

Moody College

1979-1980

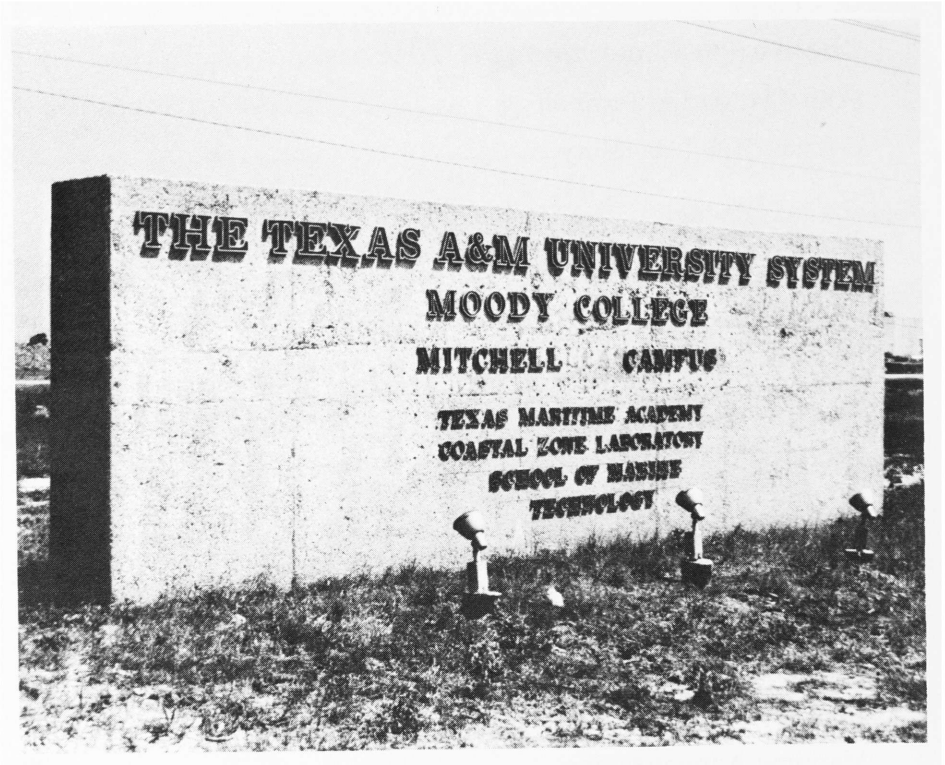
The Texas A&M University System

MOODY COLLEGE
P.O. Box 1675
Galveston, Texas 77553

MOODY COLLEGE
1979-1980
CATALOG

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BOARD OF VISITORS

Moody College is served by a Board of Visitors which is appointed by The Texas A&M University System's Board of Regents. The Board functions in an advisory capacity to the President of Moody College.

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**THE ACADEMIC CALENDAR
FOR 1979-80**

**REGULAR SESSION
Summer Session 1979**

June 4	Monday. Registration for the first term.
June 5	Tuesday. Beginning of classes.
June 7	Thursday. Last day for enrolling in the College for the first term and for adding new courses.
June 8	Friday. Last day for dropping courses with no record.
June 9	Saturday. T.S. Texas Clipper departs on summer cruise.
June 21	Thursday. Last day for dropping courses with no penalty.
July 4	Wednesday. Independence Day holiday.
July 10	Tuesday. Last day of first term classes. Beginning of final examinations.
July 11	Wednesday. Last day of first term final examinations.
July 12	Thursday. Registration for the second term.
July 13	Friday. Beginning of classes.
July 17	Tuesday. Last day for enrolling in the College for the second term and for adding new courses.
July 18	Wednesday. Last day for dropping courses with no record.
August 3	Friday. Last day for dropping courses with no penalty.
August 5	Sunday. T.S. Texas Clipper returns from summer cruise
August 16	Thursday. Last day of second term classes. Beginning of final examinations.
August 17	Friday. Last day of second term final examinations.
August 18	Saturday. Commencement for First and Second Term graduating students.

**REGULAR SESSION
Fall Semester 1979**

August 30-31	Thursday and Friday. Delayed registration.
September 3	Monday. Beginning of Fall Semester classes.
September 7	Friday. Last day for enrolling in the College for the Fall Semester or for adding new courses.
September 14	Friday. Deadline for applying for undergraduate degrees to be awarded in December.
September 18	Tuesday. Last day for dropping courses with no record.
October 19	Friday. Mid-semester grade reports due, 3 p.m.
October 29	Monday. Last day for dropping courses with no penalty.

November 22-25 Thursday through Sunday, inclusive. Thanksgiving Holidays.
 December 14 Friday. Last day of Fall Semester classes.
 December 15 Saturday. Commencement.
 December 17 Monday. First day of Fall Semester examinations.
 December 21 Friday. Last day of Fall Semester examinations.
 December 22 Saturday. All final grades due, 12 noon.

Spring Semester 1980

January 10-11 Thursday and Friday. Delayed registration.
 January 14 Monday. Beginning of Spring Semester classes.
 January 18 Friday. Last day for enrolling in the College for the Spring Semester or for adding new courses.
 January 29 Tuesday. Last day for dropping courses with no record.
 February 1 Friday. Deadline for applying for undergraduate degrees to be awarded in May.
 February 29 Friday. Mid-semester grade reports due, 3 p.m.
 March 10-16 Monday through Sunday, inclusive. Spring Recess.
 March 17 Monday. Last day for dropping courses with no penalty.
 May 2 Friday. Last day of Spring Semester classes. Convocation.
 May 3 Saturday. Commencement and Final Review.
 May 5 Monday. First day of Spring Semester examinations.
 May 9 Friday. Last day of Spring Semester examinations.

Summer Session 1980

June 2 Monday. Registration for the first term.
 June 3 Tuesday. Beginning of first term classes.
 June 5 Thursday. Last day for enrolling in the College for the first term and for adding new courses.
 June 6 Friday. Last day for dropping courses with no record.
 June 7 Saturday. **T/S TEXAS CLIPPER** departs on summer cruise.
 June 13 Friday. Deadline for applying for graduate and undergraduate degrees to be awarded in August for students completing degree requirements in July.
 June 19 Thursday. Last day for dropping courses with no penalty.

July 4	Friday. Independence Day holiday.
July 8	Tuesday. Last day for first term classes. Beginning of final examinations.
July 9	Wednesday. Last day for the first term final examinations.
July 10	Thursday. Registration for the second term.
July 11	Friday. Beginning of second term classes.
July 15	Tuesday. Last day for enrolling in the College for the second term and for adding new courses.
July 16	Wednesday. Last day for dropping courses with no record.
July 18	Friday. Deadline for applying for graduate and undergraduate degrees to be awarded in August for students completing degree requirements in August.
July 29	Tuesday. Last day for dropping courses with no penalty.
August 3	Sunday. T/S TEXAS CLIPPER returns from summer cruise.
August 14	Thursday. Last day of second term classes. Beginning of final examinations.
August 15	Friday. Last day for second term final examinations.
August 16	Saturday. Commencement for first and second term graduating students.

MOODY COLLEGE

Moody College is the marine and maritime college of The Texas A&M University System. The College provides academic instruction in six marine and maritime-related degree programs leading to Bachelor of Science degrees from Texas A&M University. In conjunction with the formal academic instruction, a very active program of research and extension service is conducted throughout the College. Moody College also coordinates all of the Texas A&M University academic programs in the Galveston area and, with Coordinating Board approval, is authorized to teach Texas A&M University courses.

Moody College consists of the School of Marine Technology, Texas Maritime Academy, and Coastal Zone Laboratory. The degree programs offered are four-year courses of study with majors in Marine Biology, Marine Engineering, Marine Sciences, Marine Transportation, Maritime Administration and Maritime Systems Engineering. All programs, except Maritime Administration and Maritime Systems Engineering, offer directly, or as an option, training leading to qualification for a U.S. Coast Guard license as a Third Mate or Third Assistant Engineer.

Classes are held at the Mitchell Campus on Pelican Island, as well as at the Fort Crockett Campus on Galveston Island. The T/S TEXAS CLIPPER, training ship of the Academy, serves as a floating classroom, laboratory, and dormitory for the annual summer training cruise of the U.S. Maritime Service cadets. During the regular school year, the ship is berthed at Pelican Island and provides valuable dockside laboratory facilities for practical aspects of the maritime curricula.

The location of the College in Galveston affords students the opportunity to utilize facilities of the local maritime and marine industries both ashore and afloat as well as to benefit from the active programs of field research and instruction in the nearby bay, estuarine and nearshore waters.

