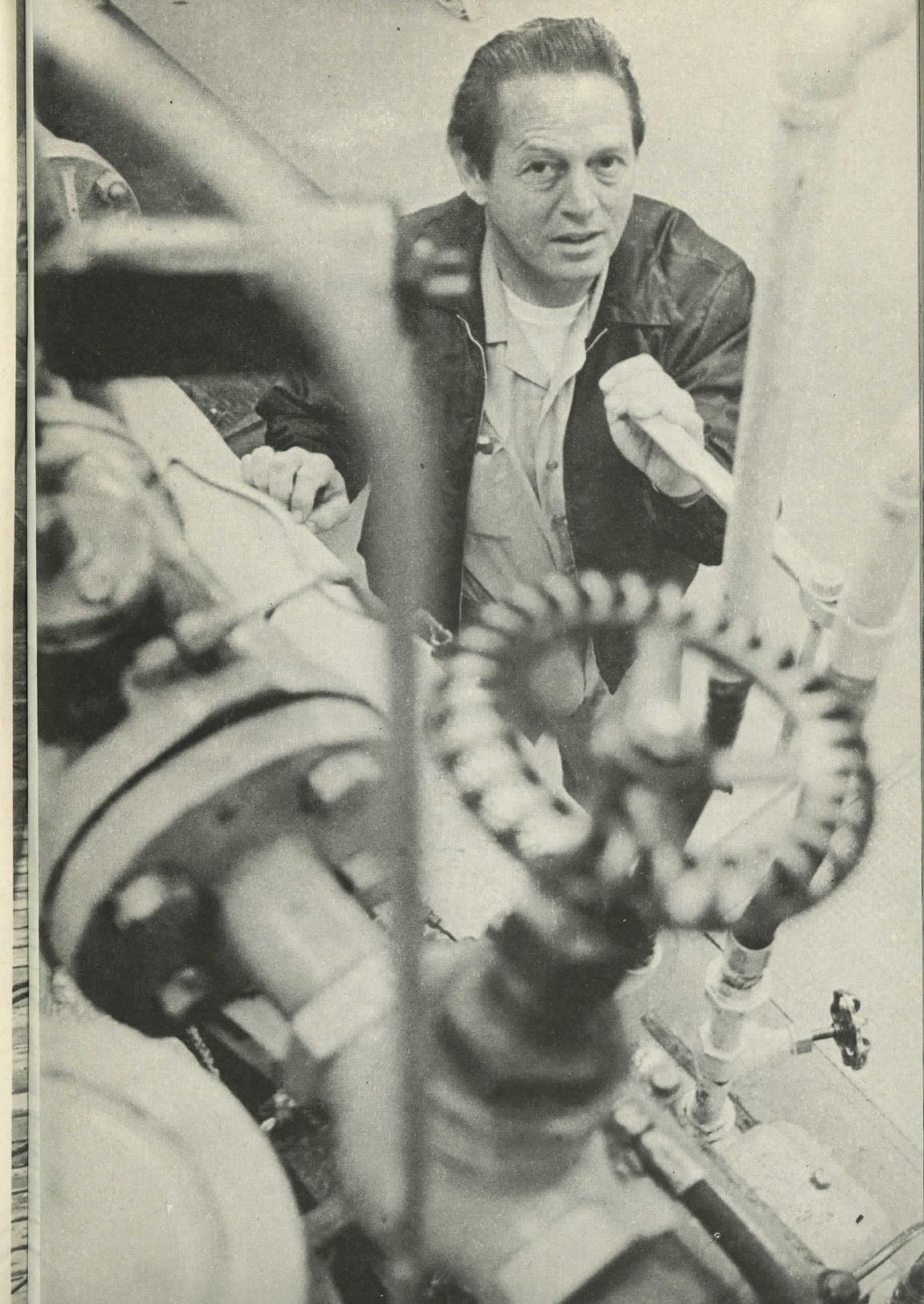
Senior Instructor: Fred B. Newton, Jr. Miami University of Ohio; U.S. Navy General Line School; Master Mariner, Oceans, Unlimited; Lieutenant Commander, USN-Ret. (1959)

Instructor: Joe Barron, B.S., California Maritime Academy, 1970; Second Mate, Oceans, Unlimited. (1973)

Instructor: Calvin Bourke, Georgetown University; B.S., U.S. Merchant Marine Academy, 1943; graduate study, University of California; Master Mariner, Oceans, Unlimited. (1972)

Instructor: Robert Craig, B.S., California Maritime Academy, 1949; graduate study, University of the Americas; Universidad Nacional de Mexico. Second Mate, Oceans, Unlimited. (1958)

Instructor: John Keever, B.S., California Maritime Academy, 1970; Third Mate, Oceans, Unlimited. (1972)



#### **MARINE ENGINEERING DEPARTMENT**

Chairman: Otto J. Bruhn, B.S., U.S. Merchant Marine Academy, 1946; B.A., University of California, 1947; Chief Engineer, Steam Vessels, Unlimited Horsepower. (1957)

Senior Instructor: Arthur S. Behm, B.S., California Maritime Academy, 1942; Chief Engineer, Steam Vessels, Unlimited Horsepower; Second Assistant Engineer, Diesel Vessels, Unlimited Horsepower. (1954)

Instructor: Dennis Arnett, B.S., California Maritime Academy, 1966; First Assistant Engineer, Steam Vessels, Unlimited Horsepower; Third Assistant Engineer, Diesel Vessels, Unlimited Horsepower. (1972)

Instructor: Thomas Beland, B.A., University of California, 1951; First Assistant Engineer, Steam Vessels, Unlimited Horsepower. (1957)

Instructor: Frank L. LaBombard, First Assistant Engineer, Steam Vessels, Unlimited Horsepower; Journeyman Machinist. (1946)

Instructor: Robert L. Rogers, B.S., California Maritime Academy, 1969; M.S., Stanford University, 1971; Second Assistant Engineer, Steam Vessels, Unlimited Horsepower; Third Assistant Engineer, Diesel Vessels, Unlimited Horsepower. (1972)

Instructor: Howard A. Thor, B.S., U.S. Merchant Marine Academy, 1944; B.A., 1950, M.A., 1954, Ph.D., 1965, University of California; Chief Engineer, Steam Vessels, Unlimited Horsepower; Third Assistant Engineer, Diesel Vessels, Unlimited Horsepower. (1962)

#### **GENERAL EDUCATION DEPARTMENT**

Robert F. Corwin, Instructor of Science and Oceanography. B.S., University of Missouri, 1964; M.S., PhD, University of California, 1973. (1973)

Harry Diavatis, Instructor of Physical Education. B.F.A., University of Utah, 1969; Graduate Study, California State University, Sonoma. (1969)

Martin S. Hanson, Instructor of Mathematics. B.A., Occidental College, 1932; M.S., Purdue University, 1961; Lieutenant Commander, USCG-Ret. (1961)

Rory K. Miller, Instructor of English and Humanities. B.A., Loyola University, 1969; M.A., University of California at Davis, 1971. (1971)

Norman M. Nilsen, Instructor of Mathematics and Computer Science. B.S., Massachusetts Maritime Academy, 1960; M.S., University of California, 1973; Third Assistant Engineer, Steam and Diesel Vessels, Any Horsepower. (1967)

#### **LIBRARY**

Paul W. O'Bannon, Librarian. B.A., University of California, 1955; M.S.L.S., University of Southern California, 1956. (1969)

#### **MEDICAL DEPARTMENT**

Donovan C. Lenhart, Pharmacist. USAF School of Aviation Medicine. Master Sergeant, USAF-Ret. (1965)

#### **NAVAL SCIENCE DEPARTMENT**

Lieutenant Steven C. Harmon, USN. B.A., California State University at Hayward, 1967. (1971)

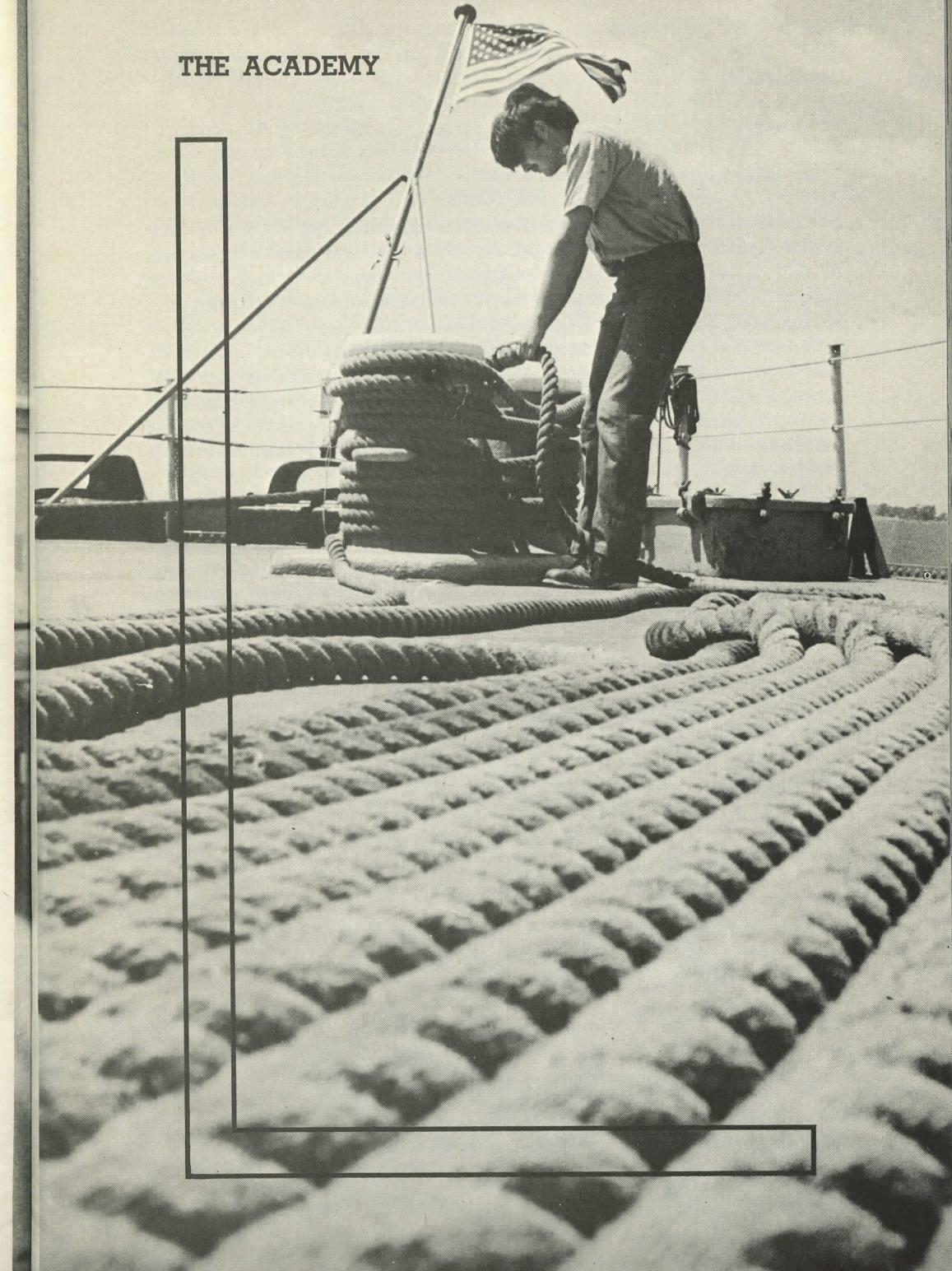
Lieutenant Roderick L. Lindberg, USNR. B.A., Washington State University, 1969. (1972)

Lieutenant Alfred E. Yudes, USN, B.A., U.S. Naval Academy, 1969 (1973)

Roland C. Coburn, MMC, USN. (1970)

Ulderico M. Edquid, GMGC, USN. (1971)

#### **THE ACADEMY**



## THE ACADEMY

### HISTORY

The California Maritime Academy was originally established in 1929 as the California Nautical School by an act of the State Legislature. In 1972 it was given its present status as an independent institution of higher education, deriving certain administrative support from the Trustees of the State Colleges and Universities.

Federal authority and encouragement for state maritime academies date from an Act of Congress of 1874. While it is distinctly an educational agency of the State of California, the California Maritime Academy obtains considerable assistance from several federal agencies: Maritime Administration, Navy, Coast Guard, and Public Health Service.

The United States 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."

### LOCATION

The California Maritime Academy is located on the north shore of the Carquinez Strait, in the City of Vallejo. It is about a thirty-minute drive on U.S. Interstate Highway 80 from San Francisco. The Naval Shipyard at Mare Island is in the immediate vicinity and is available for observation of drydocking, heavy shop practice, ship repair procedures, and electronic developments. Oceangoing steamers from all parts of the world pass through the Carquinez Strait en route to and from Sacramento and San Joaquin River ports.

### FACILITIES

The Academy is situated on a 67-acre campus adjacent to the Carquinez Strait. A deep water pier provides berthing space for the training ship *Golden Bear* and encloses a boat basin for power, sailing and rowing boats.

A three-story brick residence hall, with a commanding view of the Strait, was completed in late 1958 and provides living and study accommodations for the midshipmen.

The Hugh P. Gallagher Library, completed in 1971, sits in the center of the campus, overlooking Carquinez Strait on one side, and Golden Bear Park on the other. This new facility provides the ultimate in library equipment and design, offering the midshipmen thousands of

volumes and periodicals covering the technical subjects of the maritime industry as well as the Arts and Sciences.

Mayo Hall houses a well-equipped gymnasium, 25 meter indoor pool, and a 10 man Universal weight machine.

Classrooms are located in a two-story building and contiguous to the classrooms is a small assembly hall.

The dining hall is adjacent to the midshipmen formation area. Service is cafeteria style and a balanced diet is provided by dietary experts.

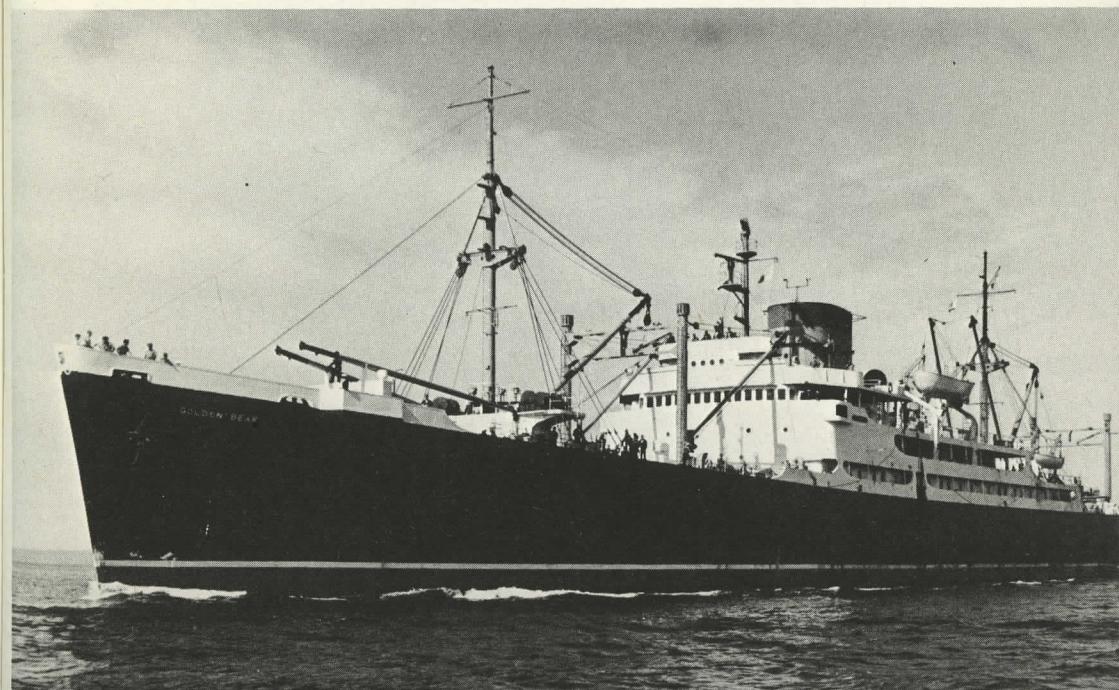
The Seamanship Building is located adjacent to the boat basin and provides facilities for instruction in manila and wire splicing, canvas work, boat overhaul and the reeving of blocks and tackles.

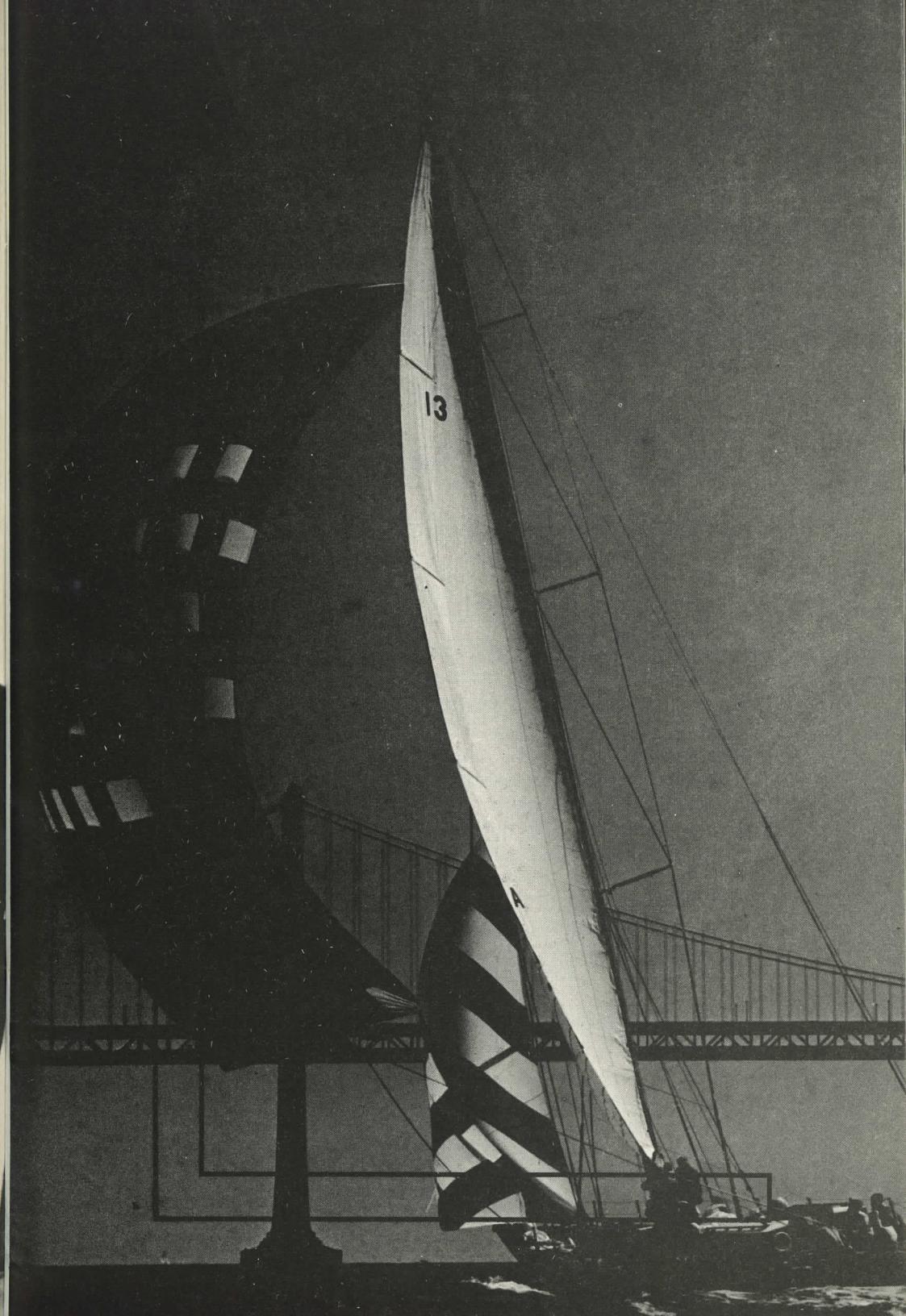
An engineering building, Dwyer Hall, completed in 1961, provides excellent office space for the Marine Engineering Department and classroom and laboratory facilities for instruction in chemistry, physics, electricity, electronics, diesel engines, and machine shop. A welding and burning shop are also provided. Dwyer Hall also houses the Academy's computer lab.

The Administration Building provides offices for the Superintendent, Academic Dean, Commandant of Midshipmen, Business Manager, Nautical Science and General Education departments.

Tennis, archery and handball courts and an athletic field provide ample outdoor recreational facilities while the recently enlarged pistol range with targets set at 25 and 50 yards serves as an excellent facility for the Academy's pistol team.

The Academy's training ship *Golden Bear* is a 10,000-ton vessel which can cruise at 16 knots and serves as a "floating laboratory" during the annual 10-week training cruise.







## MIDSHIPMEN LIFE

### Corps of Midshipmen

For purposes of organizational management and the development of a sense of discipline, the student body is organized as a Corps of Midshipmen.

A para-military routine is followed and midshipmen wear a functional merchant marine uniform at all times.

The Corps is under the command of the Commandant of Midshipmen who is responsible for the conduct, discipline, welfare, and morale of the entire student body.

The Corps is divided into eight divisions which are commanded by top students of the senior class, called First Class at the Academy. They in turn are responsible to the Corps Commander, also a top ranking First Class.

### Orientation Week

The Student Council, through the Commandant, is responsible for the orientation week which takes place during the first or second week of August for the entering Third Class.

The purpose of orientation is to provide an understanding of the life of a midshipman at the Academy, including proper attitudes toward study, discipline, and duty.

Entering students are provided with a background in the Academy's two core curriculum (Nautical Science and Marine Engineering) to enable them to make a decision as to which course of study they wish to pursue.

Orientation also provides for the issuance of uniforms and instructional materials and the normal registration procedures.

### Daily Schedule

A midshipman's daily routine begins at 0630 (6:30 a.m.) with a cleaning formation followed by breakfast and morning colors formation at 0800 (8:00 a.m.). After colors, midshipmen have scheduled classes until noon formation followed by lunch. Afternoon classes, usually scheduled aboard the *Golden Bear*, begin at 1300 (1:00 p.m.) and end at 1600 (4:00 p.m.).

The time between 1600 (4:00 p.m.) and 1800 (6:00 p.m.) is a midshipman's free time and is normally devoted to varsity athletics, intramurals, club meetings, extra study, or some form of extra-curricular recreation. Following the evening meal at 1800 (6:00 p.m.) the rest of the evening is generally spent in studies.

Friday afternoons are devoted to Naval Science drill and inspection after which liberty is granted to those divisions not standing the weekend watch.

### Leave and Liberty

All midshipmen are granted approximately two weeks leave during the Christmas Holiday, three days during Thanksgiving, one week in the spring following the training cruise and three weeks at the conclusion of the academic year.

At the conclusion of classes at 1600 (4:00 p.m.) the First and Second Classes are granted all night liberty until 0700 (7:00 a.m.) the following day.

Third Class midshipmen are only granted Wednesday evening liberty in addition to weekend liberty. Midshipmen on watch or on conduct restriction must remain on the base at all times.

The Commandant of Midshipmen may grant sick leave or emergency leave to a midshipman when circumstances warrant, and may also grant special leave or liberty for extra-curricular activities and special events.

### Conduct

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 so dropped or denied re-enrollment may be readmitted only after representation to and with the authority of the Board of Governors.

Midshipmen may be placed on conduct restriction, resulting in loss of liberty, for failure to maintain a satisfactory record. An accumulation of a designated number of demerits may also result in conduct restriction.

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.

It should be noted here that a midshipman who is placed on probation for failure to meet the Academy's conduct requirements may lose the Federal subsistence allowance for any period up to six months. In such case the midshipman must pay the lost allowance to the Academy himself.

## Varsity and Intramural Athletics

An extensive program of intercollegiate and intramural athletics is carried on at the Academy. Students are encouraged to participate in one or more sports or recreational activities during the year.

The Academy is a member of the California Coast Conference, The Northern California Intercollegiate Yacht Racing Association and the American Rifle Association. Varsity teams are fielded in the following sports:

Soccer  
Basketball

Pistol  
Tennis

Sailing  
Crew

Intramural competition between divisions is stressed at the Academy. Team sports and individual tournament play is scheduled throughout the year thus affording students the opportunity of participating in a variety of athletic and recreational activities. The following activities are scheduled throughout:

Flag Football  
Swimming  
Volleyball  
Table Tennis  
Wrestling

Badminton  
Rowing  
Weight Lifting  
Basketball  
Handball

Horseshoes  
Cross Country  
Bowling  
Softball  
Tennis

Archery  
Pistol  
Golf  
Pool

## Extra-Curricular Clubs and Activities

A wide variety of clubs and activities are available and most students participate in one or more depending upon their time and interests.

Midshipmen with a literary bent can participate in the publication activities which include the **Binnacle**, a monthly newspaper, and the **Hawsepipe**, the annual yearbook of the graduating class.

Religious activities in various denominations are available through campus organizations such as **Newman Club**, **Calvin Club**, **Canterbury Club**, and **Young Life**.

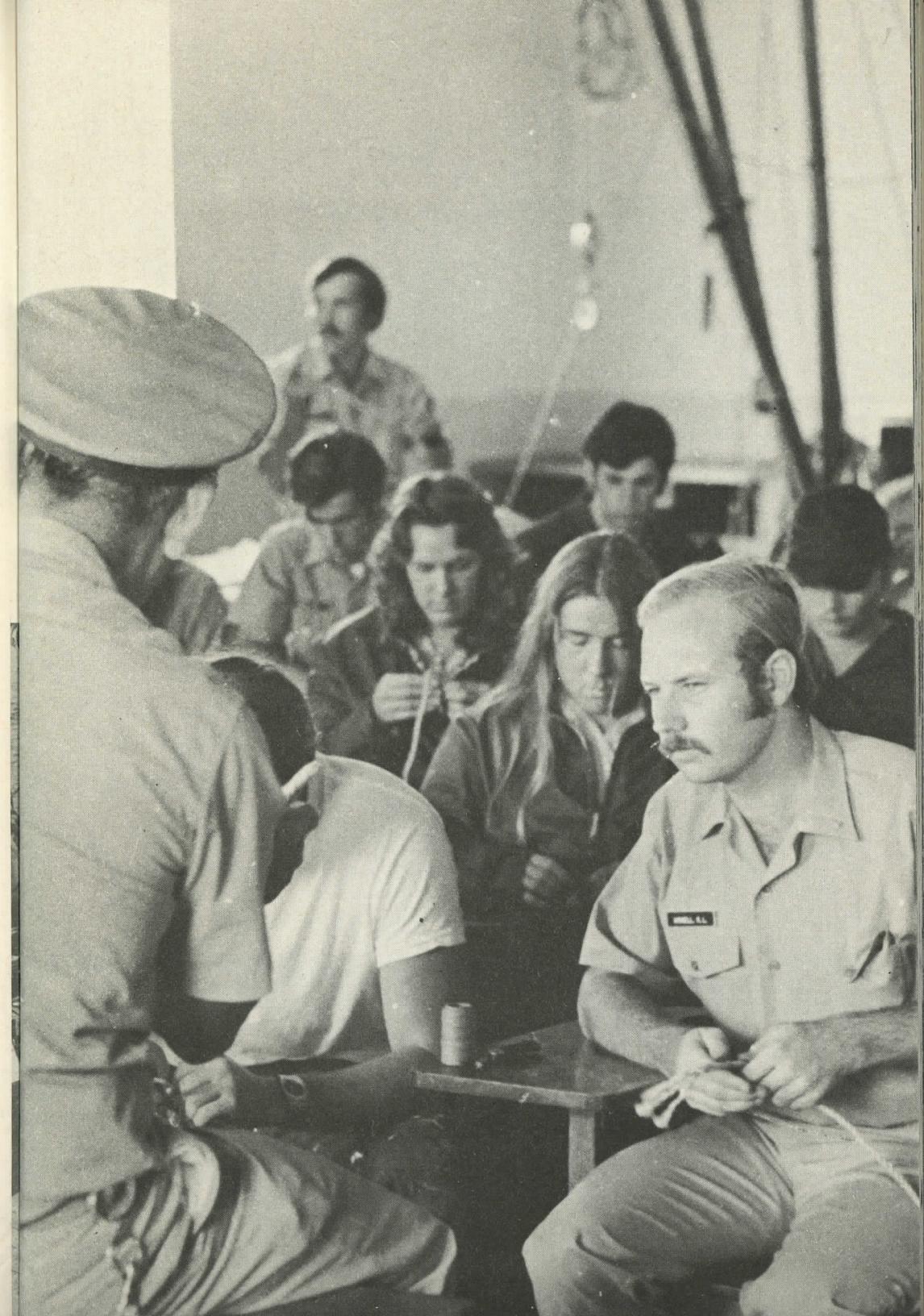
The Student Port of the **Propeller Club of the United States** is the largest club on campus and sponsors many social events during the year. The Propeller Club is a national organization dedicated to promoting public knowledge of the American Merchant Marine.

A wide variety of other activities include the **Athletic Council**, **Camera Club**, **Sailing Club**, **Radio Club**, **Pistol Club**, **Skindivers Club**, **Veterans Club** and the **Navy Club**.

The Academy also sponsors **Honor Guard** and **Drill Team** units which win many honors and awards annually while participating in parades and ceremonies all over the state.

The center for student activities is in the newly renovated Naval Science Building and includes a coffee mess, pool and table tennis tables, reading lounge, and meeting areas.

The biggest annual social events are the **Ring Dance**, sponsored by the Second Class, and the **Keema Kickback**, sponsored by the Athletic Council.



### **Student Government**

Students are encouraged to voice their views through an active student government. A Student Council, comprised of the elected officers of each of the three classes, meets with the Superintendent and other administrative officers periodically to discuss applicable items of student interest.

Student Council offices are located in the residence hall and all midshipmen activities are coordinated from there.

### **Cultural Activities**

The San Francisco Bay Area abounds with cultural activities which are available at no cost or at reduced rates for Cal Maritime students.

Within easy driving distance of the Academy are numerous museums, observatories, and zoological and botanical gardens.

For fine arts minded students, the San Francisco Symphony, Ballet and Opera offer excellent student rates, as does the American Conservatory Theatre, one of the finest theatre companies in the world.

### **Medical and Dental Care**

As Cadets in the U.S. Maritime Service, Academy Midshipmen qualify for free medical and dental care at the U.S. Public Health Hospital in San Francisco. In addition, a full-time Pharmacist Mate is located on base and a local general practitioner conducts daily sick calls. While the *Golden Bear* is at sea, a doctor is always aboard.