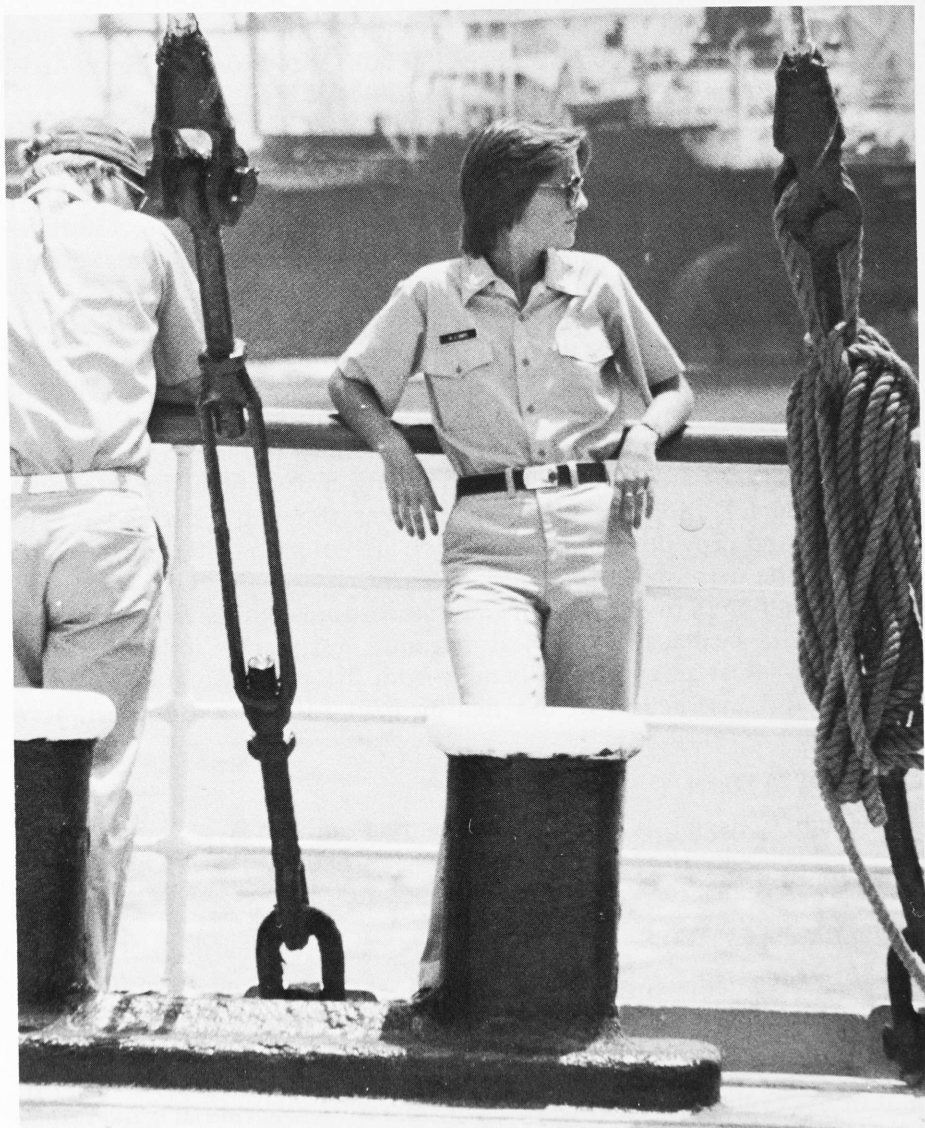
ACCREDITATION

Moody College is fully accredited by the Southern Association of Colleges and Schools. The Marine Engineering curriculum is accredited by the Engineers' Council for Professional Development.

LIBRARY FACILITIES

The Moody College Library is housed on the Mitchell Campus and is being continually developed in support of the degree programs offered by the College. In addition to supporting the academic curricula, it serves the professional, recreational and general reading needs of the students and staff of the College along with many people in the marine and maritime-related fields of the Galveston area.

The Moody College Library holds 17,000 volumes and has access to over 19,000 relevant volumes at the University of Texas Medical Branch and the National Marine Fisheries Service in Galveston. The proximity of these special collections provides students and staff with access to a wide range of periodical literature in the fields of science and technology. In addition, the Library is a member of the Texas Information Exchange, which provides the user with access to material throughout the state of Texas. The Library will soon have computer-based bibliographic search capability.



TEXAS MARITIME ACADEMY

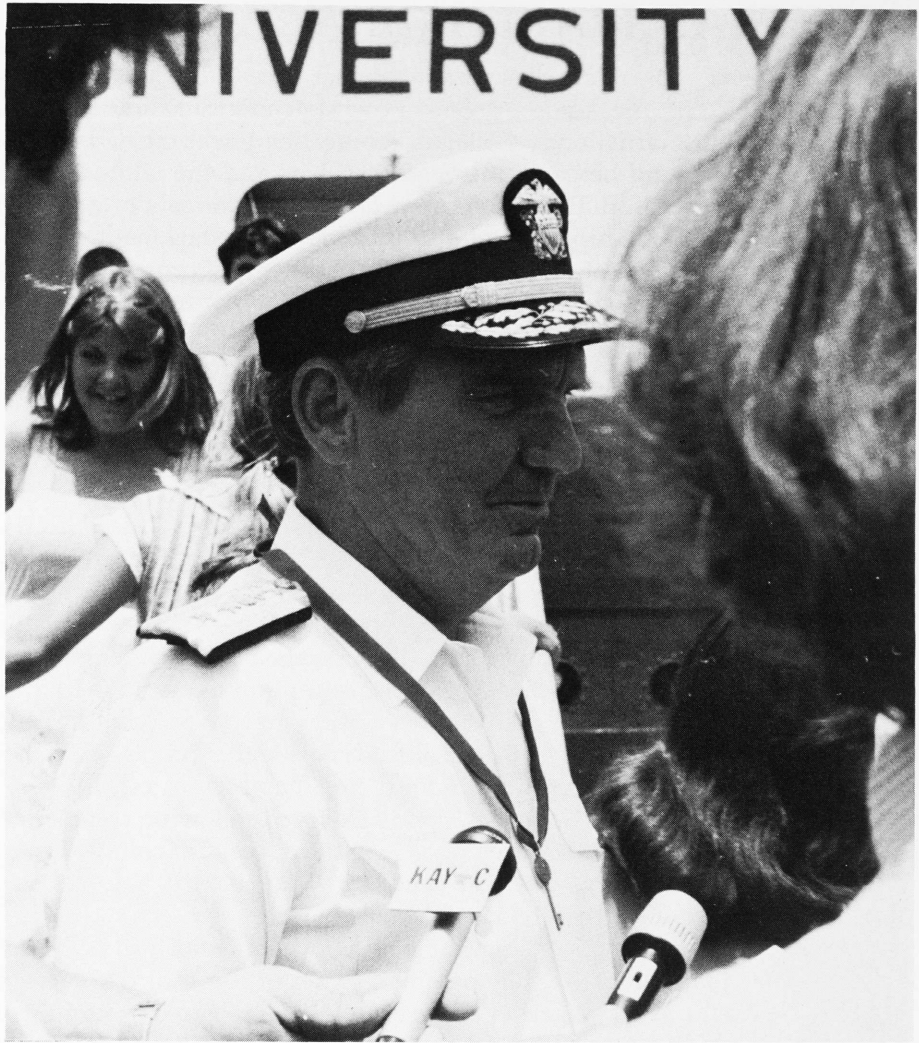
The Texas Maritime Academy, one of five state maritime academies, is an academic division of Moody College. The Academy was created in 1962 through an agreement between the State of Texas and the United States Maritime Administration. Federal support for the Academy is provided in the form of a training ship, annual appropriations for ship maintenance, \$100,000 a year in operating funds for the Academy's programs and a uniform, textbook, and subsistence allowance of \$100 per month currently provided to 35 eligible U.S. M.S. cadets in each incoming class.

The Texas Maritime Academy administers degree programs in Marine Engineering, Marine Transportation and Maritime Administration. The programs in Marine Engineering and Marine Transportation, as well as those in Marine Biology and Marine Science administered by the School of Marine Technology, offer, in addition to a rigorous academic program, professional training toward the qualification for U.S. Coast Guard licensing as merchant marine officers. These license-option students must complete four years of academic training as well as three two-month training cruises to be eligible for Coast Guard licensing. Those students in the Marine Transportation, Marine Biology and Marine Sciences degree programs may qualify as Third Mates while license-option students in Marine Engineering may qualify as Third Assistant Engineers. In addition, the student may be eligible for a U.S. Naval Reserve commission as an Ensign upon graduation. License-option students are required to join the U.S. Maritime Service Corps of Cadets at Moody College. Following completion of training and experience requirements, and the successful completion of a written examination administered by the U.S. Coast Guard, a license as a merchant marine officer may be issued.

After graduation and licensing, the new Third Mate or Third Assistant Engineer may join a ship as a fully qualified junior officer. Third Mates are responsible for the safe navigation of the vessel, loading and discharging of cargo, vessel maintenance and shipboard safety. Third Assistant Engineers are responsible for maintenance and operation of all machinery aboard ship including propulsion, auxiliary and refrigeration machinery, in addition to the electrical and air-conditioning systems.

SUMMER SCHOOL AT SEA

The Summer School at Sea program allows recent high school graduates who enroll in Moody College as freshmen, to earn their first six semester hours of college credit during the annual summer training cruise on the **T/S TEXAS CLIPPER**. In this program the new student is allowed to choose two three-semester hour courses from offerings in English, history and mathematics. In addition to these daily classes, they are also responsible for assisting the ship's crew in maintaining and operating the **TEXAS CLIPPER**, assisting with food services, and maintaining their quarters during the training cruise.



For students interested in Marine Engineering, first-hand experience with operation of the ship's power plants is available. For those interested in Marine Transportation, there is an opportunity to work on the bridge or on deck under the supervision of a licensed merchant marine officer. The program also allows the potential merchant marine officer to determine if his or her initial attraction to the sea is one that can be directed through the College curricula toward a career in the maritime service.

While it is hoped that Summer School at Sea participants will continue their collegiate careers at Moody College or elsewhere in The Texas A&M University System, their college credits earned during the summer cruise should be transferable to other colleges and universities which they might choose to attend.

SCHOOL OF MARINE TECHNOLOGY

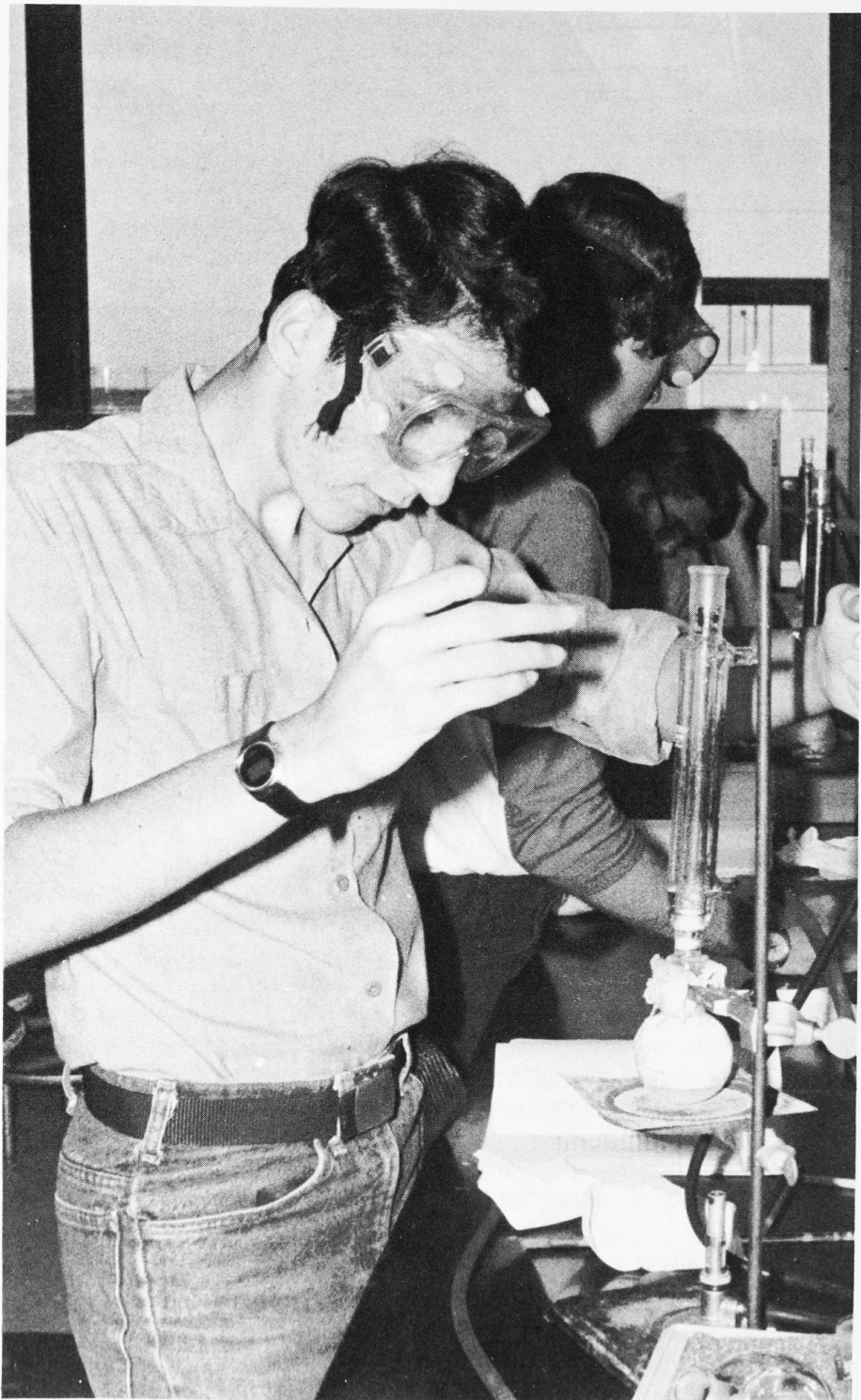
The School of Marine Technology directs degree programs in Marine Biology, Marine Sciences and Maritime Systems Engineering. In addition to academic instruction, the Marine Sciences and Marine Biology programs offer, as an option, professional training leading toward qualification for United States Coast Guard licensing as a deck officer in the merchant marine. (See the Texas Maritime Academy and Application for Admission to U.S. Maritime Service Cadet Program for details on eligibility and training requirements.) Maritime Systems Engineering options include hydromechanics, ocean engineering, and coastal resources.

Graduate work in Biology and Wildlife and Fisheries Sciences is conducted at the Galveston campus. For information concerning admissions to graduate programs, contact the Director, School of Marine Technology at Galveston or the Head, Department of Biology, or Head, Department of Wildlife and Fisheries Sciences, at Texas A&M University in College Station.

COASTAL ZONE LABORATORY

The Coastal Zone Laboratory coordinates the research, advisory and extension activities of the College. Research activities have included oyster culture, use of offshore oil rigs for oceanographic engineering, distribution of blue crabs in experimental temperature gradients, development of an oyster hatchery, and various shrimp studies. Currently, research conducted includes nearshore water and sediment processes, cultural impact in the coastal zone, oyster mortality, geochemical analysis of sedimentation rates in Galveston Bay, microbiological and biological studies of continental shelf waters and seabed, marine education, and environmental impacts associated with construction of a new natural gas port facility.

Extension activities are currently carried out through the Marine Radar Simulator Training Facility, operated by the Coastal Zone Laboratory, and the Oil Spill and Hazardous Material School and various short courses offered by the Texas Engineering Extension Service. The Radar Simulator Training Facility offers courses leading to both original certification and recertification for shipboard radar observers.



GENERAL INFORMATION

While every effort has been made to make this catalog as complete and accurate as possible, it should be noted that changes may occur at any time in requirements, deadlines, fees, curricula and the courses listed. For administrative reasons, because of insufficient enrollment, or because of limited resources, any given course might not be offered in the announced semester.

Students enrolled in Moody College adhere to the same academic requirements as students enrolled at Texas A&M University. These requirements are detailed in the Texas A&M University Catalog. Students are advised to study these requirements as well as the publication, Moody College Regulations, which concerns other aspects of student life.

ADMISSION

UNDERGRADUATE ADMISSION

Admission to Moody College and any of its sponsored programs is open to qualified individuals regardless of race, color, religion, sex, national origin or educationally unrelated handicaps. Applicants for admission to Moody College are welcome at any time. Those who meet the standards will be admitted until the last day for enrollment during the session requested.

Applications for admission to Moody College should be addressed to the Office of Admissions, Texas A&M University, College Station, Texas 77843. Completed application forms must be accompanied by transcripts of credit if the applicant is entering directly from high school. A student who desires to transfer from another college or university must submit two complete official transcripts from each college or university attended.

REQUIREMENTS

To be admitted to Moody College and Texas A&M University, an applicant must have graduated from a properly accredited secondary school. In addition, the applicant must have satisfactorily completed certain high school subjects and made an acceptable score on the Scholastic Aptitude Test.

REQUIRED HIGH SCHOOL CREDITS

The unit requirements for admission to the College are designed to insure adequate preparation for the various curricula offered by the College. To give deserved recognition to proven ability as reflected by high academic achievement, students may enter the College even though they have not completed all the required high school subjects as listed below. Applicants who rank in the highest quarter of their class and score a minimum total score of 1000 on the CEEB Scholastic Aptitude Test may be granted admission with credit deficiencies.

The sixteen acceptable entrance credits or 49 quarter units which a student should have for admission (with exceptions indicated where applicable) are as follows:

Subject	Credit Required		Remarks
	Quarter Units	Units	
English	12	4	Two units or 6 quarter units in a single foreign language may be substituted for one unit or 3 quarter units in English
Social Science	8	2½	
Mathematics:			
Algebra	6	2	
Geometry	3	1	
Science	6	2	It is preferred that these two units or 6 quarter units include biology, chemistry, or physics.
Electives	14	4½	Recommended from the following subject areas: foreign languages, mathematics, science, social science, speech. Not more than three units or 9 quarter units in vocational subjects may be submitted as electives. Applicants for admission to engineering, mathematics, and science are strongly advised to include at least ½ unit or 2 quarter units electives in advanced mathematics.
TOTAL	49	16	

APPLICATION FOR ADMISSION TO U.S. MARITIME SERVICE CADET PROGRAM

In addition to the normal requirements for admission, a student seeking to enroll in a license-option curriculum as a U.S. Maritime Service Cadet must satisfy additional criteria. He or she must be a citizen of the United States and must pass a physical examination as specified by the U.S. Coast Guard. The physical requirements for a deck officer cadet include uncorrected vision of at least 20/100 in both eyes correctable to at least 20/20 in one eye and 20/40 in the other. For an engineering officer cadet, the corrected vision must be at least 20/30 in one eye and 20/50 in the other. The color sense will be tested by means of a pseudoisochromatic plate test, but any applicant who fails this test will be eligible if he or she can pass the "Williams" lantern test or equivalent. The examination for acceptance as a United States Maritime Service Cadet cannot be given before enrollment. The examination has no bearing on enrollment in curricula which do not include the license-option.

TESTS REQUIRED OF NEW STUDENTS

Moody College and Texas A&M University require certain College Entrance Examination Board (CEEB) tests as a part of its admission procedures for those applicants seeking admission to their first semester of college or university work. Results of these tests are to be used for admission, counseling, and placement purposes. The following tests are required: Scholastic Aptitude Test (SAT), English Composition Achievement Test, and Mathematics Achievement Test (Level I or II). The College Entrance Examination Board offers these examinations at conveniently located testing centers throughout the United States and in major cities of many foreign countries. Testing dates, locations, and fees required are described in an information bulletin which may be obtained by writing to the College Entrance Examination Board, Box 592, Princeton, N.J. 08540.

The College will accept scores on either Mathematics Test, Level I or the Mathematics Test, Level II. However, most students will be expected to take the Mathematics Test, Level I. Students interested in taking the Mathematics Test, Level II, should do so only after careful study of the College Entrance Examination Board Publication, "Achievement Tests", and a conference with a high school counselor or mathematics teacher.

The minimum test score requirements for admission for applicants who have never attended another college or university are stated in terms of a total score on the College Entrance Examination Board's Scholastic Aptitude Test. This total score is the sum of the Verbal and Mathematical scores reported by the College Board. The following test score requirements are effective for entering freshmen:

Standing in High School Graduating Class	Minimum Total Score Acceptable for Admission
Highest Quarter	800
Second Quarter	800
Third Quarter	900
Fourth Quarter	1000

Summer Conferences: Several two-day conferences will be conducted during the summer months on the Moody College campus for applicants who have qualified for admission to the fall semester as beginning freshmen or new transfer students. At these conferences the CEEB test scores will be interpreted and additional tests in other areas may be administered. Students will register for classes after consulting with an academic advisor.