### **Counseling**

Academic counseling is provided by assigned faculty advisors who meet with students periodically. Personal and career counseling is available to students as needed.

Any student in doubt about whom to see for help will receive assistance from the Academic Dean's office.

### **Motor Vehicles**

The use of motor vehicles at the Academy is considered a privilege and is granted subject to compliance with Academy regulations. The privilege may be withdrawn if the regulations are violated.



### **THE U.S. NAVAL RESERVE OFFICER PROGRAM**



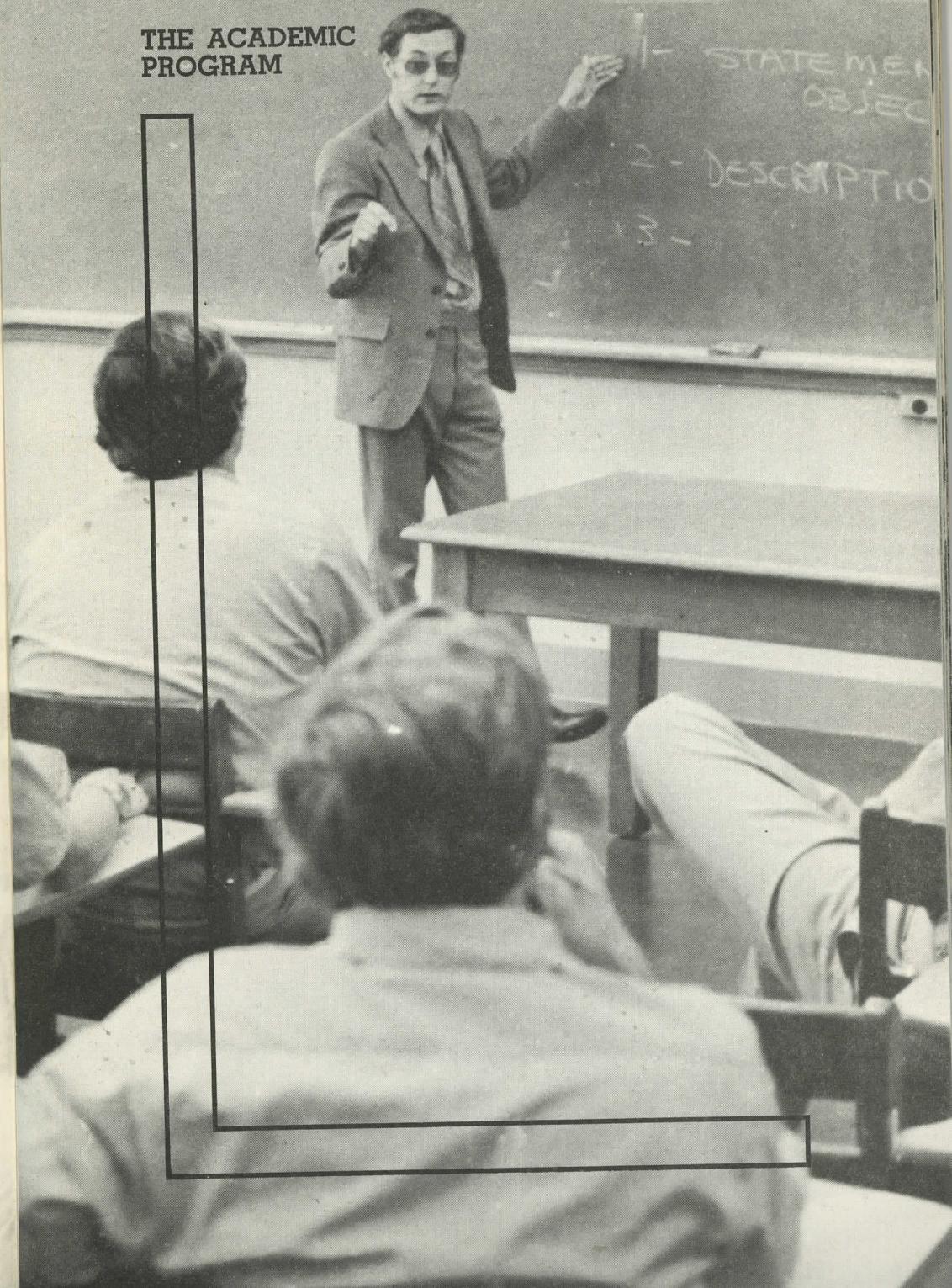
## THE U.S. NAVAL RESERVE OFFICER PROGRAM

### Military Service

The Secretary of the Navy, in concert with the Secretary of Commerce, has developed a plan whereby merchant marine officers may fulfill their military obligation by accepting a commission in the U.S. Naval Reserve while continuing to sail in the Merchant Marine. The pertinent points of this program are as follows:

1. Students at maritime academies retain civilian status.
2. The Navy provides naval science courses designed to qualify the students for a commission as ensign, USNR.
3. At the time the student enters the academy he must agree in writing to apply for a commission as ensign, USNR, at the appropriate time before graduation and to accept such a commission if offered.
4. Upon acceptance of the commission, the Officer must choose one of four options to maintain his commission. They are:
  1. To sail on his license for a period of six months each year for three consecutive years;
  2. Sail on his license for a period of four months each year for four consecutive years;
  3. To go on active duty in the U.S. Naval Reserve for a period of three consecutive years or
  4. To apply for and serve on active duty for training on board a navy ship for a minimum period of thirty consecutive days each year for a period of three consecutive years. He also must satisfactorily complete a minimum of one Navy Correspondence Course annually.
5. There is also a direct commissioning program that allows a Midshipman, if he so chooses, and provided he is qualified, to enter the United States Coast Guard as Ensign upon graduation. These men are generally assigned to the Merchant Marine Inspection Service of the Coast Guard.

## THE ACADEMIC PROGRAM



#### ACADEMIC STANDARDS

The California Maritime Academy is recognized by the United States Office of Education and listed in the Directory of Higher Education as a degree-granting professional school on the collegiate level.

The program of studies is fully prescribed. Midshipmen must obtain passing grades in every course to remain in good standing. Similarly, they must achieve satisfactory grade point averages. Students failing to meet requirements will be required to appear before the Academic Board for determination of their continuance in the Academy. Midshipmen are expected to perform to the best of their abilities at all times and academic failure, inaptitude and continuous disciplinary infractions may effect the midshipman's dismissal by the Board of Governors at any time.

#### CURRICULUM

The curriculum of the California Maritime Academy is currently undergoing considerable revision in an effort to provide a fully accredited Bachelor of Science degree. Such courses as oceanography, computer science, and automation have already been included, and a number of new courses are being planned in both the professional and general education areas. Prospective students who are interested in entering the Academy in 1974 should make further inquiry as to degree requirements, inasmuch as this 1973-74 catalog does not reflect the latest curricular developments.

The California Maritime Academy is recognized by the Accrediting Commission for Senior Colleges and Universities of the Western Association of Schools and Colleges as a candidate of the Commission. A candidate is an emerging institution, which has indicated its intent to work toward accreditation, has provided evidence of sound planning and of the resources to implement these plans, and appears to have the potential to attain accreditation within a reasonable time. Candidate status is not accreditation, and does not assure or imply eventual accreditation.

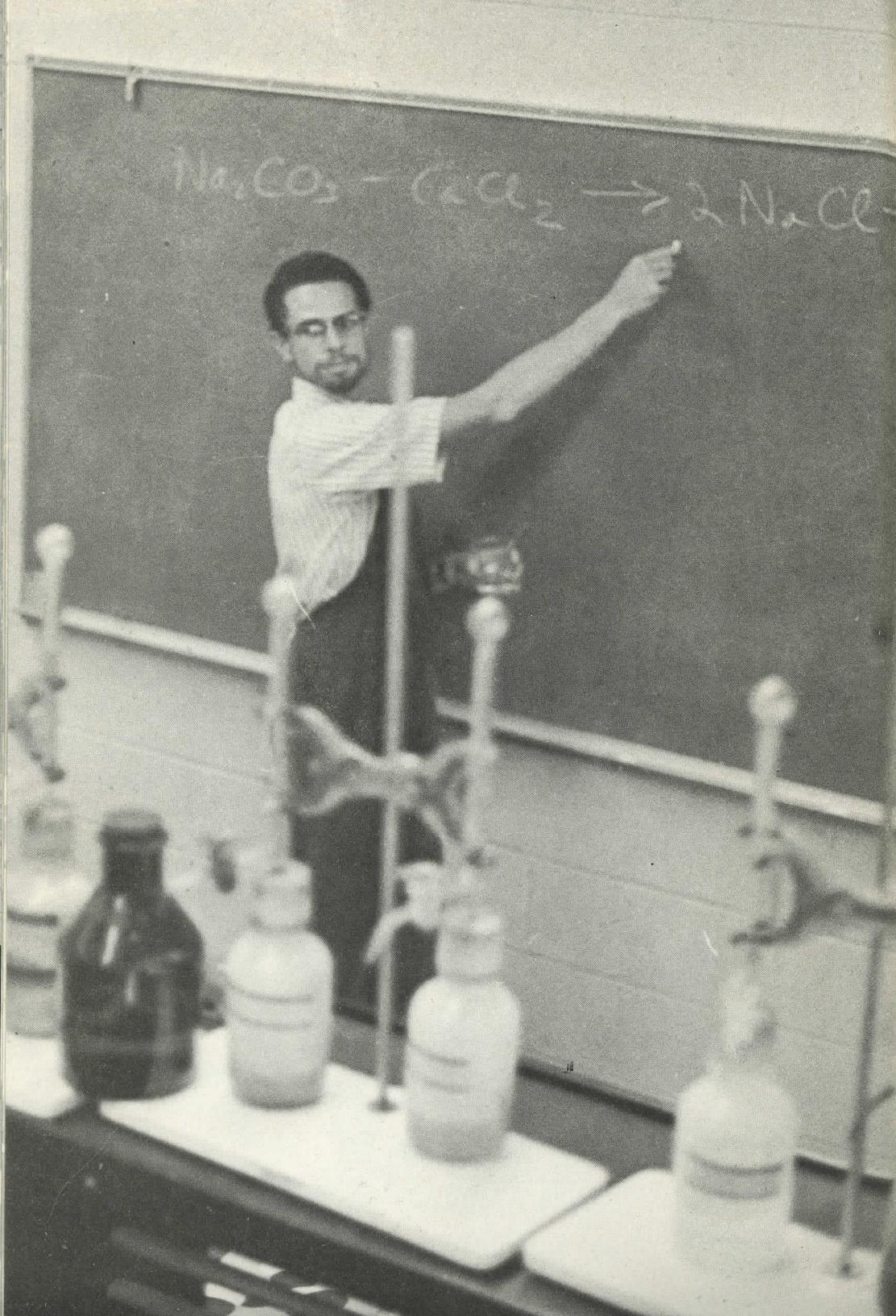
#### ADMINISTRATION

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. His appointment is approved by the Federal Maritime Administration, the Navy Department, and the California State Department of Education.

#### INSTRUCTORS

The instructors are also the officers of the training ship *Golden Bear*, insuring sound continuity and relationship between studies during academic trimesters and practical experience on the annual training cruise. Every member of the professional faculty has a creditable record of service in the Merchant Marine, Coast Guard 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. In addition several instructors are assigned to the general education department. These instructors teach the non-professional courses required for graduation, and do not go on the annual training cruise.





## INSTRUCTIONAL PROGRAM

### SESSIONS

The California Maritime Academy provides an intensive three-year program of education on the college level. The academy is in session every month of the year and this produces an instruction time approximating four years of instruction in regular sessions or three regular sessions and three summer sessions in most colleges.

### DEGREES

The bachelor of science degree in nautical science or the bachelor of science degree in marine engineering is conferred upon midshipmen successfully completing the academy program of instruction and the U.S. Coast Guard license examination.

### LICENSES

Midshipmen meeting the physical and educational requirements of the U.S. Coast Guard examination are licensed as third mates or third-assistant engineers and are qualified in these capacities to serve aboard any American Flag ship.

### SCHOOL YEAR

The academic year is divided into three trimesters. The shore based trimesters are approximately 17 weeks each and the sea training trimester is approximately 13 weeks in length. A brief recess follows each trimester.

### DAILY PROGRAM

The instructional day is from 8 a.m. to 4 p.m. In general, the morning classes are devoted to required professional subjects; the afternoon classes are organized to provide practical operational experience in essential shipboard procedures. The course of instruction is fully prescribed; there are elective subjects only for midshipmen of the first class.

### GRADING SYSTEM

The letter grading system with corresponding grade points is used to indicate the caliber of the student's work. The scholastic significance of the grades are:

<i>Letter scale</i>		<i>Grade points</i>
A	Outstanding	4
B	Excellent	3
C	Average	2
D	Minimum passing grade	1
F	Failed	0
W	Withdrew	0
WF	Withdrew under failing conditions	0

In certain courses, grades must of necessity be assigned on a pass or fail basis. The designation P or F is used in such cases.

## REPORTS OF ACADEMIC PROGRESS

A permanent record card is maintained for each midshipman. At the conclusion of each trimester a grade report will be mailed to the parents or guardian of each midshipman who requests that this be done.

The academic standing of each midshipman is determined by his grade point average and is made a part of the midshipman's permanent record card.

## SEA TRAINING

In each of their three years at the Academy, midshipmen participate in a sea training trimester. On the first cruise they do the actual work of ordinary seamen, oilers and wipers. On the second cruise they perform duties of intermediate responsibility. On the third and final cruise they perform the duties they will carry out as junior watch officers on deck and in the engine room. In general, the forenoons at sea are devoted to the ship's work and the afternoons to instruction. In these activities, the Academy officers integrate the instruction given ashore with actual practice at sea. In the ship's engine room the first class engineer midshipmen actually stand an independent watch with a licensed watch officer keeping an overall eye on him as safety officer. The first class deck midshipmen likewise perform the duties of a third mate under the supervision of a faculty safety watch officer. First class deck midshipmen each do a full day's work as navigator and each in turn performs the actual navigation duties with his positions the official ones in the log and on charts.

### SEA TRAINING—DEPARTMENT OF NAUTICAL SCIENCE

#### THIRD CLASS CRUISE

**Practical Work.** Under the direction of upper classmen and the ship's officers, perform the actual basic duties of the deck department. Chipping, painting, overhauling cargo gear, boats, and other deck equipment.

**Seamanship.** Boat drills; launching and recovering lifeboats; use of firefighting and emergency gear; use of deck equipment; emergency procedures; watch standing; beginning rules of the road.

#### SECOND CLASS CRUISE

**Navigation.** Sextant adjustments and altitude measurements; observation for lines of position using the sun; meridian altitudes of the sun; azimuths of sun for compass error; practical compass adjustment; practical application of piloting and the sailings; correction of charts and publications; bridge duties; basic meteorology.

**Seamanship.** Boat drills under oars, sail and power; lifeboat equipment; launching and recovering small boats; performance of coxswain duties; mooring; docking and undocking; rigging of breeches buoy; use of Lyle gun; canvas work; operation of ships' cargo gear; watch standing as quartermaster, patrolman, and signalman.

**Communications.** International signals; drill for speed and accuracy; watch standing as junior signalman.

#### FIRST CLASS CRUISE

**Navigation.** The navigator's work at sea and in port; practical celestial navigation, piloting and electronic navigation; analysis of running fixes and estimated positions; chart and publication correction; tide and current tables; lifeboat navigation; responsibilities of the navigator. Deck midshipmen are required to obtain

at least one celestial fix every day the ship is at sea. In addition thereto, they are relieved of all other duties for one-third of the time at sea for intensive navigation study. During this period, each man independently does a full day's work, and in turn, each supplies the official position entered in the log and reported by the ship for the day he is navigator.