Steps in Applying for Admission to Moody College and Texas A&M University

1. **Application for Admission:** Write to the Office of Admissions, Texas A&M University, College Station, Texas 77843 to obtain an application. Applications are also available at High School/College nights.

2. **Testing:** Arrange through a high school counselor to take the Scholastic Aptitude Test (SAT), English Composition Achievement Test

and Mathematics Achievement Test of the College Entrance Examination Board (CEEB). Designate that the scores be sent to Texas A&M University (CEEB Code 6003). It is recommended that the SAT be scheduled in the latter part of the junior year or early part of the senior year. The achievement tests are used for counseling and placement purposes and should be taken by January of the senior year. Students are admitted on the basis of specified courses taken in high school, class rank, and SAT score, but they must submit the results of the achievement tests before they can be invited to a Summer Registration Conference.

3. Transcripts: Ask the high school counselor or registrar to forward an official transcript to the Office of Admissions at Texas A&M University. This transcript must reflect grades complete through six semesters or nine quarters of high school work. The transcript should also reflect the rank in class and the list of courses which will be completed during the senior year. To be considered official, a transcript must bear an original signature of a school official and/or the school seal.

There are two periods when a high school student may apply for admission to Moody College and Texas A&M. Those students who score 1000 on the SAT and rank in the top quarter of their class may submit their application and supporting credentials at the end of their junior year under the Early Decision program. Letters of acceptance are mailed to those who meet the admission requirements as soon as the applications are processed. Students who do not meet the requirements for Early Decision should submit their applications after October 1 and notifications will be sent beginning November 15.

Acceptance to the College or Texas A&M University is conditional until the student has satisfactorily completed the courses in progress for the senior year and graduated from high school. Application for on-campus housing may be made after completion of the junior year in high school. Please refer to that section of this catalog for more information.



EARLY DECISION PROGRAM

In order to recognize and reward superior academic performance, Moody College and Texas A&M have an Early Decision program that permits a student to apply for admission after completion of the junior year of high school. To be eligible for this program students must rank in the highest quarter of their class and score at least 1000 on the SAT. Students who desire to apply under these provisions may submit their application for admission at the completion of their junior year of high school. A list of courses they will be taking during their senior year must be included with the transcript. Acceptance will be conditional until the student has satisfactorily completed the courses in progress for the senior year and graduated from high school.

EARLY ADMISSION

Students who have a superior high school record and wish to enter higher education before graduating from high school may apply for admission under the following program.

Students who wish to enroll as full time students at the completion of their junior year must have a superior academic record, complete the prescribed 16 credits or 49 quarter units required of entering freshmen, rank in the top quarter of their class and score at least 1200 on the SAT, with at least 600 on the verbal section of the SAT. In addition, they must be recommended by their high school principal and counselor and have their parents' approval if under 18 years of age. Students must submit the results of the English composition and mathematics achievement tests. A personal interview with the Director of Admissions is also required. Further information may be obtained from the Director of Admissions.

TRANSFER STUDENTS

Admission may be granted to undergraduate students who have begun their work at other colleges or universities and who have satisfied the requirements as set forth below. An applicant may not disregard the academic record of any previous education received at another institution.

An applicant must be eligible to return to the institution from which the transfer is sought. Applicants must also submit a formal application for admission as well as two official transcripts of their record at each college or university previously attended by July 31 for the Fall Semester and as early as possible for other semesters. Except as further indicated below, the applicant must have achieved an overall grade point ratio of 2.00 (C average) or better on the work attempted and must meet or surpass this same standard for each of the last two semesters of attendance, if in attendance two or more semesters. A twelve-week summer session with a normal load of course work will be considered a full semester.

A student who has attempted 18 semester hours or less must meet the entrance requirements for entering freshmen as well as the 2.00 standard indicated above. The high school record, college record, and the test results will be used to determine admission status. The results of either the CEEB Scholastic Aptitude and Achievement Test in Mathematics and English or the American College Testing Program (ACT) will be accepted in determining eligibility for admission as a transfer student.

On the basis of the credentials submitted, credit will be given for work completed satisfactorily at another properly accredited college or university so far as the work is equivalent in character and extent to similar work at Moody College or Texas A&M University. Credits given by transfer are provisional and may be cancelled at any time if the student's work at the College is unsatisfactory.

Courses in a subject area which are more elementary than the beginning required courses in that same subject area of a student's chosen curriculum at this College will not apply toward satisfying the degree requirements of that curriculum.

INTERNATIONAL STUDENTS

If space is available, international students (non-U.S. citizens) with outstanding academic records may be considered for admission. For information about application deadlines, admissions criteria, English language proficiency and expenses, international students should request a copy of the brochure, "Information for Prospective International Students," from the Office of Admissions.

READMISSION OF STUDENTS

Any former student who has resigned, been dropped from the rolls, or has not attended Moody College or Texas A&M for at least one full semester must fill out an Application for Readmission and submit it to the Office of Admissions by July 31 for the Fall Semester and as early as possible for other semesters. If the student has attended any other institutions since last enrolled at Moody College or Texas A&M, he or she should submit two official transcripts from EACH of these schools at the time of re-application.

Refer to the section "Transfer Students" for entrance requirements.

SPECIAL ADMISSIONS

The Dean of Admissions and Records can, under extreme mitigating circumstances, waive the admissions requirements of a student who presents strong evidence of ability to succeed in the College.

ADMISSION BY INDIVIDUAL APPROVAL

Undergraduates who have not recently attended school and who cannot satisfy the entrance requirements in full may be admitted, subject to the following requirements:

1. They must submit a completed application for admission.
2. They must furnish evidence that their preparation is substantially equivalent to that required of other applicants and that they possess the ability and seriousness of purpose necessary to pursue their studies with profit to themselves and to the satisfaction of the College.

ADMISSION OF SPECIAL STUDENTS

A limited number of students may be admitted to the College as special students not candidates for a degree, subject to the following regulations:

1. Applicant must show good reason for not taking a regular degree and must submit satisfactory evidence that they are prepared to profit by the special studies they wish to pursue.
2. Record of previous scholastic work must be submitted on the official entrance blanks and must be accompanied by a statement showing (1) experience; (2) a plan of study enumerating the courses desired; and (3) the purpose or end expected to be accomplished by this study.

DEGREE INFORMATION

Moody College reserves the right to modify the curricula or withdraw any courses when it appears wise to do so. The policies and procedures in this catalog are currently in effect; however, the College reserves the right to make changes or modifications for good cause.

DEGREES OFFERED

The following degrees are offered by Texas A&M University for the satisfactory completion of resident study in the appropriate curriculum at Moody College:

Bachelor of Science with a major in Marine Biology

Bachelor of Science with a major in Marine Engineering

Bachelor of Science with a major in Marine Sciences

Bachelor of Science with a major in Marine Transportation

Bachelor of Science with a major in Maritime Administration

Bachelor of Science with a major in Maritime Systems Engineering

REQUIREMENTS FOR A BACCALAUREATE DEGREE

The diploma of Texas A&M University, with the appropriate degree, will be granted to the student who has made formal application for the undergraduate degree and has satisfied the following requirements:

1. The student must complete, with at least a C average, one of the regular courses of study leading to a degree.

2. A curriculum leading to a baccalaureate degree shall contain a minimum of 128 credit hours. At the discretion of the student's department and academic dean, advanced ROTC courses may be used to satisfy curriculum requirements if the student has completed 124 hours excluding advanced ROTC courses.

3. The total number of grade points earned at Moody College and Texas A&M University in courses must be at least twice the number of hours which were carried in courses at these institutions. Grades of F or WF shall be included, except those grades and grades of D made in the freshman year or summer session preceding that year which are subsequently repeated at either Moody College or Texas A&M with a grade of C or better during the student's first four semesters. Grades of WP and Q shall be excluded. Grades in courses not applying to the degree may be waived by petition if approved by the academic dean and submitted to the Registrar. The waiver of grades in courses as indicated above will not affect a student's grade point ratio or entitlement to graduation with honors.

4. The total number of grade points earned at Moody College in courses in the major department must be at least twice the number of hours which were carried at this institution in the major department. Grades of F and WF shall be included but grades of WP and Q shall be excluded. Grades in courses not applying to the degree may be waived by petition if approved by the academic dean and submitted to the Registrar.

5. Grades made in courses elected in excess of a student's degree requirements shall be counted, but if failed, such courses need not be repeated.

6. The student must have settled all financial obligations to the College and the University.

7. The student must be formally recommended for graduation by the Academic Council after consideration of his or her complete record.

8. The student is expected to be present in person at the graduation exercises, unless registered in absentia or excused by his or her academic dean.

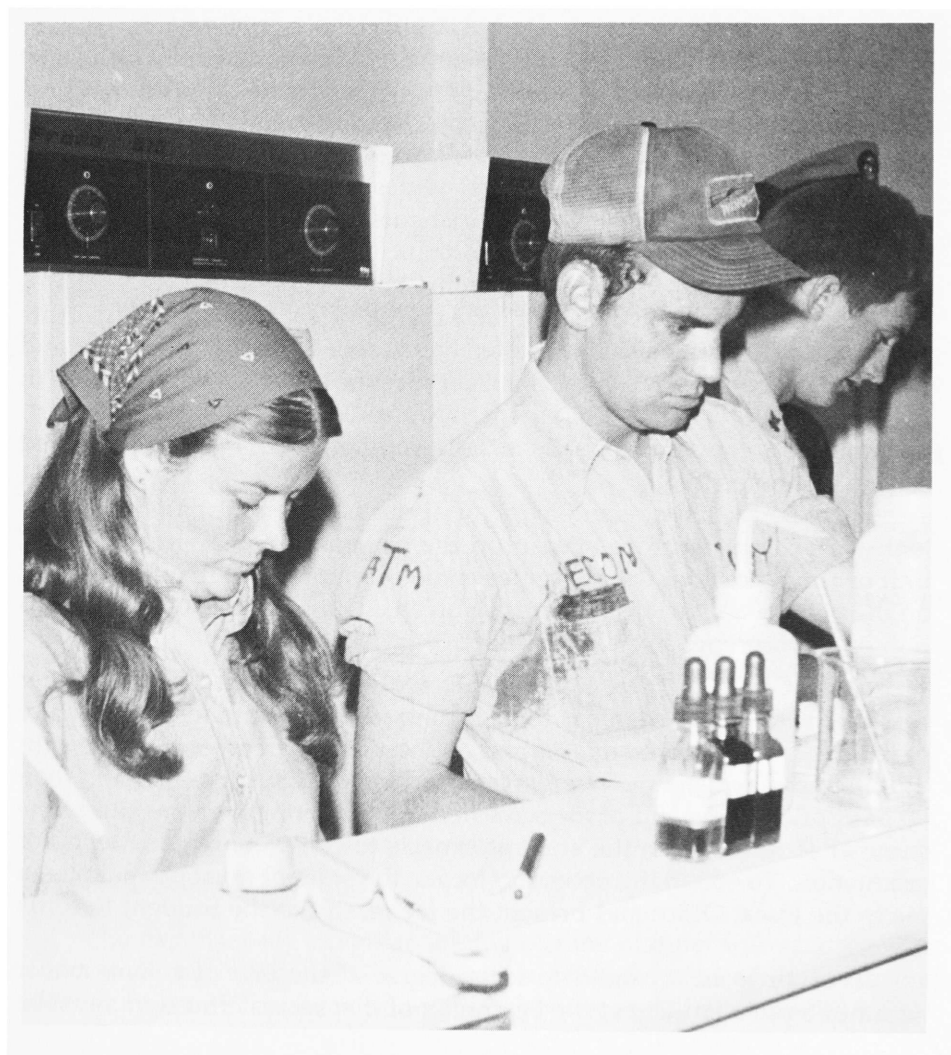
These requirements must be completed and all grades on record in the Registrar's Office of Texas A&M University not later than 5 p.m. on Thursday preceding Commencement Day.

RESIDENCE REQUIREMENT:

The candidate for graduation must have completed a minimum of twelve semester hours in his major subject-matter field at this institution.

A student pursuing a baccalaureate degree at Moody College may transfer from a two-year college a maximum number of hours not to exceed six (6) more than the number required through the freshman and sophomore years of the chosen curriculum at Moody College. Such courses will normally be restricted to those of the freshman and sophomore years.

Candidates for degrees in Moody College curricula will abide by the following guidelines: For non-license curricula, 30 of the last 36 hours must be completed in Galveston, and for license curricula, the last three years must be spent in Galveston and in the Corps of Cadets.



REQUIREMENT IN POLITICAL SCIENCE (GOVERNMENT) AND HISTORY: In order to meet the legal requirement for a baccalaureate degree or a lesser degree or academic certificate, all students must have at least six credit hours in Political Science (Government) and at least six credit hours in American History as described in detail in the following paragraphs. Students whose curricula require only three credit hours of Political Science are required to successfully complete three additional credit hours of Political Science plus one credit hour of elective if they do not elect at least three credit hours in Military, Air or Naval Science plus one elective hour.

Political Science (Government): One must have credit for six semester hours or its equivalent. Three of the six semester hours are to be in Political Science 206 (American National Government) and three semester hours in Political Science 207 (State and Local Government with emphasis on that of Texas). This requirement may also be met, in whole or in part, by equivalent course work satisfactorily completed at another accredited college or university.

Three hours of the Political Science requirement may be satisfied on the basis of equivalent work completed by a student in the program of an approved ROTC unit or three of the six-semester-hour requirement may be satisfied if the student meets the requirements to receive credit by examination on the basis of acceptable performance on an advanced placement examination or a comprehensive examination.

American History: One must have credit for six semester hours or its equivalent. Three of the six semester hours may be in Texas History and three semester hours in American History, or the entire six hours may be in American History. This requirement may also be met, in whole or in part, by equivalent course work satisfactorily completed at another accredited college or university.

Three hours of the requirement may be satisfied on the basis of equivalent work completed by a student in the program of an approved ROTC unit or three hours of the six-semester-hour requirement may be satisfied on the basis of acceptable performance on an advanced placement examination or a comprehensive examination.

APPLICATION FOR A DEGREE: During the semester or summer session in which the degree is to be conferred, a student must be officially registered in the University. Formal application for degrees must be submitted to the Registrar, on forms provided for that purpose, not later than 90 days prior to the end of the semester, or 30 days prior to the end of the summer term in which the student expects to complete requirements for graduation. To obtain the necessary forms, the student must pay a diploma fee in the Fiscal Office and present the fee receipt to the Student Records Officer.

In order to be a candidate for a degree at the end of a semester or summer term, a student at the beginning of that semester or term must be

registered for the courses necessary to complete the requirements of the curriculum.

TWO DEGREES

A candidate for a second baccalaureate degree must have completed all the essential work of the second curriculum not covered in the first. In all such cases the total semester hours required must be at least 30 semester hours additional to the greater number required for either degree.

GRADUATION WITH HONORS

Students who have completed a minimum of sixty hours at Moody College and/or Texas A&M are eligible for graduation with honors. The grade point ratio of all college hours attempted, combined with the A&M grade point ratio, must equal that required at Texas A&M for the appropriate category of honors. This combined average shall not permit the student to graduate with honors higher than that to which the student would be entitled, based on the Texas A&M grade point ratio only. Categories for Honors shall be designated as follows:

- A. For students whose degrees are conferred prior to May, 1982;
 - (1) Summa Cum Laude: A student may be graduated "Summa Cum Laude" with a grade point ratio of 3.750 or above.
 - (2) Magna Cum Laude: A student may be graduated "Magna Cum Laude" with a grade point ratio range of 3.500 through 3.749.
 - (3) Cum Laude: A student may be graduated "Cum Laude" with a grade point ratio range of 3.250 through 3.499.
- B. For students whose degrees are conferred in May, 1982 and thereafter;
 - (1) Summa Cum Laude: A student may be graduated "Summa Cum Laude" with a grade point ratio of 3.900 or above.
 - (2) Magna Cum Laude: A student may be graduated "Magna Cum Laude" with a grade point ratio range of 3.700 through 3.899.
 - (3) Cum Laude: A student may be graduated "Cum Laude" with a grade point ratio range of 3.500 through 3.699.

FINANCIAL INFORMATION

EXPENSES

The expenses for a regular session of nine months will vary with the individual concerned and with the course of study pursued. In the case of new students, the total cost should range between \$2,700.00 and \$3,500.00.

In general these amounts include three types of expenditures: fees payable to the College Fiscal Department, textbooks and supplies, and incidental expenses which are estimated in the range of \$400.00 to \$1300.00, depending on the individual concerned. Non-resident students, other than those pursuing a license-option curriculum, should increase these estimated expenses by \$1,100.00 to cover non-resident tuition fees.

PAYMENTS

Payments to the Fiscal Department may be in the form of cash, cashier's check, personal check, or money order payable to the Moody College. All checks and money orders are acceptable subject to final payment.

FEES

The fees set out herein for the session of 1979-80 are strictly approximations and are subject to change because of economic conditions and/or legislative requirements. The fees listed below are for all students except those in license options curricula. The fees listed below are based on a resident student registered for fifteen semester credit hours during the Fall and Spring semesters and six credit hours during a term of the Summer Session.

	Fall Semester	Spring Semester	Summer Term (6 Weeks)
Tuition (see explanation of fees)	60.00	60.00	25.00
Student Services	18.00	18.00	9.00
Room	375.00*	375.00*	125.00
Board	426.00	426.00	199.50
Room Deposit	100.00		
Identification Card	3.00		1.00***
	\$982.00	\$879.00	\$359.50

The estimated fees based on eighteen hours for students in a license-option curriculum are shown below:

	Fall Semester	Spring Semester	Summer Cruise
Tuition (see explanation of fees)	90.00	90.00	60.00
Student Services	18.00	18.00	17.60**
Room	375.00*	375.00*	185.00
Board	426.00	426.00	426.00
Room Deposit	100.00		
Identification Card	3.00		1.00***
Cruise Fee			425.00
	\$1,012.00	\$909.00	\$1,114.60

Board may be paid in three installments with a service charge of \$9.00.

*Add \$10.00 per semester for semi-private room. Subtract \$190.00 per semester for License Option students for rooms in the T.S. Texas Clipper.

**Student Services Fee. \$4.40/hour for summer cruise.

***Applies to summer students not enrolled during the Fall and Spring Semesters.

If payment for board is made by installments (full payment in summer term), a \$3.00 service charge for each installment will be assessed. A late

fee of \$1.00 per day to a maximum of \$10.00 will be charged for installments made after the due date. Students who are more than ten days delinquent with installment payments will be dropped from the rolls of the College. Students who select the board installment plan are obligated for a complete semester regardless of the method of payment.

EXPLANATION OF FEES

Tuition

Resident students pay four dollars (\$4.00) per semester credit hour, but the total of such charges shall be not less than fifty dollars (\$50.00) per semester or twenty-five dollars (\$25.00) per summer term.

Non-resident students pay forty dollars (\$40.00) per semester credit hour.

Students enrolled in the license option curricula, whether resident or non-resident, pay five dollars (\$5.00) per semester credit hour, but the total of such charge shall be no less than sixty dollars (\$60.00) per semester and sixty dollars (\$60.00) for the summer cruise.