**Meteorology.** During cruise each man performs duties of Ship's Meteorologist, making out the Weather Bureau log and preparing the ship's official weather report for radio transmission.

**Seamanship.** Boat drills; operation of ship's cargo gear; planning and supervision of maintenance programs; review of safety on the supervisory level; functions of ship's officers within the deck department, together with the functions of other departments within the ship; engineering knowledge required of deck officers; ship handling; supervision of damage control parties; review of rules of the road; stand deck watches in rotation.

**Communications.** Review of blinker and international signals; drill for speed and accuracy; watch standing as signalman.

### SEA TRAINING—DEPARTMENT OF MARINE ENGINEERING

#### THIRD CLASS CRUISE

**Engineering.** Introduction to the basic elements of ship's operations; ship organization and methods of maintaining a seaworthy vessel; basic steam cycle and major equipment of the steam power plant; one line diagrams of all basic cycles necessary to operate the ship; engine room watch standing with progressive responsibility assumed by the student during cruise.

#### SECOND CLASS CRUISE

**Engineering.** Detailed study of all engine room equipment; operation manuals, manufacturers' instruction books; maintenance methods; watch standing as oiler, watertender, electrician and evaporator operator.

#### FIRST CLASS CRUISE

**Engineering.** Detailed study of basic equipment with emphasis on boiler and turbine operation; watch standing as watch engineer and junior watch engineer.

## DEPARTMENTS

Prior to 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.

The Department of Nautical Science (deck) courses provide a knowledge of navigation, ship handling, design and operation which fits the graduate for the duties of a deck officer.

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

The Department of Naval Science provides training and instruction for all students in essential naval subjects so that coordinated action between the Navy and the Merchant Marine can be assured in time of war.

The Department of General Education includes all non-professional courses which are given to round out education of the midshipmen as well as furnish them with the basic skills in English, mathematics, and science required in their professional courses.

## SPECIAL SCHOOLS AND CERTIFICATIONS

Incorporated into the instructional program are a series of special schools and U.S. Coast Guard examinations designed to provide the midshipmen with training and certification in special fields. Among these are:

Third Class Year	U.S. Navy Firefighting and Damage Control School. U.S. Coast Guard Lifeboatman Certification.
First Class Year	Nuclear, Biological and Chemical Defense School. U.S. Coast Guard Able Seaman Certification.
	U.S. Coast Guard Radar Observer Certification. Damage Control School.
	Communications Certification.
	U.S. Public Health Service First-Aid Certification

## FIELD TRIPS

The knowledge and principles studied in professional courses are strengthened and made more meaningful when observed in their natural setting. Therefore, field trips to shipping terminals, cargo vessels, ship repair yards, industrial laboratories, meteorology stations, etc., form a regular part of the instructional program.

## GUEST SPEAKER PROGRAM

From time to time the midshipmen are addressed by a person who has attained prominence in some phase of the shipping or allied industries, or in some branch of the federal government concerned with shipping. These educational lectures are designed to supplement the information presented to the midshipmen through the curriculum and to provide additional instruction in related fields.

## AWARDS AND HONORS

It is expected that every midshipman will perform to the best of his ability and maintain an academic record that will be of credit to himself and the academy. The "Dean's List" is published each trimester to honor those students who have earned a 3.0 grade point average (B average).

Midshipmen must also pass every course in order to be eligible for the "Dean's List." A special uniform ribbon is issued to these students making the "Dean's List."

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

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

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.

## FACULTY ADVISORS

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

## CALIFORNIA MARITIME ACADEMY

### Fall Trimester 1973—Nautical Science

	Third Class	Units
D-105	College Math	3
D-108	Marine Trans. or	2 }
D-300	Oceanography	2 }
G-101	English I	3
NS-101	Naval Organization and Management	3
D-111	Basic Seamanship	2
D-90	Basic Engineering	2
G-103	U. S. Government	2
D-115	Marlinspike Seamanship	2
D-117	Boats	1
D-125	Ships Operations	1
G-129	Physical Education	½
		21½

	Second Class	Units
D-201	Navigation	3
NS-201	Naval Operations Anal.	3
D-205	Physics I	3
D-203	Spherical Trigonometry	3
D-207	Ships Construction	3
D-223	Communications	1
D-225	Ships Operations	1
D-80	Navigation Applied	1
D-215	Applied Seamanship	1
G-229	Physical Education	½
G-284	Humanities (Elective)	2
		21½

	First Class	Units
D-303	Meteorology	3
G-318	Introduction to Computer Science	3
D-309	Cargo I	3
D-311	Seamanship	3
NS-301	National Secur. Policy	3
D-307	Ships Medical Practice	1
D-323	Communications	1
D-305	Radar	1
D-301	Navigation	3
D-325	Marine Supervising Skills	1
D-315	Applied Seamanship	1
		23

### Spring Trimester 1974—Nautical Science

	Third Class	Units
G-102	English	3
G-104	U. S. Government	2
D-106	Trigonometry	3
D-108	Navigation	3
D-110	Engineering Graphics	1
D-112	Rules of the Road	2
NS-102	American Military Affairs	3
D-116	Marlinspike Seamanship	1
D-118	Boats	1½
D-126	Ships Operations	1
G-130	Physical Education	½
G-301	Oceanography II or	2 }
D-109	Marine Transportation	2 }
		23

	Second Class	Units
D-202	Navigation	3
D-204	Calculus I	3
D-206	Physics II	3
D-208	Maritime Economics	2
D-212	Rules of the Road	2
D-216	Applied Seamanship	1½
D-222	Instruments and Navigational Aids	1
D-226	Ships Operations	1
G-230	Physical Education	½
NS-203	Intro. to Naval Ships Systems	3
Elective	Humanities II	2
		22

	First Class	Units
D-302	Navigation	3
D-304	Maritime Law	3
D-306	Marine Rules and Reg.	3
D-308	License Seminar	2
D-310	Cargo II	3
D-312	Rules of the Road	3
D-326	Ships Operations	1
G-348	Computer II	3
		21

CALIFORNIA MARITIME ACADEMY

Fall Trimester 1973—Marine Engineering

Third Class

		Units
G-101	English I	3
E-105	College Math I	3
E-109	Engineering Graphics	1
G-103	U. S. Government	2
E-107	Chemistry I	3
E-111	Basic Engineering & Lab.	3
NS-101	Naval Organization and Management	3
E-107L	Chemistry Laboratory	1
G-285	Humanities I	2
D-300	Oceanography or	2
D-108	Marine Transportation	2
E-115	Boats	1
G-129	Physical Education	½
		24½

Second Class

		Units
E-209	Calculus I	3
E-290	Applied Environmental Tech.	2
E-203	D. C. Electrical Engineering	3
E-205	Physics II	3
E-201	Marine Engineering	2
E-221	Refrigeration	2
NS-204	Naval Operating Anal.	3
E-223	Marine Machinery Lab.	1½
E-217	Machine Shop Lab.	1½
G-229	Physical Education	½
		21½

First Class

		Units
E-301	Steam Engineering V	5
NS-301	Naval Security Policy	3
E-311	Ships Medical Practice	1
G-318	Introduction to Computer Science	3
E-303	Diesel Engineering	3
G-309	U. S. Government	2
E-305	Strength of Materials	3
E-315	Diesel Lab.	1½
E-317	A. C. Electrical Lab.	1½
E-319	Marine Machinery Lab.	1½
		24½

Spring Trimester 1974—Marine Engineering

Third Class

		Units
G-102	English II	3
E-106	College Math II	3
E-108	Chemistry II	3
E-110	Physics I	3
E-112	Steam Engineering II	2
E-116	Boats	½
E-118	Machine Shop Lab.	1½
E-120	Marine Machinery Lab II	1½
G-130	Physical Education	½
NS-102	American Military Affairs	3
G-301	Oceanography II or	2
D-110	Marine Trans. II	2
Elective	Humanities II	2

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Second Class

		Units
E-202	Steam Engineering IV	2
E-204	A. C. Electrical Engineering	3
E-208	Machine Shop Theory	1
E-210	Calculus II and Apps.	3
E-212	Thermodynamics	3
E-214	Electronics	2
E-216	D. C. Electrical Lab.	1½
E-218	Marine Machinery Lab IV	1½
E-220	Arc and Gas Welding	1½
E-291	Applied Env. Tech.	2
G-220	Physical Education	½
NS-202	Navigation	3

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First Class

		Units
E-302	Steam Engineering VI	3
E-304	Diesel Engineering II	3
E-306	Ships Const. and Damage Control	3
E-312	Engineering Admin.	1
E-314	Labor Relations	1
E-316	Diesel Lab.	1½
E-318	License Seminar	2
E-320	Marine Machinery Lab VI	1½
G-348	Computer II	3

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COURSE DESCRIPTIONS



## DESCRIPTION OF COURSES

### NUMBERING AND CLASSIFICATION

Courses of the first year have numbers beginning with one (1), those of the second year with two (2), and those of the third year with three (3). Fall trimester courses end with odd numbers and spring trimester courses end with even numbers. The three sea training trimesters are designated by the numbers one (1), two (2) and three (3).

Courses in the Department of Nautical Science are classified as deck courses and are indicated by the prefix "D." Courses in the Department of Marine Engineering are classified as engineering courses and bear the prefix "E." General courses required of all midshipmen are prefixed "G." Naval science courses have the prefix "NS."

### CREDIT VALUE

At the California Maritime Academy, one unit of credit consists of one hour of the midshipman's time each week in lecture or recitation during one trimester (17 weeks) or a longer time in laboratory and/or operational training. An additional ten (10) units is awarded each midshipman for successfully completing the work of each training cruise.

## DEPARTMENT OF NAUTICAL SCIENCE

### D-105. College Algebra (I)

Credit: 3  
An integrated course of college algebra and trigonometry designed to prepare the student for courses in spheroid trigonometry, calculus, and navigation. The course covers linear equations, exponents, functions, angular measure and identities, tables, graphs, and quadratic equations.

### D-106. Trigonometry (II)

Credit: 3  
Continuation of E-105, systems and equations, matrices, and determinants, variation, functions of composite angles, complex numbers, logarithmic solutions of triangles, mathematical induction, trigonometric equations and inverse functions.

### D-108. Navigation

Credit: 3  
Fundamental navigational topics including basic definitions, rudimentary knowledge of the instruments used by the navigator, charts, piloting and dead reckoning.

### D-110. Engineering Graphics

Credit: 1-1  
The fundamentals of mechanical drawing and lettering directed to the objective of enabling the deck officer to produce working drawings of shipboard devices and equipment. Instruction and practice is given in making orthographic projections, isometric drawings, single stroke Gothic lettering, dimensional and scale drawings.

### D-111. Seamanship

Credit: 3  
The study of basic seamanship, including sea terms, nomenclature, small boats, merchant ship characteristics, deck fittings, rigging, equipment, appliances, lifesaving devices, and emergency procedures.

### D-112. Rules of the Road

Credit: 2  
Initial study of the International Rules of the Road, including their origin, purpose, history, technical provisions, and application.

### D-114. Basic Marine Engineering and Lab

Credit: 2

A systematic study of the basic systems and elements of the training vessels engineering plant. Subject matter is directed to aid the students understanding of the function of the marine power plant and to prepare him for his first seatraining trimester.

### D-115-116. Marlinspike Seamanship

Credit: 1-1

Instruction in practical use of cordage, knotting, splicing, whipping, reeving tackles, sewing, rigging stages, bosn's chairs, shear legs, splicing wire rope, and sewing canvas. General shipboard familiarization.

### D-117-118. Boats

Credit: 1-1

Instruction in rowing, handling boats under oars and sail, launching and recovery of lifeboats, lifeboat nomenclature and equipment. This course prepares the midshipman for the U.S. Coast Guard Lifeboatman's Certificate.

### D-125-126. Ship's Operations

Credit: 3-3

Instruction in ship maintenance including the selection and application of preservatives, chipping and painting, and assigned work in the interior, exterior and navigational divisions of the training ship.

### D-201-202. Navigation

Credit: 4-3

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.

### D-203. Spherical Trigonometry

Credit: 3

The course begins with theorems from spherical geometry, solution of spherical triangles by Napier's method, derives laws of sines, cosines, tangents, and haversines. It applies these methods to solve problems in great circle sailing and to the solution of all navigational problems by mathematics as distinguished from tabular solutions.

### D-204. Calculus I

Credit: 3

The course consists of the study of differentiation with applications to rates, maxima and minima, followed by elementary integration as the limit of a sum, and applications to areas, and volumes. The course concludes with the use of Simpson's rule, and applications.

### D-205. Physics I (Mechanics)

Credit: 3

The 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 and fluids in motion.

### D-206. Physics II

Credit: 3

Heat, electricity and magnetism; direct and alternating circuits and machines; sound, light and atomic theory.

### D-207. Ship Construction

Credit: 3

This course covers the history of ship building, wooden ship construction, steel ship construction, boat building including fiberglass construction and the construction of lifeboats.

### D-208. Maritime Economics

Credit: 2

The purpose of this course is to provide the student with an understanding of the history and objectives of the labor movement in the United States, trade union government, structure and objectives of management, collective bargaining and the issues involved, the nature and development of public controls, unions in the maritime industry, maritime labor contracts, and ship's business.

**D-210. Ship Stability**

Credit: 3  
This course covers the theory of stability for small and large angles of inclination, principles of buoyancy and trim and methods of calculation such as Simpson's rules. Practical problems covering calculations of stability, trim, and free board are covered.

**D-212. Rules of the Road**

Credit: 2  
Marine Collision Law, case histories, and legal interpretations, comparative study of various sets of laws, regulations, and rules.

**D-215-216. Applied Seamanship**

Credit: 1-1  
A course of practical instruction covering the operation of all deck and auxiliary machinery such as anchors, winches, capstans, cargo gear; qualification in the use of power boats.

**D-222. Instruments and Navigational Aids**

Credit: 1  
The nomenclature, operation, use and recognition of navigational instruments and aids such as the magnetic compass, sextant, radio direction finder, fathometer, gyroscope, loran, chronometer, and omega.

**D-223. Communications**

Credit: 1  
Signaling by international code flags and flashing light; use of International Signal Book.

**D-225-226. Ships Operations**

Credit: 3-3  
A course of practical instruction aboard the training ship covering the operation of all deck and auxiliary machinery such as anchors, winches, capstans, and boat davits; advanced marlinspike seamanship; advanced material maintenance including damage control features; qualification in use of power boats.

**D-108. Marine Transportation (Option†)**

Credit: 2  
This course introduces the student to the field of commercial marine transportation. It gives the student a broad understanding of the nature of the maritime industry and relates his work and studies at the Academy with the maritime world. It assists the student in long range planning in his maritime career. This course includes American maritime history, government policies and regulations, steamship and stevedore company organization, principles of foreign trade, documentation and the various related organizations, both public and private.

**D-300-301. Introductory Oceanography (Option†)**

Credit: 2-2  
A lecture course presenting some of the more important phenomena in oceanography. It includes physical, chemical and biological oceanography, submarine geology and atmosphere-ocean interactions.

**D-301-302. Navigation**

Credit: 3-3  
Modern tabular methods for solution of the astronomical triangle, advanced plotting, great circle sailing, electronic navigation.