Alien students who attended the College at any time prior to June 19, 1975, pay fourteen dollars (\$14.00) per semester credit hour, but the total of such charges shall be no less than two hundred dollars (\$200.00) per semester. Alien students who register for the first time after June 19, 1975, shall pay forty dollars (\$40.00) per semester credit hour unless the student is a citizen of a country that charges citizens of the United States tuition at publicly funded colleges or universities an amount which is equal to or less than two hundred dollars (\$200.00) per semester; in this case the alien student pays fourteen dollars (\$14.00) per semester credit hour but not less than two hundred dollars (\$200.00) per semester. Information on countries whose citizens are eligible for the reduced tuition rates may be obtained from the Student Records Office.

Students who in any semester register (including payment of fees) after the beginning of classes pay an additional ten dollar (\$10.00) fee.

Student Services

The student service fee is required of all students at the rate of \$1.50 per semester credit hour (not to exceed \$18.00) per semester (or \$9.00 per summer term). The student service fee for students on the summer cruise of the **T.S. Texas Clipper** is \$4.40 per semester credit hour (not to exceed \$26.40). Student service fees finance recreational activities, student government, student publications, student organizations, weekly movies, intramural athletic programs, and social activities.

Room Rent, Board

All Moody College students who are pursuing a license-option program or who are unmarried and not residing with parents in the Galveston area are required to live in campus housing and participate in the board plan, if campus housing is available. Rooms are for double occupancy and are furnished with beds, desks, chairs, wardrobes, and dressers. Students

are expected to furnish pillows, blankets, and linens. Active duty veterans of the United States armed services are generally exempt from the mandatory campus housing and board requirements. Other exceptions based on special circumstances will be considered upon written request to the President of the College.

Room Deposit

A deposit of \$100.00 is required to apply for a room in a residence hall. This fee will be retained as a deposit against damage or late cancellation, or to keep the application on active file. A reservation may be cancelled and deposit refunded upon written request prior to July 1 for the Fall semester, December 1 for the Spring semester, and May 10 for the First Summer Session. Any cancellation after the above dates will result in forfeiture of the deposit. A refund may be made in accordance with the College and University policy for a student graduating or withdrawing from school, upon request, after clearance by the Student Records Office.

Seniority in campus housing and on the residence hall waiting list will be based upon the date of receipt of the room deposit.

Identification Card

All students must have an identification card. This card is used in registration procedures, collection of fees, cashing of checks, for dining hall privileges, etc.

Laboratory Fees

A laboratory fee ranging from \$2.00 to \$8.00 is charged for each laboratory course each semester. Moody College students needing certification as shipboard radar observers will be charged \$17.00 per day, not to exceed three days, for classwork at the Radar Simulator Facility.

Parking Permit

All students driving motor vehicles on the campus must pay a fee of \$5.00 per semester and \$2.50 per summer session for registration and parking.

OTHER EXPENSES

Textbooks and Supplies: The cost of textbooks and supplies will vary with the quality of items purchased and with the course of study to be pursued. Students can expect to pay an amount ranging between \$200.00 and \$250.00. These amounts are estimates for the combined Fall and Spring Semesters. Expenses for the Summer Session should amount to approximately one-half of the above estimates.

Uniforms: License-option students must purchase uniforms with initial outfitting estimated at \$300.00-\$500.00.

Other Items: The College operates a store for the purpose of supplying necessary articles to students. The store carries textbooks, stationery, drawing instruments, toilet articles, and other supplies. All merchandise is sold at the usual retail prices prevailing in the area.

EXEMPTIONS

Certain students in the following classifications are exempt from paying tuition and some of the required fees by action of the State of Texas and The Texas A&M System Board of Regents. Specific eligibility requirements under these provisions can be obtained from the Student Records Office.

Dependent children of disabled or killed-on-duty firemen and peace officers and firemen who are enrolled in Fire Science courses are exempt from paying tuition and laboratory fees.

Blind and Deaf students who are eligible for the rehabilitation services of the State Commission for the Blind and/or Division of Vocational Rehabilitation of the Texas Education Agency are exempt from the above fees.

Certain veterans (and dependents of veterans who died in active service) who are Texas citizens and who were honorably discharged from World War I, World War II, Korean War or the "Cold War" which began on termination of the Korean War and have exhausted their Federal Veterans educational benefits are exempt from paying tuition and laboratory fees. Orphans of members of the Texas National Guard and the Texas Air National Guard killed since January 1, 1946, while on active duty either in the service of their state or the United States may also be eligible under this provision.

The State Board of Education will certify 235 students from other nations in the American Hemisphere to be exempt from paying tuition at institutions of higher learning in the State of Texas.

Full-time Texas A&M University System employees and students registered in absentia will only be required to pay tuition and laboratory fees.

REFUNDS

Refund of fees shall be made to students officially withdrawing according to the following withdrawal schedule:

Tuition, Student Services Fee, Laboratory Fee and Residence Hall Rent	
Fall or Spring Semester	
Prior to the first class day	100 percent
During the first five class days	80 percent
During the second five class days	70 percent
During the third five class days	50 percent
During the fourth five class days	25 percent
After the fourth five class days	None
Six-week Summer Term	
Prior to the first class day	100 percent
During the first, second, or third class day	80 percent
During the fourth, fifth, or sixth class day	50 percent
Seventh day of class and thereafter	None

Refunds on residence hall rent will not be made unless the room vacated is rerented within ten days to a student residing in other than College-owned property. If the room is rerented within this 10-day period to a student not residing in College owned property, refunds will be made in accordance with the above schedule.

Board Fee: Board fees are refundable in full *prior* to the first day of classes. Students electing the board option of installment payments or payment in full will not be allowed to drop board after classes begin and will be obligated to pay for the full semester. Refunds will be made only in case of official withdrawal at which time a pro-rata refund will be made computed on a daily basis.

In case of a consecutive absence of 10 or more days due to illness of the student or member of his family or for some other unavoidable cause, a pro-rata refund will be made computed on a daily basis.

Yearbook Fee: Yearbook fees are refundable in full during the semester in which payment is made. Thereafter no refunds will be made on cancelled orders. Yearbooks must be picked up during the academic year in which they are published.

REDUCTIONS

No reduction will be made in the charge of room rent and board in case of entrance within ten days after the opening of a semester or summer term, nor will a refund be made in case of withdrawal during the last ten days of a semester, or summer term, or the last days for which payment is made.

UNPAID CHECK

If a check accepted by the Fiscal Department is returned unpaid by the bank on which it is drawn, the person presenting it will be required to pay a penalty of \$15.00. The penalty increases to \$25.00 fifteen days after the date of the first notice and the student may be dropped from the rolls of the College. In addition, the check will be turned over to the District Attorney for prosecution. A student dropped from the rolls of the College for failure to redeem an unpaid check within the grace period is eligible for reinstatement after payment of penalties, a \$50.00 reinstatement fee and redemption of the check.

DAY STUDENTS

Day students pay all specified fees and charges except board (optional) and room rent.

STUDENT AFFAIRS

The Office of Student Affairs coordinates the student life programs and activities of Moody College. Information is available from this office

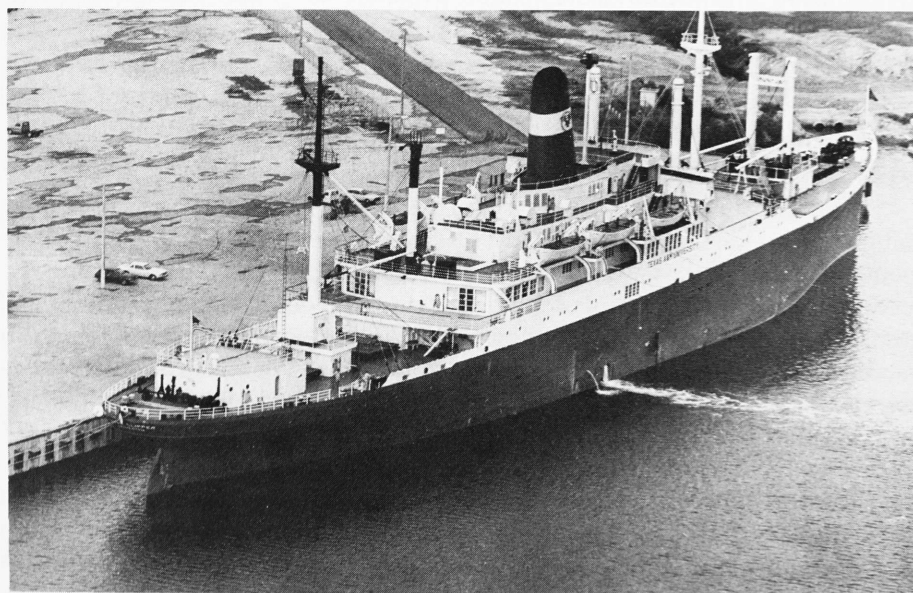
concerning new student orientation, veterans affairs, international students, counseling services, housing, financial aid, health services, student activities, student employment, and graduate placement.

FINANCIAL AID

Students of Moody College are eligible for most of the scholarships and financial aid programs available to students of Texas A&M University. While the scholarship programs are offered to encourage and reward scholastic effort on the part of students, some of the scholarships and most of the grant and loan programs are designed to assist the student with a demonstrated financial need. Students seeking financial aid must submit a Financial Aid Form to the College Scholarship Service in Berkeley, California. A need analysis will be prepared by the College Scholarship Service and forwarded to Moody College. Financial Aid Forms are available from high school counselors and the Moody College Financial Aid Officer. Students applying for financial aid from the College must also apply for a Basic Education Opportunity Grant (BEOG), a federal grant program. This action can be taken by checking "YES" to the special BEOG reply section on the Financial Aid Form.

Scholarships

Moody College Students are eligible to participate in the Texas A&M University scholarship program which is administered by the University Scholarship Committee. In general there are three types of scholarships available: (1) Valedictory Scholarships, Opportunity Awards and Academic Achievement Awards, representing those limited to entering as freshmen; (2) scholarships designed for the more advanced undergraduate students; and (3) fellowships for graduate students.