**D-303. Meteorology**

Credit: 3  
Meteorology for the mariner covering basic principles of weather, weather observations and reports, preparation of weather maps, study of air masses, winds and currents, weather prediction and weather problems at sea.

**D-304. Maritime Law**

Credit: 3  
The rights, obligations and responsibilities of seamen, master, and pilots as prescribed by the laws and regulations of the United States; maintenance of essential ship's papers, records and reports.

† During 1973-74 Trimester two options are being offered. Students may elect either the marine transportation or oceanography option. The present plan is to expand these two options into minors with a minimum of 16 units being offered in each field.



**D-305. Radar**

The theory and practical operation of shipboard radar and radar plotting.

**Credit: 1****D-306. Marine Rules and Regulations****Credit: 3**

This course covers the USCG Rules and Regulations for passenger vessels, cargo ships, tankers, and the various uninspected types. It also includes regulations covering officers and seaman of the merchant service, licensing and certificating, and investigations or similar legal proceedings.

**D-307. Ship's Medical Practice****Credit: 1**

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

**D-308. License Seminar****Credit: 2**

Lectures and discussions in preparation for mates and master's license examinations before the Merchant Marine Examiners, U.S. Coast Guard.

**D-309. Cargo I****Credit: 3**

This course covers all aspects of cargo handling aboard dry-cargo vessels. It includes study of the various types of cargo gear and cargo handling equipment, stowage of various commodities, ship owner organizations, cargo plans and ship loading, and the mathematics used in the above operations.

**D-310. Cargo II****Credit: 3**

This course is a continuation of Cargo I. It covers tankers, bulk carriers, container ships and other special types. It includes rules and regulations pertaining to special cargoes, and the handling of refrigerated cargoes. A portion of this course is devoted to automation as it applies to deck officers.

**D-311. Seamanship****Credit: 3**

This course is designed to complete the student's background knowledge of seamanship and covers those matters aboard ship which are primarily the duties and responsibilities of the master and chief officer. The course covers the factors and forces involved in ship handling under all conditions in port and at sea from maneuver in tropical horizons to ice navigation. A portion of the course is devoted to engineering knowledge required of deck officers and special attention is given to the study of sea disasters with the objective of learning lessons from them.

**D-312. Rules of the Road****Credit: 3**

Intensive study of the International, Inland and Pilot Rules of the Road, including certain court interpretations.

**D-315. Applied Seamanship****Credit: 1**

Practical experience in ship handling with 65-foot T boats diesel powered.

**D-323. Communications****Credit: 1**

Instruction and practice in communications by means of Morse code sent by flashing light and international code flags. Drill for speed; knowledge and use of storm signals, quarantine signals, pilot signals, wreck signals; thorough knowledge and use of International Signal Book; preparation for U.S. Coast Guard documentation in communications. Preparation for FCC permit for radio-telephone third-class operator.

**D-325-326. Marine Supervisory Skills****Credit: 2-1**

A course of practical instruction aboard the training ship *Golden Bear* covering all phases of the deck department. Includes the supervision of groups of men in deck department maintenance; the planning of maintenance programs; the operation of auxiliary deck machinery; the practical aspects of navigational instruments and equipment; a review of safety on the supervisory level; and a study of the functions of the officers within the deck department together with the functions of other departments within the ship.

**D-330. Merchant Ship Operations****Credit: 4**

This course is conducted aboard the ships of participating companies. It consists of twenty (20) days aboard the U.S. Flag merchant ships as observer, cadet or other rating during the period of enrollment at the Academy. A report comprising a sea project is submitted upon completion. Credited during final trimester.

**DEPARTMENT OF MARINE ENGINEERING****Credit: 3-3****G-348. Computer I and Lab**

Programming and solution of computer problems.

**Credit: 3****E-105. College Mathematics (I)**

An integrated course of college algebra and trigonometry designed to prepare the student for courses in spheroid trigonometry, calculus, and navigation. The course covers linear equations, exponents, functions, angular measure and identities, tables, graphs, and quadratic equations.

**Credit: 3****E-106. College Mathematics (II)**

Continuation of E-105, systems of equations, matrices, and determinants, variation, functions of composite angles, complex numbers, logarithmic solutions of triangles, mathematical induction, trigonometric equations and inverse functions.

**Credit: 3****E-107. Chemistry I**

Introduction to chemical theory; structure of matter; valence; chemical change; oxidation-reduction; equilibrium; solutions; ionization reactions in solutions, weak electrolytes. In addition to the standard theory, emphasis is placed on ecological aspects of chemistry.

**Credit: 3****E-108. Chemistry II**

This course covers material of special interest to marine engineers. It includes an intensive study of boiler water analysis and conditioning; testing and utilization of fuels and lubricants, elements of combustion, electrochemistry, corrosion control, and atomic theory.

**Credit: 1****E-109. Engineering Graphics**

A general course in engineering drawing meeting the needs of the engineering curriculum. Material covered includes lettering, applied geometry, use of instruments, orthographic projection, free hand and isometric sketching, isometric and oblique drawing, sections, thread and fasteners, dimensioning, pipings, drawings, and blueprint reading. Practical projects applying to the marine field are encouraged for advanced students.

**Credit: 3****E-110. Physics I**

Mechanics; properties of matter; heat; electricity and magnetism.

**Credit: 3****E-111. Steam Engineering I**

A systematic study of the basic systems and elements of the training vessel's engineering plant. Subject matter is directed to aid the student's understanding of the function of the marine power plant and preparing him for his first sea-training trimester.

**E-112. Steam Engineering II****Credit: 2**

A progressive and continuing course covering all the components of the marine steam power plant. Course includes studies on steam generators and evaporators; steam propulsion engines; auxiliary machinery; piping systems; U.S. Coast Guard regulations pertinent to the steam power plant. The steam engineering courses are supplemented by practical projects conducted in the marine machinery laboratory periods aboard the training ship in inspection, maintenance, and repair and by three sea-training trimesters.

**E-113. Maritime Economic History****Credit: 1**

This course introduces the student to a history of the maritime industry and offers background material necessary for an understanding of today's collective bargaining relationship and related economic topics.

**E-115-116. Boats****Credit: 1-3/4**

Instruction in rowing, handling boats under oars and sail, launching and recovery of lifeboats, lifeboat nomenclature and equipment. This course prepares the midshipman for U.S. Coast Guard Lifeboatman's Certificate.

**E-118. Machine Shop Lab****Credit: 1 1/2**

A laboratory course in the machine shop applying the theory learned in machine shop theory. The student will gain a knowledge of and skill in the principles and operation of hand tools and power machines. Individual projects ranging from turning a simple diameter to computing and machining helical gearing are performed.

**E-120. Marine Machinery Laboratory I****Credit: 3**

A series of practical laboratories in which the student becomes directly involved in the inspection, maintenance and repair of the marine machinery systems aboard the training ship. Beginning in the third class year, and continuing through the first class year, the student is assigned projects on an increasingly responsible scale in the preventative maintenance program necessary to ready the ship for annual sea training voyages.

By rotating assigned projects the student obtains practical experience in evaluating problems and remedies connected with steam generators and pressure vessels, piping systems, turbine and reciprocating machinery, pumps, electrical equipment, diesel engines, machine shop repairs, welding repairs and many other items of shipboard equipment.

**E-208. Machine Shop Theory****Credit: 1**

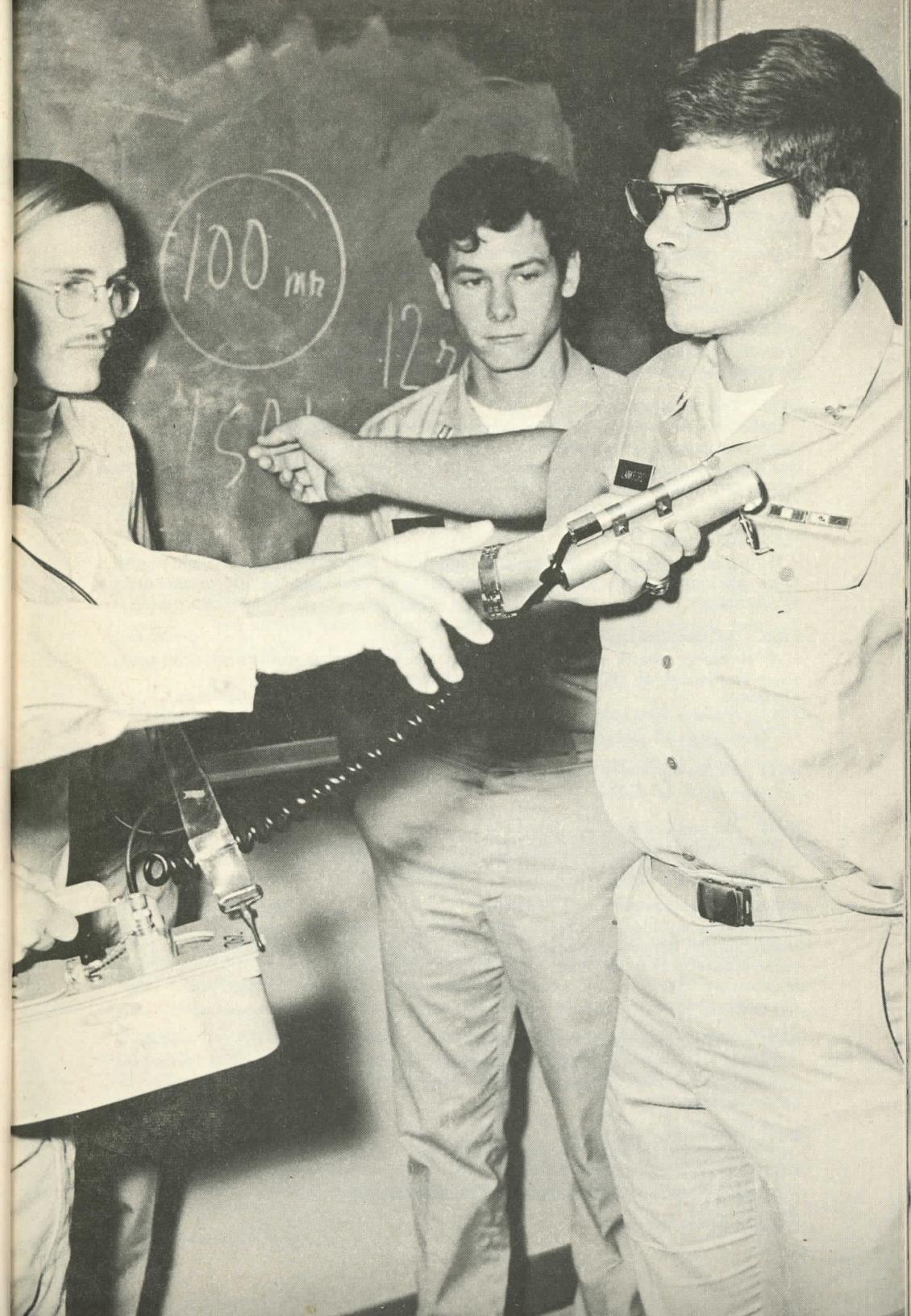
Nomenclature and proper use of hand tools used in bench work; use and care and all precision measuring instruments; detailed instruction dealing with engine lathes and milling machines; construction procedures and methods used to accomplish operations with these machines; the computations involved in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

**E-201-202. Steam Engineering III-IV****Credit: 2-2**

A continuing study in greater depth of marine power plants and related machinery.

**E-203-204. D-C and A-C Electrical Engineering****Credit: 3-3**

The fundamentals of electrical circuits and machines giving priority to the design, operation and maintenance of equipment in the marine field; basic concepts of electricity and magnetism, direct current circuits and machines; alternating current circuits, machines and control systems; and marine electrical propulsion.



**E-205. Physics II**

This course provides the student with studies in sound, light, atomic physics, and nuclear physics.

**E-209. Calculus I**

Begins with analysis of trigonometric functions, identities, functions of double angles, derivatives and integrals of trigonometric functions, logarithmic and exponential functions. The course concludes with a unit on coordinate geometry and one on complex numbers and vectors.

**E-210. Calculus II and Applications**

Begins with review of elementary differentiation and integration, integration by parts, and advanced integration, implicit differentiation, with applications to rates, volumes, surfaces, centroids, work and forces. The course concludes with an introduction to differential equations.

**E-212. Thermodynamics**

Basic laws of energy and thermodynamics and their application to heat-power machinery applied on shipboard; heat-power plants, principles of thermodynamic 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.

**\*E-214. Electronics I**

A course covering the fundamentals and basic concepts of vacuum tubes; gas tubes; semi-conductors; power suppliers; rectifiers; amplifiers, oscillators and their applications.

**E-216. D-C Electrical Laboratory**

A laboratory course designed to provide the engineering student with an operating knowledge of DC electrical principles and operations.

**E-217. Machine Shop Lab**

Continuation of E-117.

**E-218. Marine Machinery Lab III**

Continuation of E-217.

**E-220. Arc and Gas Welding**

A laboratory course providing experience in welding, brazing and burning techniques sufficient to permit effecting emergency repairs.

**E-290. Applied Environmental Technology**

2 Class hours—2 Credits

Discussion on identity of air, water and land pollutants; the nature of their environmental impact; technology of reduction and elimination. Emphasis on EPA regulations effecting the maritime industry. Applications of control technology is obtained by operation and servicing of shipboard equipment through watch rotations during academic year as well as during sea training.

**E-221. Refrigeration and Air Conditioning**

Credit: 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.

**E-223. Marine Machinery Lab II**

Credit: 3

**E-301-302. Steam Engineering V-VI**

Credit: 5-3

Advanced study of the elements of a ship's engineering plant.

\* Elective for first class only.

Credit: 3

Credit: 3-3

**E-303-304. Diesel Engineering I-II**

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

**E-305. Engineering Materials**

Credit: 3

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 materials; properties and control of properties of metals; casting and mechanical working of metals; the mechanism of corrosion and its prevention; petroleum products and plastics; welding and its application.

**E-306. Ship Construction and Damage Control**

Credit: 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.

**\*E-307. Automation Principles**

Credit: 2

An introductory course including two-position, proportional, integral, derivative, and compilation control modes; the application of these control modes to pneumatic, hydraulic, and electrical systems; elements of control; system analysis; and a brief survey of some shipboard systems.

**\*E-310. Nuclear Power**

Credit: 2

The course is designed to give the student a fundamental grasp of the physics, design, materials, economics and operation of nuclear power plants. Such subjects as atomic structure, charge, mass, radius, nuclear moments, ionization, alpha, beta, gamma rays and decays, nuclear fission, chain reaction and its control, reactor systems and auxiliaries, reactor loop components and power cycle studies are covered.

**E-311. Ship's Medical Practice**

Credit: 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, bones, poisoning, fractures, moving the injured, exposure; diagnosis and treatment of ailments; radio aid.

**E-312. Engineering Administration**

Credit: 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.

**E-314. Labor Relations**

Credit: 1

The current collective bargaining relationships of the maritime industry are emphasized. Legislation, subsidies, contracts, personnel relations and technological development are examined.

**E-315. Diesel Laboratory**

Credit: 1½

Provides the engineering student operational experience with a marine diesel propulsion plant. It also familiarizes the student in engine analysis, maintenance schedules and prevention of casualties by utilizing data obtained during engine operation.

**E-316. Advanced Diesel Laboratory**

Credit: 1½

A laboratory designed to acquaint the student with the various analyses methods performed on lubricating and fuel oils to determine engine operating criteria. The course also covers analysis in refrigeration and pneumatic systems oriented toward automation principles.