Valedictory Scholarships

These scholarships consist of exemption of tuition during the student's freshman year at Moody College or Texas A&M University, and are offered to the highest ranking graduate (valedictorian) from each accredited high school in Texas. To receive this award, the student must be certified to Moody College or Texas A&M University as valedictorian through the Texas Education Agency, and the recipient's initial enrollment must be in this College. No formal application is required. Qualified students may obtain a certificate authorizing exemption from paying tuition from the Student Financial Aid Officer at the beginning of the fall semester.

The Opportunity and Academic Achievement Award Programs

This program annually provides four-year awards to high school graduates of Texas who are capable of outstanding scholastic achievement and who need financial assistance to attend the College. The scholarships are made possible through the Association of Former Students, through the Texas A&M University Development Fund, and by interested citizens and organizations. Financial benefits range in value from \$100 to \$1,500 each year. Most of the awards are unrestricted as to course of study or degree objective in the College.

Graduates of accredited high schools who have not attended another college or university and who are single, are eligible to apply for an Opportunity Award Scholarship before Feb. 1.

To be considered for such an award an applicant must satisfy the admission regulations of the University, plus:

1. make formal application on forms provided by the University or Moody College;
2. have SAT-CEEB scores made available to Texas A&M University before Feb. 1.
3. submit a Financial Aid Form to the College Scholarship Service, P.O. Box 1025, Berkeley, California 94701, by Feb. 1.
4. submit a high school transcript showing grade records through the first quarter of the senior year with the application.

Winners are selected by the Texas A&M University Scholarship Committee on the basis of the applicant's academic record in high school; College Entrance Examination Board test scores; the evidence of initiative, leadership, and other traits of good character. In order for the award to be continued from year to year the recipient must maintain a standard of scholastic achievement and personal conduct satisfactory to the Scholarship Committee.

Applications are available to interested students upon request. Requests for additional information and application forms should be addressed to the Director, Student Financial Aid, Room 310, Y.M.C.A. Building, Texas A&M University, College Station, Texas 77843 or the Moody College Financial Aid Officer, P.O. Box 1675, Galveston, Texas 77553.

Scholarships for Advanced Undergraduate Students

Scholarships ranging in value from \$100 to \$1,000 are available to students already enrolled. Some of these awards are limited to certain fields of study and to individuals who have attained a necessary academic classification, while others are unrestricted. Recipients are chosen by the University Scholarship Committee in May each year.

Information regarding scholarships for advanced undergraduate students may be obtained from the Moody College Financial Aid Officer.

Student Part-Time Employment

The Student Affairs Office is the coordinator for student part-time employment, both off and on campus.

Students solicit their employment through job leads provided by the Student Affairs Office or through their own initiative. Employment counseling is available to those students who have not had previous job seeking experience.

Student employees are paid on an approved College wage scale. Students employed by Moody College are paid every two weeks along with regular College employees. Student employees are not entitled to fringe benefits.

College Work-Study Program.

This federally subsidized program provides part-time employment for U.S. citizens and permanent residents within fund limitations, who have an established financial need and desire campus employment.

To qualify for the College Work-Study Program, a student must have submitted a financial aid form to the College Scholarship Service, have financial need, be enrolled or accepted for enrollment and be making satisfactory academic progress, if enrolled. Students who attend the College only during the summer sessions are not eligible for this program.

CWS students are paid on an approved College wage scale, may not work more than 20 hours per week, and are not entitled to fringe benefits.

Loan Funds

Moody College participates in the Hinson-Hazlewood College Student Loan program, Federally Insured and the National Direct Student Loan programs. Repayment periods on these loans usually begin 9 months after graduation. Applications for these loans must be submitted 60 days prior to the time when the funds are needed. Inquiries should be addressed to Moody College Financial Aid Officer.

The Moody College Financial Aid Officer also administers other short-term loan funds for enrolled students. These funds are available to meet emergency needs and in most cases must be paid back prior to graduation.

COUNSELING

Counseling services are available through the Office of Student Affairs. Students with educational, career, and personal concerns are invited to visit with the counselors. Aptitude and achievement testing and interest and personality inventories are available along with professional interpretation. In addition, referral for the use of specialized community resources will be coordinated upon the student's requests.

HOUSING

Moody College has limited on-campus housing in a modern student dormitory and aboard the **T.S. Texas Clipper**. Rooms are assigned in accordance with the date on which the housing application and room deposit are received in the Moody College Fiscal Office. All license-option students and, with certain specific exceptions, all other single students are required to live on-campus. Permission to live off-campus may be granted on a semester basis only when on-campus housing is not available. Students living on campus are required to purchase the board plan for meals.

Since license-option students are required to live on campus, students will only be able to pursue a license-option if campus housing is available for them. To receive a housing assignment, students who elect a license-option program of study must apply for housing *and* notify the College of their intent to study a license-option program prior to July 15. A failure to receive campus housing does not preclude a student from enrolling in the degree program of their choice but simply restricts participation in license-option programs until campus housing is available.

Due to the shortages in both on- and off-campus housing, it is recommended that housing applications be submitted early. In the event that on-campus housing is not available, information concerning off-campus housing will be provided upon request.

STUDENT ACTIVITIES

A wide variety of student activities are coordinated through the Student Affairs Office in the Northen Student Center. The Northen Student Center contains dining facilities, a book store, conference rooms, a post office, student offices, a dark room, a game room, counselors' offices, and other facilities. Adjacent to the Northen Student Center are the swimming pool, tennis courts and other outdoor recreational facilities.

Clubs

Clubs on campus include: Aquarium Club, Sailing Club, B-2 Club, Dive Association, Outdoor Sportsmen Club, the Propeller Club-Port of Galveston, Dormitory Council, and a Graduate Student Association.

Student Publications

Students publish a weekly newsletter, *Channel Chatter*; a yearbook, *The Voyager*; and a literary publication, *Seaspray*.

Student Government

The evolving student government of Moody College is embodied in the Student Advisory Committee to the President. This Committee serves as a direct communications link to the administration on student affairs. Members are elected each year on the basis of academic class and division. The College's seat in the Texas A&M University Student Senate is filled by a student elected from the College-at-large.

Athletics

The Intramural Program attempts to provide each student with the opportunity to participate regularly in organized activities. Teams are organized in flag football, basketball, softball, table tennis, and volleyball. Moody College also has an intercollegiate baseball team and a soccer team which competes in a local city league.

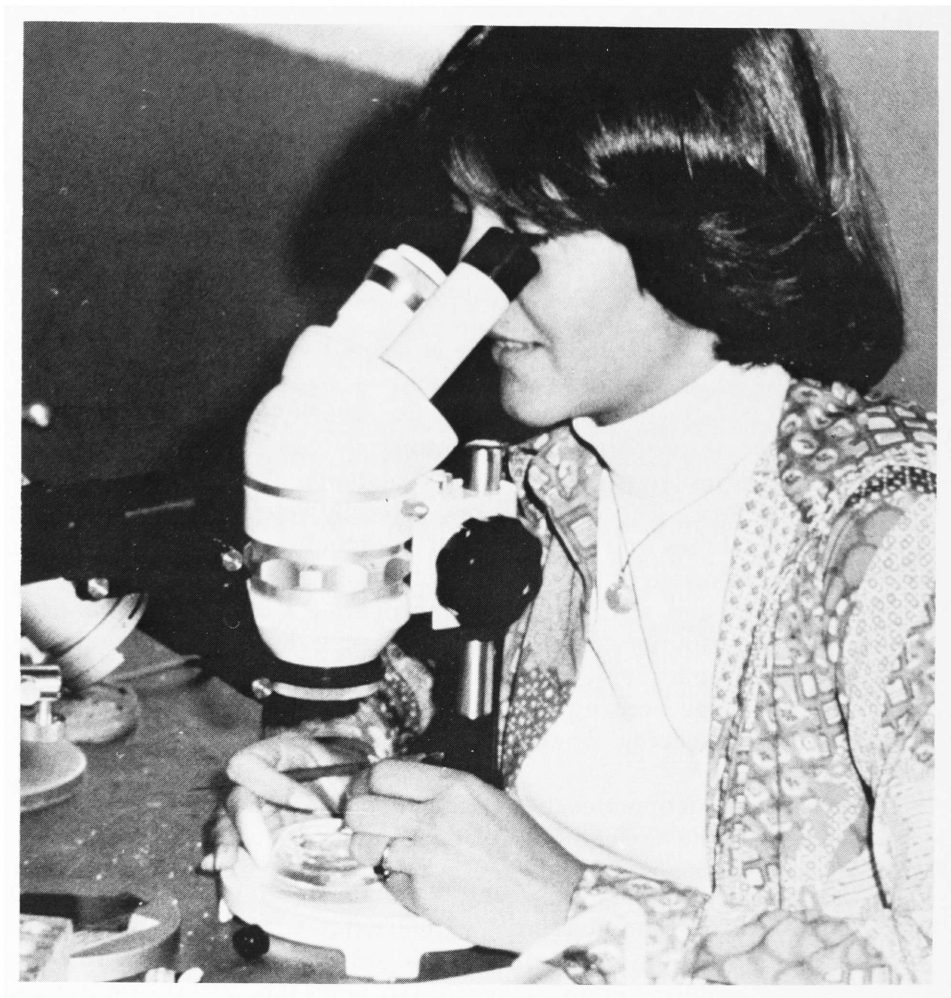
CAMPUS POLICE

The Moody College Police Office is located in the Central Services Building at the southeast corner of the campus, near the small boat berthing area. It is the agency responsible for the security and protection of all public and private property on the campus and for the enforcement on campus of all state laws and College Regulations. The personnel are all commissioned Peace Officers of Texas, carefully selected and trained to carry out their duties and conduct their operation so as to maintain the respect and confidence of the College community.