\* Elective for first class only.

**E-317. A-C Electrical Laboratory**

Credit: 1½  
A laboratory course designed to provide the engineering student with an operating knowledge of AC electrical principles and operations.

**E-318. License Seminar**

Credit: 2  
Lectures and discussion in preparation for the engineers' license examination before the Merchant Marine Examiners, U.S. Coast Guard.

**E-319. Marine Machinery Lab IV**

Credit: 1½  
Continuation of E-217.

**E-320. Marine Laboratory Lab V**

Credit: 1½

## DEPARTMENT OF GENERAL EDUCATION

**G-101. Freshman Composition**

Credit: 3  
Expository writing. Its purpose is to teach the essentials of clear and effective expository writing. The course focuses on the problems of unity, clarity, coherence and vitality of expository communication within the sentence, the paragraph, and the essay. There is also practice in delivery of effective oral reports.

**G-102. Introduction to Literature**

Credit: 3  
This course is designed to introduce students to several major forms of English literature. The course emphasizes close analysis of particular works (intensive reading), but also the range of forms and styles (extensive reading) in English prose and poetry.

**G-103-104. United States Government**

Credit: 2-2  
This course is designed to meet the state requirements for a college level study of the federal, state, and local government. A review and analysis of post and current socio-political events is expected to help students become better thinking and voting citizens.

**G-210. Humanities I**

Credit: 2  
An integrated course which deals with the several arts: music, the visual arts, literature, the drama, architecture, philosophy, and history. Study made of slides, prints, films, and of selections of original texts of literature and philosophy from the time of ancient Greece to the Renaissance.

**G-211. Humanities II**

Credit: 2  
An integrated course which deals with music, the visual arts, literature, the drama, architecture, philosophy, and history. Study is made of selections from original texts of literature and philosophy from the end of the Renaissance to the present.

**G-232. Latin American Studies**

Credit: 2-2  
The first semester is scheduled for the training cruise. Students visit foreign universities, receive lectures by the professors and also visit government buildings and observe foreign legislators at work. The second semester reviews all of the material gathered on the training cruise.

**G-309. United States Government**

Credit: 2  
This course is the same as G-104, but taken by Engineer midshipmen during the Fall Trimester of First Class Year instead of during the Spring Trimester of Third Class Year.

**G-312, 314. Maritime Literature and Research**

Credit: 2  
An elective course offering credit for guided "in depth" individual research in a marine-related subject of the student's choosing. Covers fundamentals of library usage, research methodology, bibliography compilation, indexing, and justification of findings. Prerequisite: G-101, or equivalent, or validation of same.

**G-320. Advanced Calculus III**

Credit: 3  
Partial differentiation; multiple integration; infinite series; complex numbers; introduction to differential equations; applications.

**E-400. Independent Study in Nuclear Engineering in Shielding and Radiation**

Credit: Arr.  
Written assignment. The papers will combine both research and reflection in such a fashion that the written work will demonstrate the student's appreciation of the subject matter, the student's knowledge of the criticism, and the student's lively interest in the subject.

**G-400. Independent Study in English**

Credit: Arr.  
This course provides the opportunity for individual or group study of a major author or period in literature. The particular topics will be determined by the instructor and his students. Approval is required from the instructor and the Departmental Chairman. Prerequisite: G-101 and G-102 English, or their equivalents.

## PHYSICAL EDUCATION

**P-101. Physical Education**

Credit: ½  
Physical Fitness and swimming tests are administered to all Third Class. Those who do not qualify on the swim test are required to attend remedial classes until they are able to qualify.

First half—Water safety and survival swimming.

Second half—Physical Fitness through weight lifting and jogging.

**P-102. Team Sports Activity**

Credit: ½  
Fundamentals and techniques of team sports to be chosen from the following: Flag Football, Basketball, Softball, Volleyball, and Soccer.

**P-201. Individual Sports Activity**

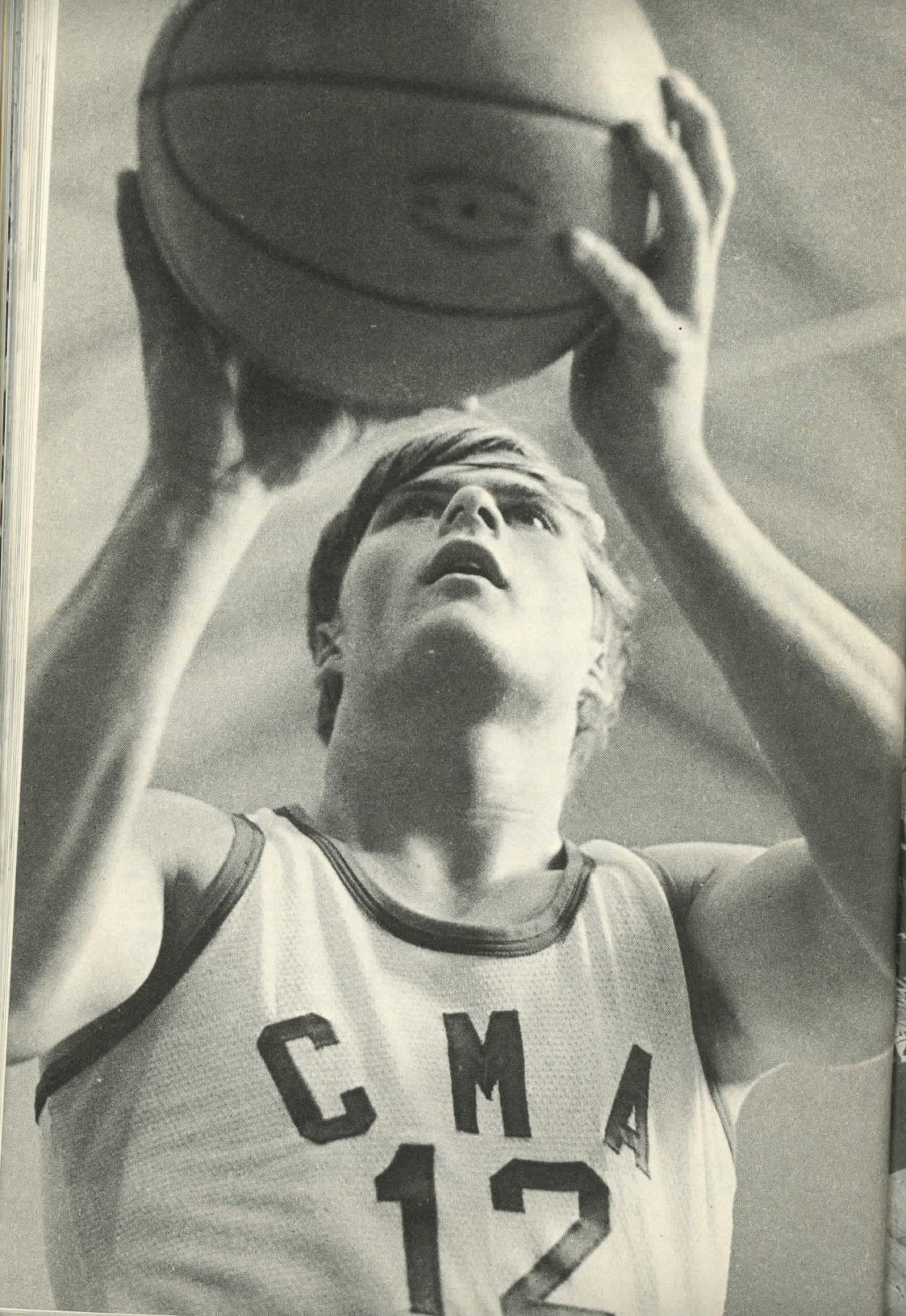
Credit: ½  
Fundamentals and techniques of individual and recreational sports. To be chosen from Handball, Badminton, Tennis, Golf, Table Tennis and other carry-over activities.

**P-202. Individual Sports Activity**

Credit: ½  
Fundamentals and techniques of Archery and Pistol.

**P-250. Varsity Sports**

Credit: 1  
Those qualified may enroll by permission of the instructor. Varsity sports include Basketball, Soccer, Crew, Pistol, Sailing, and Tennis.



## DEPARTMENT OF NAVAL SCIENCE

### NS-101. Principles of Naval Organization and Management

Credit: 3

An introduction to the structure and principles of Naval Organization and Management. Naval Organization and Management practices and the concepts that lie behind them are examined within the context of American social and industrial organization and practice. The course includes coverage of lines of command and control; organization for logistics, service and support; functions and services of major components of the Navy and Marine Corps; and shipboard organization.

### NS-102. American Military Affairs

Credit: 3

An introductory survey of American Military Affairs in the United States from the American Revolution to the present. The course describes the transformation from limited eighteenth century wars to total wars of this century and the brushfire wars of the last two decades.

### NS-201. Naval Operations Analysis

Credit: 3

Development of operational systems through the use of probability and game theory. The student is introduced to concepts of linear programming, program budgeting, critical path scheduling, utility theory and other decisionmaking techniques.



**NS-202. Navigation and Naval Operations****Credit: 3**

A study of the cause-and-effect relationships in hypothetical cases of naval warfare, checking not only the interrelationships of factors influencing performance but also how different tactics or systems may possibly influence search effectiveness under varying environmental conditions.

**NS-203. Introduction to Naval Ships Systems****Credit: 3**

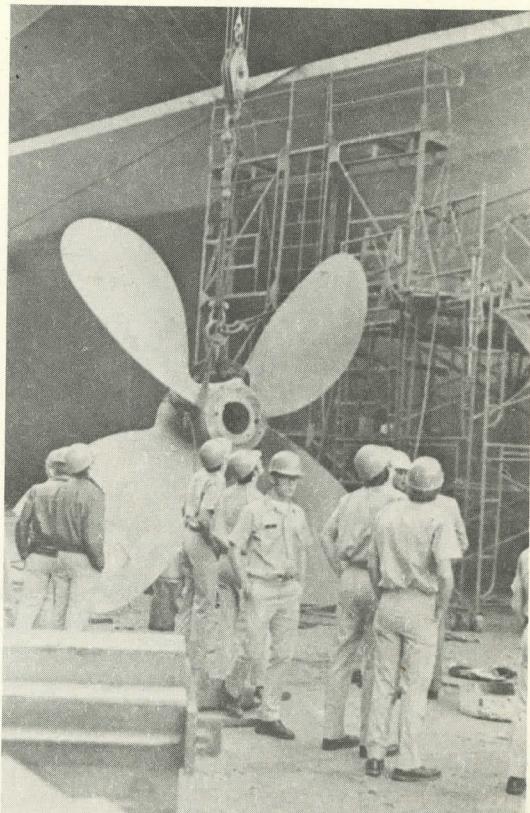
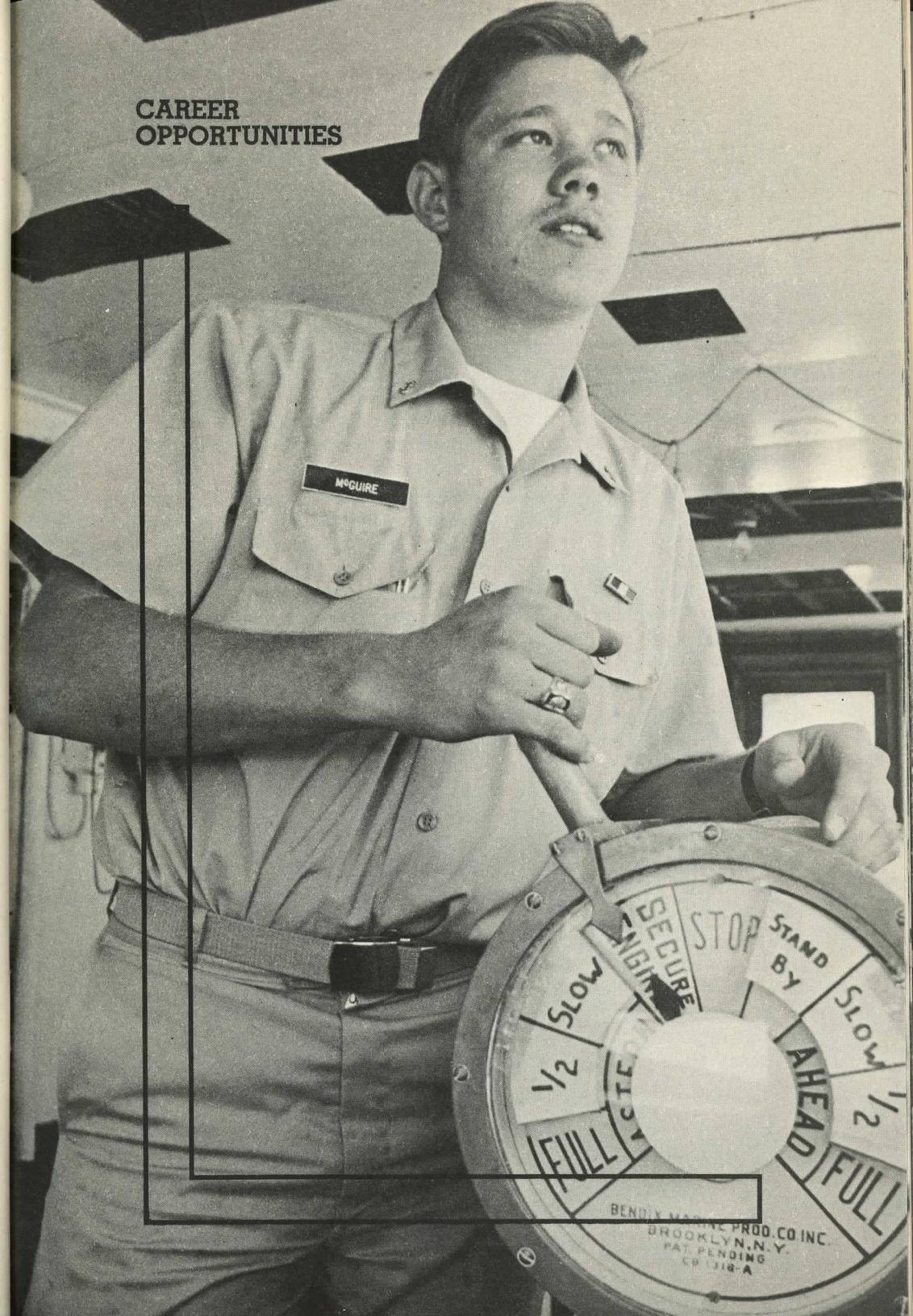
An introduction to the types, structure, and purpose of naval vessels. Buoyancy, equilibrium, stability, and the effects of flooding to the design characteristics of naval vessels, the relation of the basic principles of a ship's propulsion system to all of the ship's systems, and the interrelationships and interdependency of all of a ship's systems to the successful mission of the ship are examined.

**NS-301. National Security Policy****Credit: 3**

A study of the formulation and implementation of American security policy. American Military history is analyzed briefly to determine the factors bearing on the development of the defense structure of the United States. The method of formulation of national security policy is studied, as is the role of each governmental component concerned with security affairs. The elements of national power are reviewed.

**NS-303. Seminar****Credit: 0**

During the senior year a seminar in the concepts, principles, and practices of Naval Leadership is conducted every other Friday afternoon. (No credit)

**CAREER OPPORTUNITIES**

## CAREER OPPORTUNITIES IN TODAY'S MARITIME INDUSTRY

Career opportunities are unlimited in America's maritime industries. The vast productive capacity of industry in the United States cannot be consumed by the domestic market alone, nor can our factories or refineries produce without importing essential raw materials. Seven-tenths of the globe consists of water and since foreign trade depends largely upon ships, ocean shipping becomes of greater importance to the American economy than ever before in our history. An active merchant marine and the knowledge required to operate merchant ships is essential for the commerce and defense of our nation.

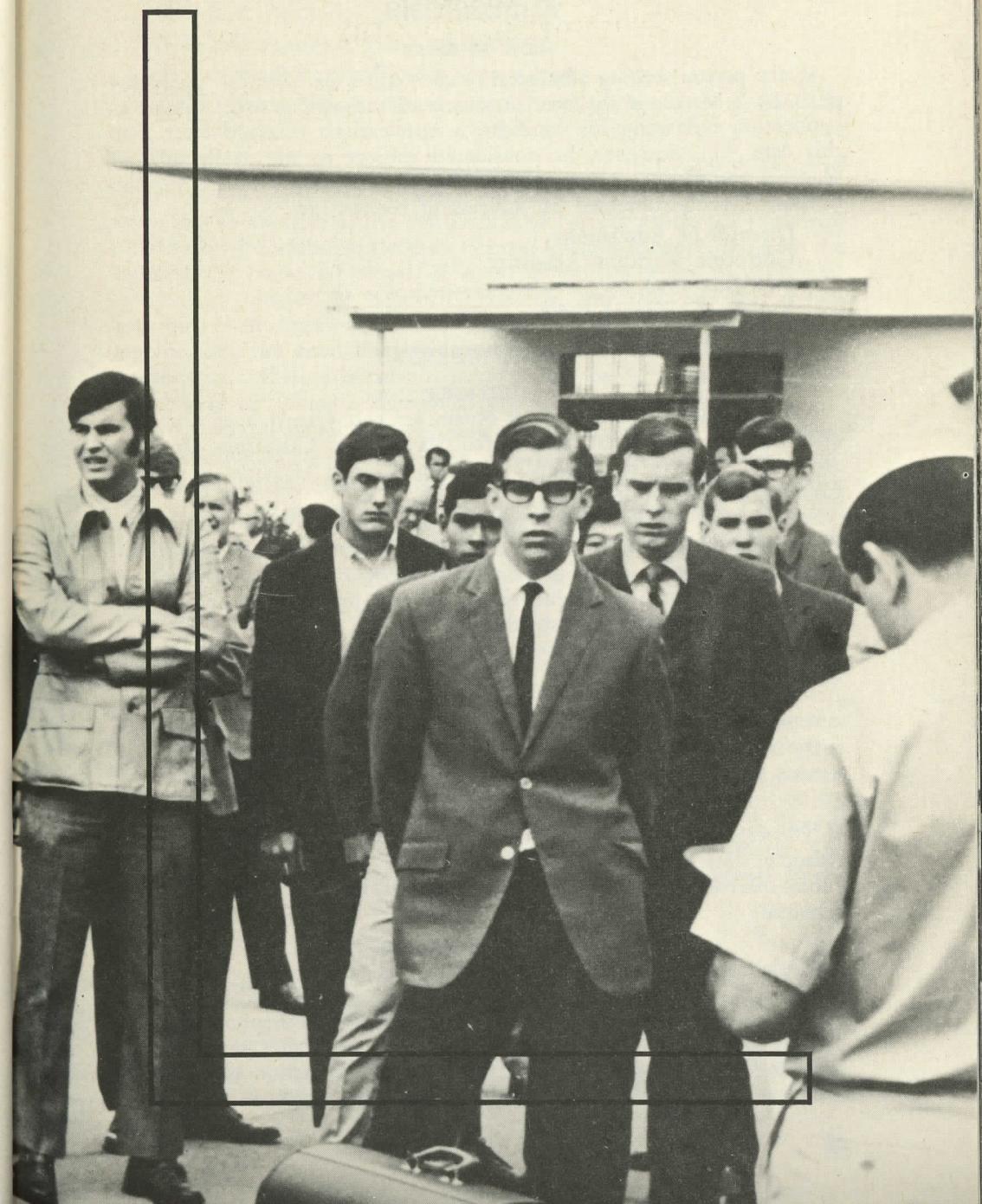
Not too many years ago, a young man could "sign on" a ship as a deck-boy or "wiper." With a reasonably good head on his shoulders and a knowledge of basic mathematics, he could work his way up to Chief Engineer or Master. The demands of commerce have radically changed the complexion of the merchant marine from the days of the small, slow, lumbering sailing ships to vessels with a carrying capacity of hundreds of thousands of tons which travel at speeds never previously believed possible.

These larger, faster ships demand crews highly trained in the most modern marine technology known to man. In addition to the traditional skills which a mariner must master, he must also be skilled in such fields as electrical engineering, electronic systems, marine nuclear science, marine ecology, meteorology, oceanography, marine transportation management, computer technology, and intermodal transportation concepts.

Unfortunately for some, the romantic old sailing ships are gone. So are the hardships and limited opportunities for sea-going personnel. Today's maritime industry is a global enterprise possessing limitless opportunities for the ambitious both afloat and ashore.

Today Cal Maritime graduates can be found employed in virtually every capacity of the maritime and related industries from marine insurance to naval architecture. In view of the wide range of knowledge required of a merchant marine officer in today's maritime industry, career opportunities for academy graduates have increased considerably in many fields of endeavor and today's graduates are highly employable.

## ADMISSIONS



## ADMISSIONS

### HOW TO APPLY

Every person seeking admission to the California Maritime Academy shall, by 1 March of the year in which admission is desired, submit an application indicating his candidacy. Applications received later than this date will, however, be considered subject to the availability of space in completing the makeup of the incoming class. Forms for this purpose may be obtained by addressing requests to:

Director of Admissions  
California Maritime Academy  
P.O. Box 1392  
Vallejo, California 94590

### QUALIFICATIONS

#### CITIZENSHIP

All candidates who expect to obtain a Coast Guard license are required to be citizens of the United States. The California Maritime Academy observes scrupulously the requirements of Title VI of the Civil Rights Act of 1964.

Section 601 of this title is quoted as follows: "No person in the United States shall, on the ground of sex, race, color, creed, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance."

Eligibility is without restriction as to sex, race, color, creed or national origin.

#### AGE

A candidate must be not more than 23½ years of age at the time of entry into the academy. However, candidates who have served in the Armed Forces will be considered for admission up to age 26½.

#### MARRIAGE

No person who is married shall be admitted as a midshipman to the Academy. Midshipmen shall not marry, and any midshipman who becomes married or who is found to be married shall be recommended for dismissal.

#### SCHOLASTIC REQUIREMENTS

Graduation from secondary school (or its equivalent), with a secondary school certificate acceptable to the academic board in terms of subject matter and level of achievement, is a requirement for admission to the Maritime Academy. In addition, candidates must qualify scholastically by entrance examination. This examination is composed of specified College Entrance Examination Board tests selected from

among those administered in November (SAT only is given this month), December, January and March of the school year preceding admission.

These tests are:

Scholastic Aptitude Test—Verbal

Scholastic Aptitude Test—Mathematics

Achievement Test in English Composition

Achievement Test in Mathematics, Level I (Standard) or Level II (Intensive)

Each candidate must ensure submission of detailed records of all of his completed high school, preparatory school, and college work. When submitted in advance of the completion of current work, the transcript should clearly indicate subjects or courses being pursued at the time the transcript is being submitted. It is extremely important to each candidate that records be supplied promptly and that previous school records include academic grades, class standing or estimated class standing for the final year. To ensure timely evaluation of the candidate's qualifications, these academic records should be received by 15 April of the year of desired admission to the Maritime Academy.

An acceptable secondary school certificate is one from an accredited secondary school, or its equivalent, showing at least 15 units of credit. Candidates should, insofar as is practicable, include as many as possible of the following studies in their secondary school programs:

a. Three years of mathematics	c. One year of chemistry
b. Three years of English	d. One year of physics

It should be noted that normally only the November, December, January or March administrations of the College Entrance Examination Board tests taken during the school year preceding admission may be used to establish scholastic qualification. The May administration will, however, be considered subject to the availability of remaining spaces for completing the makeup of the incoming class. Complete information concerning the tests, the dates, and the locations of testing centers may be obtained from high school counselors or principals, or by writing to the College Entrance Examination Board, Box 1025, Berkeley, California 94701, or Box 592, Princeton, New Jersey 08540. The California Maritime Academy Code Number for the College Board is 4035.

#### ACADEMY ENTRANCE EXAMINATION

The Academy offers its own entrance examinations in English and Mathematics for those persons who are not able to take the SAT or the ACT. The Academy administers its own entrance examination on the first Saturday of every month from January through July. In addition, if some persons are unable to travel to the Academy for the examination, arrangements can be made through the high school counselor to administer the examinations at the high school. Please contact the Academic Dean for additional information.

#### Admission Standards

Students are admitted to the California Maritime Academy on the basis of the following criteria:

The records of candidates are evaluated by an admissions committee composed of faculty members; a numerical percentage value is assigned to each of the following categories:

- 40% Tests
- 30% Transcripts
- 20% Recommendations
- 10% Activities

The Academic Dean reviews the evaluations, and then the results are made into a computer program and placed in the computer. The result is that a number is assigned to the student based upon all of these factors. Candidates are then arranged in sequence in order of high to low on their computer evaluations. The class is then selected from those having the highest numbers until all MARAD subsidies are used. If additional candidates beyond the limit of the MARAD subsidy are to be selected, they are selected by continuing down the list until the entire class is made up.

In order to maintain our contacts with the Legislature and enable the legislators to have closer relationships with their constituents, the Board of Governors of the California Maritime Academy propose the following, in addition to the computer selection method already discussed. Although previous to Concurrent Resolution No. 64 legislators nominated individuals as candidates for admission to the Academy, all applicants were rated as described and no preference was given to legislative nominations. In view of this fact, the Board of Governors wishes to keep the legislators involved by notifying them of successful candidates from their districts and give them the opportunity to send letters of congratulations. The Registrar at the Academy will send all required enrollment forms and formal notification of admission direct to the candidate.

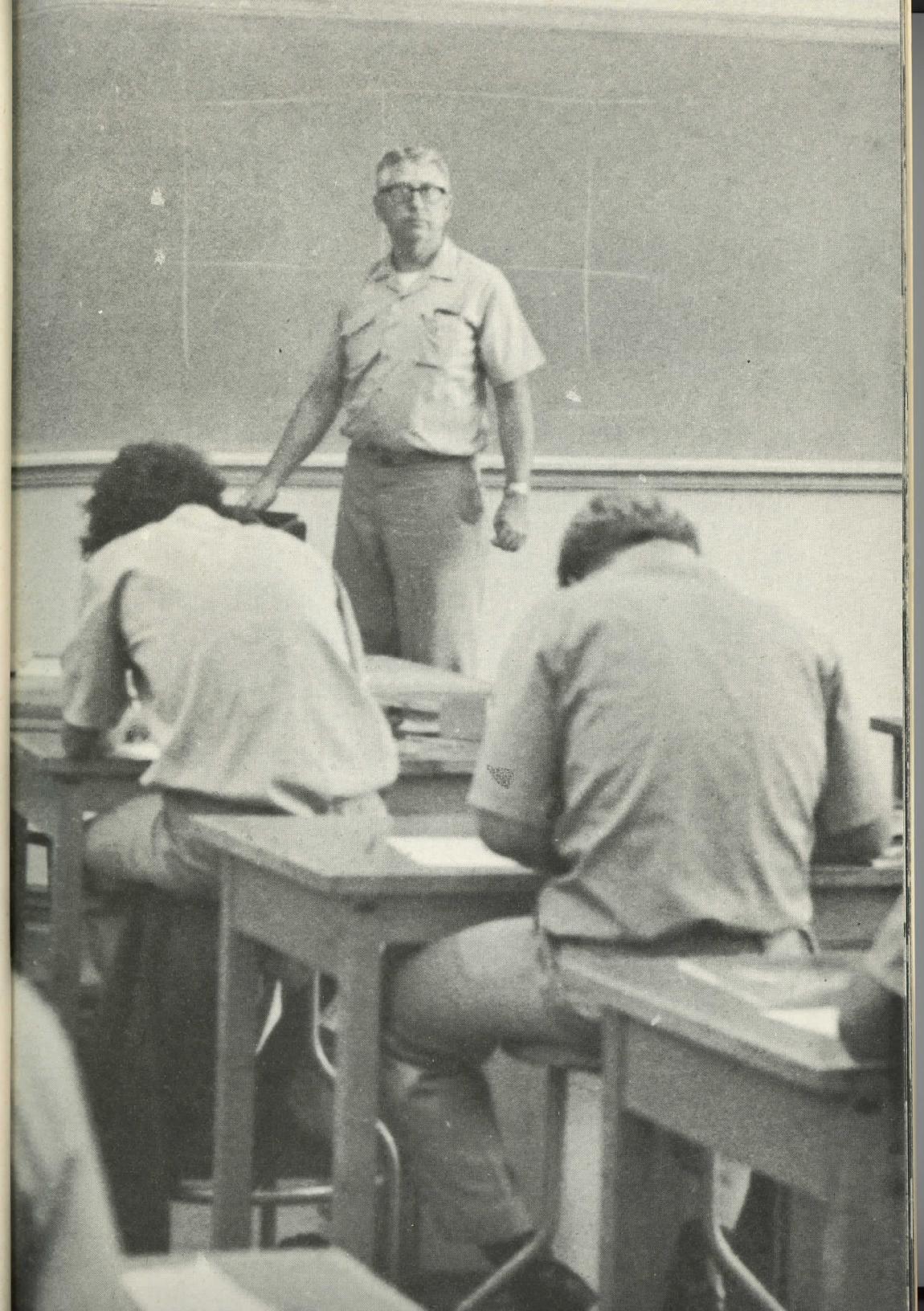
#### TRANSFER STUDENTS

Transcripts of transfer students, who enroll at the Academy, will be evaluated to validate Academy courses that have been taken elsewhere. If a student has a doubt whether or not a course will be validated on evaluation of his transcript, he should take the College-Level Examination Program Test in the subject, having the results sent to the Academy by the College Entrance Examination Board. Only those courses listed on pages 31 and 32 will be considered for validation and credit. (Courses included in curriculum.)

#### PHYSICAL REQUIREMENTS

Candidates for admission must be mentally and physically sound. It is desirable that they meet the U.S. Coast Guard physical standards for officer candidates, and it is mandatory that they meet the physical requirements for licensed officers in the U.S. Merchant Marine. Applicable U.S. Coast Guard regulations are stated, in part, as follows:

- (a) 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.
- (b) The standard for students entering the Nautical Science program will be a minimum of 20/100 in each eye, correctable



to at least 20/20 in one eye and 20/40 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.

- (c) Applicants for original engineers' license shall be examined only as to their ability to distinguish the colors red, blue, green and yellow. The current criterion for determining color perception in this category is the "Williams" lantern test.
- (d) For students entering the Marine Engineering program, the standard will be a minimum of 20/100 in each eye, correctable to at least 20/30 in one eye and 20/50 in the other.

#### **MARITIME ADMINISTRATION REGULATIONS**

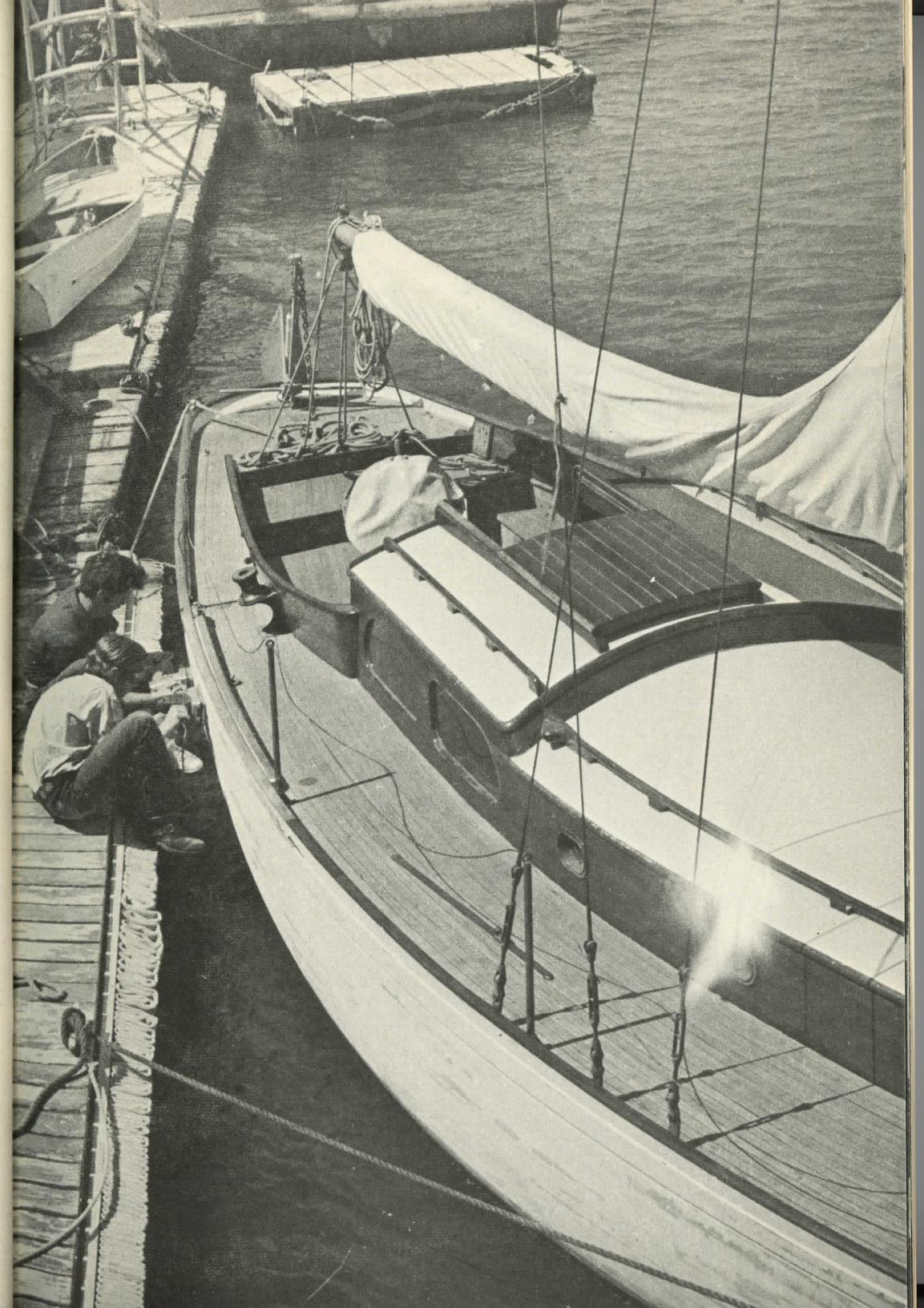
Maritime Administration regulations pertaining to admission are essentially as follows:

*Entrance Requirements.* A candidate for admission to a State Maritime Academy (other than a foreign national admitted in accordance with State regulations) must:

- (1) Be a citizen of the United States.
- (2) Agree in writing to apply, at an appropriate time before graduation, for a commission as Ensign in the U. S. Naval Reserve and to accept such a commission if offered.
- (3) Meet the physical standards specified by the U. S. Coast Guard for original licensing as a merchant marine officer.
- (4) Be not less than 17 years of age in the year appointed to the Academy.
- (5) Not be married at the time of admission to the Academy.
- (6) Possess a secondary school education or equivalent, satisfactory for admission as an undergraduate, to colleges or universities under control of the State in which the Academy is located.
- (7) Meet requirements established by the Academy in regard to such criteria as the individual's secondary school grades, rank in graduating class, aptitude, and achievement as measured by an objective examination, character, personality, and qualities of leadership.

*Enrollment.* Upon enrollment in the U.S. Maritime Service, each cadet shall be required to take an oath or affirmation of allegiance to the United States of America and execute a nonsubversive and no-strike affidavit, Form MA-527.

*Medical Attention and Injury Claims.* (a) Medical Attention and Hospitalization for Cadets. Cadets shall be entitled to receive U.S. Public Health Service hospitalization and medical and dental attention. A medical officer shall be attached or on call to the school. During the cruise, a medical officer shall be assigned to the training vessel.

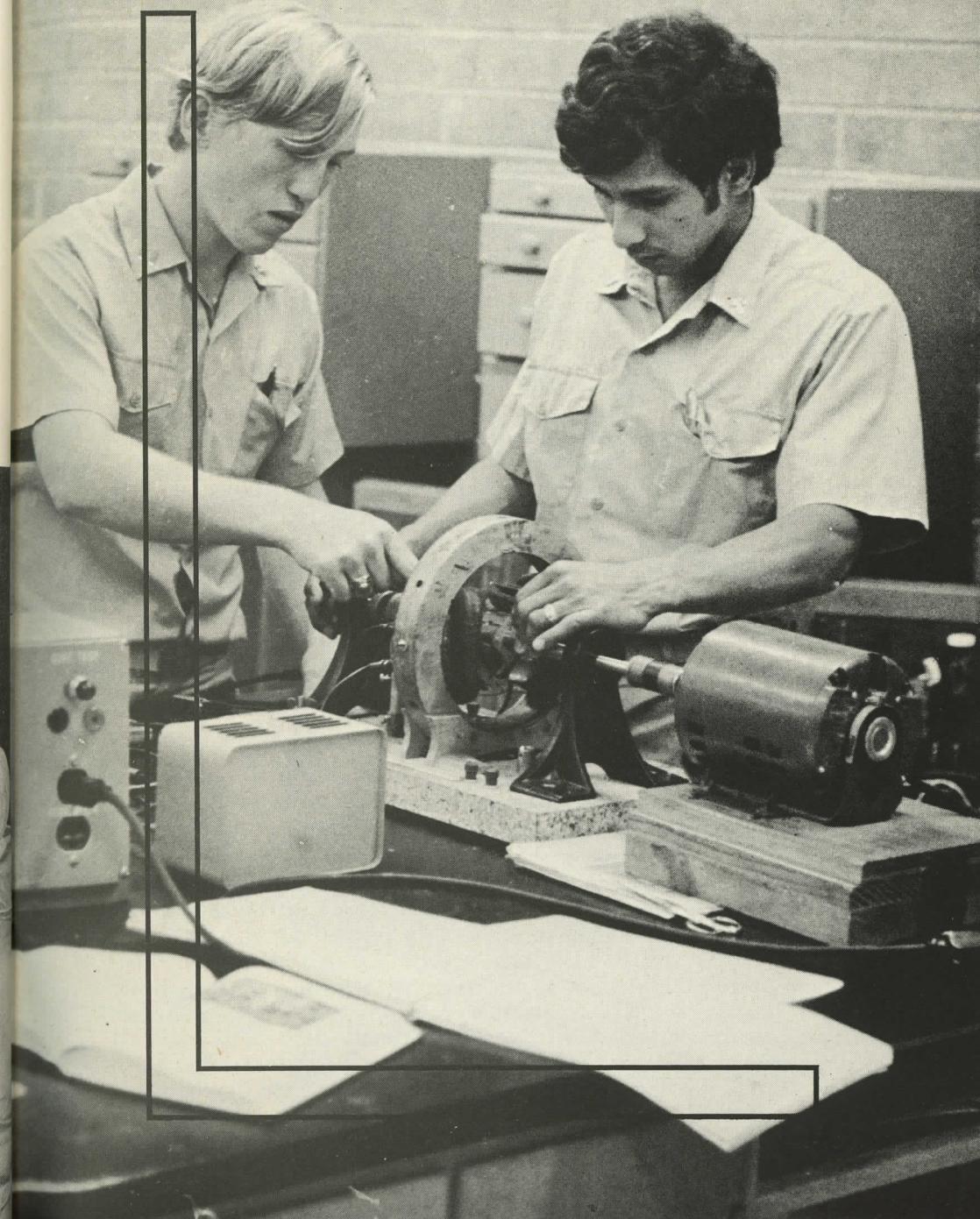


(b) Compensation Claims of Cadets. Compensation claims for personal injuries or death sustained by a cadet enrolled in the U.S. Maritime Service in performance of duty shall be forwarded via the supervisor to the administrator for transmission to the Bureau of Employees' Compensation; necessary forms to be furnished by the supervisor.

*Subsistence Payments.* The administration, subject to the provisions of Article 3, agrees to make payments, at a rate not in excess of \$600 per academic year per student, to the school for the account of the student with respect to each student attending the school. The school agrees that the payments provided for in this Article 2 shall be used by the student to assist in defraying the cost of uniforms, textbooks, and subsistence for such student. It is further agreed that the payments provided for in this Article 2 shall commence to accrue on the day such student begins his first term of work at the school and that such payments shall be paid to the school in such installments as the administration shall prescribe while such student is in attendance and until the completion of his course of instruction, but in no event for more than the normal period required, by the school, to complete the prescribed course for any one student.



## FINANCIAL INFORMATION



## FINANCIAL ASSISTANCE

The Academy participates in several State and Federal Student Financial Assistance Programs. Students at the Academy are eligible for California State Scholarships, College Opportunity Grants, and other programs operated under the California State Scholarship and Loan Commission. Federal Assistance is provided through Federally Insured Loans, National Direct Loans, Supplementary Education Opportunity Grants, and College Work-Study programs. Both the Federal and the State programs require the applicant to submit a financial statement and to undergo a financial need analysis to determine each student's actual need. In California the need analysis system used is the College Scholarship Service PCS (Parent's Confidential Statement) form. This form can be obtained through any school counseling office or by writing to: College Scholarship Service, Box 1501, Berkeley, Ca 94701.

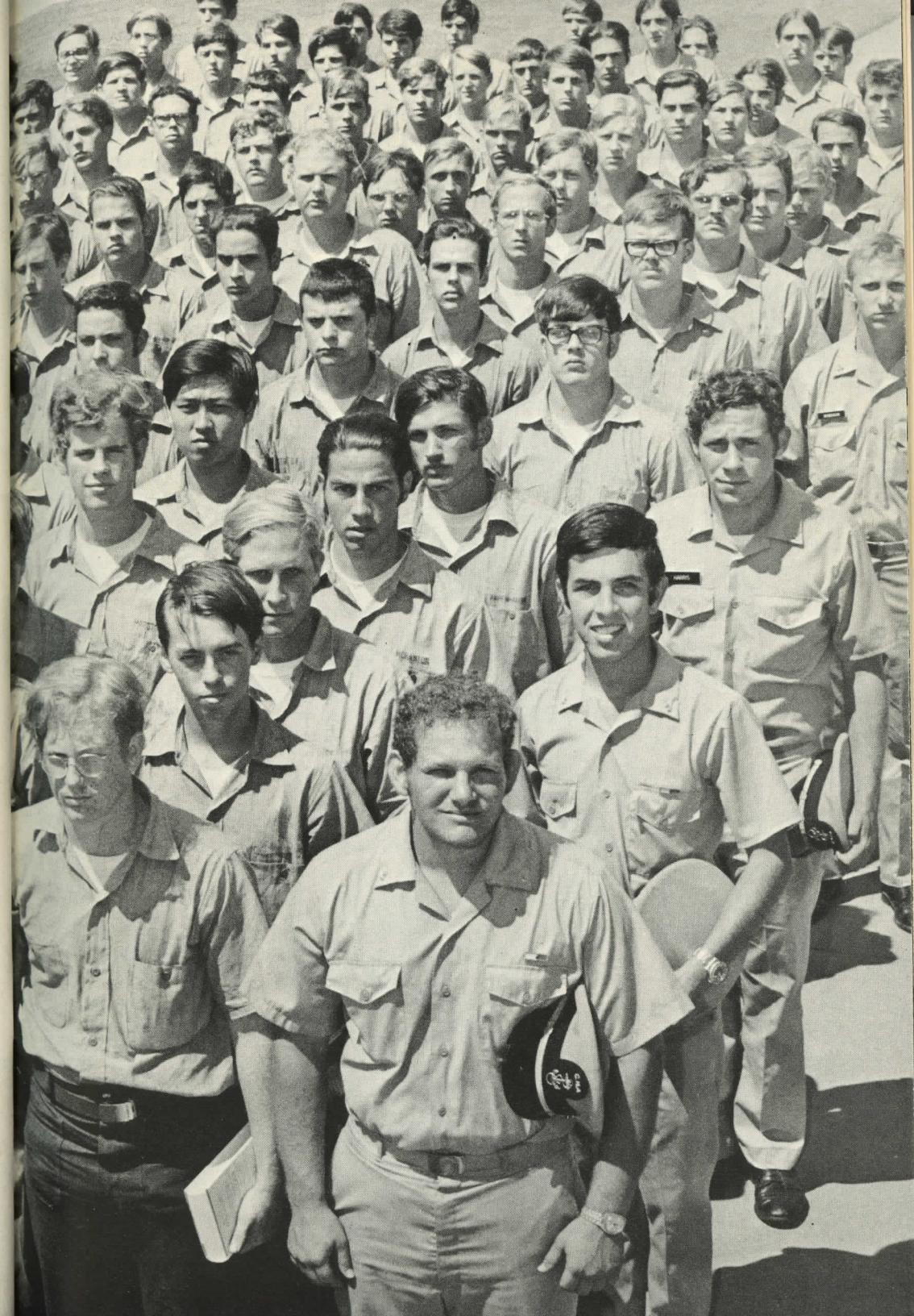
Several students also receive financial assistance from service organizations such as the Propeller Club, the Society of Port Engineers, and CMA Alumni Association, and various Armed Services auxiliaries. A limited amount of loan funds is available through the CMA Foundation, a non-profit foundation established to assist those students who are unable to meet the costs of their education at the Academy. Financial need as determined through the College Scholarship Service analysis, evidence of academic good standing, and letters of recommendation are normally required when applying for loans and scholarships from the various private funds as well as from the CMA Foundation.

Due to recent favorable legislation the College Opportunity Grant Program is now available to Cal Maritime students. The program limits new grants to students who are first entering college. For 1973-74 some 2,000 new College Opportunity Grants are authorized.

For further information, write: Financial Aid Officer, PO Box 1392, Vallejo, Ca 94590.

### 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 from federal funds. In addition, an outright grant of \$75,000 per annum is paid to the state from this same source. An allowance of \$600 per annum per eligible student is also currently paid to the Academy by the federal government to assist in defraying the cost of uniforms, textbooks and subsistence, of which, currently \$200 is allotted for uniforms and textbooks. This goes to the student in installments of \$50 per quarter. The federal government's contribution each year amounts to some \$300,000.



I would like additional information about the California Maritime Academy.

Please send me a Catalog.

Please send me an Application.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone Number \_\_\_\_\_ Date of Birth \_\_\_\_\_

CALIFORNIA MARITIME ACADEMY

Vallejo, Ca 94590

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