All students and staff members who operate motor vehicles and/or bicycles on the campus are required to register their vehicles with the College Police Department within 48 hours after arrival on the campus. Students in College housing must store personal firearms with the Department for safekeeping. They may be checked out at any time by their owners.

The department operates the "Lost and Found" office for the College.

Members of the College Police Department conduct safety meetings, drug abuse discussions, and engage in other educational activities when requested by recognized student groups.



DEGREE PROGRAMS

Curriculum in MARINE BIOLOGY (MARB)

This program offers training in the biology of coastal and marine environments. It is structured to provide the student with not only a strong basis of formal academic instruction, but also considerable hands-on field and collection experience by taking advantage of the coastal location of the College. A strong preparation in the sciences is recommended.

FRESHMAN YEAR

Fall Semester	(Th-Pr)	Cr	Spring Semester	(Th-Pr)	Cr
Biol. 113 Introductory Biology	(3-0)	3	Biol. 114 Introductory Biology	(3-0)	3
Biol. 123 Intro. Biology Lab	(0-3)	1	Biol. 124 Intro. Biology Lab	(0-3)	1
Chem. 101 Fund. of Chem. I	(3-0)	3	Chem. 102 Fund. of Chem. II	(3-0)	3
Chem. 111 Fund. of Chem. Lab I	(0-3)	1	Chem. 112 Fund. of Chem. Lab II	(0-3)	1
Engl. 103 Composition & Rhetoric	(3-0)	3	Engl. 104 Composition & Rhetoric	(3-0)	3
Math. 130 Mathematical Concepts — Pre-Calculus or Math. 209 Calculus	(3-0)	3	Math. 230 Mathematical Concepts — Calculus or Math. 210 Calculus	(3-0)	3
Naval Science or Elective		1	Naval Science or Elective		1
		15			15

SOPHOMORE YEAR

Chem. 227 Organic Chemistry I	(3-0)	3	Chem. 228 Organic Chemistry II	(3-0)	3
Chem. 237 Organic Chem. Lab I	(0-3)	1	Chem. 238 Organic Chem. Lab II	(0-3)	1
C. S. 203 Intro. to Computing	(3-0)	3	Hist. 106 History of U.S.	(3-0)	3
Hist. 105 History of U.S.	(3-0)	3	Phys. 202 College Physics	(3-3)	4
Phys. 201 College Physics	(3-3)	4	Pol. S. 207 State and Local Government	(3-0)	3
Pol. S. 206 American National Government	(3-0)	3	Naval Science or Elective		1
Naval Science or Elective		1			15
		18			

JUNIOR YEAR

Biol. 351 Fundamentals of Microbiology	(3-4)	4	Econ. 203 Principles of Economics	(3-0)	3
Engl. 301 Technical Writing	(3-0)	3	Gen. 301 Genetics	(4-0)	4
Geol. 101 Physical Geology	(3-2)	4	Elective (General)*		5
MARB 435 Invert. Zoology	(3-3)	4	Elective (Social Science or Humanities)*		3
Elective (Social Science or Humanities)*		3			15
		18			

SENIOR YEAR

MARB 310 Cell Biology	(3-3)	4	MARB 420 Comparative Phys.	(3-3)	4
MARB 481 Seminar in Marine Biology	(1-0)	1	MARB 425 Marine Ecology	(2-3)	3
MARB 485 Problems in Marine Biology	(3-0)	3	MARB 482 Seminar in Marine Biology	(1-0)	1
Stat. 302 Statistical Methods	(2-2)	3	MARB 450 Developmental Biology of Marine Organisms	(3-3)	4
Elective (Biology)*		3	Elective (Botany)*		4
Elective (Biology)*		3			16
		17			

*All electives must be chosen in consultation with, and approved by, the student's advisor.
Total Hours — 129

Curriculum in MARINE BIOLOGY WITH A LICENSE OPTION

This option leading toward qualifications for U.S. Coast Guard licensing is available to U.S. Maritime Service cadets in the Marine Biology program. The student who successfully completes the license program will be qualified to sit for the U.S. Coast Guard license examination for a license as a Third Mate, Steam and Motor Vessels, Oceans, Unlimited.

FRESHMAN YEAR

Fall Semester	(Th-Pr)	Cr	Spring Semester	(Th-Pr)	Cr
Biol. 113 Introductory Biology	(3-0)	3	Biol. 114 Introductory Biology	(3-0)	3
Biol. 123 Introductory Biology			Biol. 124 Introductory Biology		
Lab	(0-3)	1	Lab	(0-3)	1
Chem. 101 Fund. of Chem. I	(3-0)	3	Chem. 102 Fund. of Chem. II	(3-0)	3
Chem. 111 Fundamentals of Chem.			Chem. 112 Fundamentals of Chem.		
Lab I	(0-3)	1	Lab II	(0-3)	1
Hist. 105 History of the U.S.	(3-0)	3	Math. 230 Math Concepts/Calculus		
Math. 130 Math. Concepts/Pre-			or		
Calculus or			Math. 210 Calculus	(3-0)	3
Math. 209 Calculus	(3-0)	3	NAUT 203 Seamanship I	(2-3)	3
NAUT 103 Maritime Orientation			NAUT 204 Terrestrial Nav.	(2-2)	3
and Lifesaving	(2-3)	3			17
		17			

Summer Session

(Ten weeks at sea on the T.S. TEXAS CLIPPER)
NAUT 200 Basic Communications, Navigation and Seamanship, Credit 4

SOPHOMORE YEAR

Chem. 227 Organic Chemistry I	(3-0)	3	Chem. 228 Organic Chemistry II	(3-0)	3
Chem. 237 Organic Chemistry			Chem. 238 Organic Chemistry		
Lab I	(0-3)	1	Lab II	(0-3)	1
Engl. 103 Comp. & Rhetoric	(3-0)	3	Engl. 104 Composition & Rhetoric	(3-0)	3
NAUT 201 Naval Architecture I	(3-2)	4	NAUT 202 Naval Architecture II	(3-0)	3
NAVS 112 Naval Ships Systems I	(3-0)	3	NAUT 303 Celestial Navigation	(2-3)	3
Phys. 201 College Physics	(3-3)	4	Phys. 202 College Physics	(3-3)	4
		18			17

Summer Session

(Ten weeks at sea on the T.S. TEXAS CLIPPER)
NAUT 300 Intermediate Communications, Navigation and Seamanship, Credit 4

JUNIOR YEAR

Biol. 351 Fund. of Microbiology	(3-4)	4	Met. 302 Weather Reports/ Forecasting	(3-0)	3
C.S. 203 Intro. to Computing	(3-0)	3	MART 321 Maritime Law I	(3-0)	3
MART 302 Marine Cargo Ops. I	(3-3)	4	MART 406 Marine Cargo Ops II	(2-2)	3
NAVS 316 Naval Ops. & Analysis	(3-0)	3	NAUT 301 Seamanship II	(2-3)	3
NAVS 411 Naval Organization & Management	(3-0)	3	NAUT 304 Electronic Nav.	(2-2)	3
		17	MARB 482 Seminar in Marine Biology	(1-0)	1
					16

Summer Session
 (Ten weeks at sea on the T.S. TEXAS CLIPPER)
 NAUT 400 Advanced Communications, Navigation & Seamanship, Credit 4

SENIOR YEAR

License Prep.(4-0)	R	Gen. 301 Genetics(4-0)	4
MARB 310 Cell Biology(3-3)	4	Hist. 106 History of United States ... (3-0)	3
MARB 435 Marine Invertebrate Zoology(3-3)	4	MARB 420 Comparative Physiology(3-3)	4
NAUT 302 Seamanship III(1-3)	2	MARB 450 Developmental Biology of Marine Organisms(3-3)	4
NAUT 404 Advanced Navigation(2-3)	3	NAVS 210 Naval Ships Systems II ..(3-0)	3
Pol. S. 206 American National Government(3-0)	3		18
Stat. 302 Statistical Methods(2-2)	3		

19

NOTE: The license option in the Marine Biology curriculum is open only to U.S. Maritime Service cadets.
 Total Hours — 151

**Curriculum in
 MARINE ENGINEERING
 (MARE)**

The Marine Engineering program emphasizes the theory, design, operation and maintenance of maritime power plants and associated equipment. Engineering theory and practice are coordinated by relating classroom study to the student's practical experience aboard the **T/S TEXAS CLIPPER**. Thorough preparation in mathematics, sciences and basic and applied engineering subjects is recommended for students pursuing this degree program.

An option leading toward U.S. Coast Guard licensing is available to U.S. Maritime Service cadets through the Marine Engineering curriculum. The student who successfully completes the license program will be qualified to sit for the U.S. Coast Guard license examination for a license as a Third Assistant Engineer, Steam and Motor Vessels, Unlimited Horsepower.

FRESHMAN YEAR

Fall Semester	(Th-Pr)	Cr	Spring Semester	(Th-Pr)	Cr
Chem. 101 Fund. of Chem. I(3-0)		3	Chem. 102 Fund. of Chem. II(3-0)		3
Chem. 111 Fund. of Chem. Lab I ... (0-3)		1	Chem. 112 Fund. of Chem. Lab II ... (0-3)		1
E.D.G. 105 Engineering Graphics ... (0-6)		2	E.D.G. 106 Engineering Design Graphics(0-6)		2
Enl. 103 Composition & Rhetoric... (3-0)		3	Enl. 203 Intro. to Literature(3-0)		3
MARE 101 Engineering Analysis(0-3)		1	MARE 105 Engr. Mechanics I(3-0)		3
Math. 104 Analytic Geometry(3-0)		3	Math. 210 Calculus(3-0)		3
Math. 209 Calculus(3-0)		3	NAVS 112 Naval Ship Systems ¹ ... (3-0)		3

16

18

Summer Session
 (Ten weeks at sea on the T.S. TEXAS CLIPPER)
 MARE 200 Basic Operations, Credit 4

SOPHOMORE YEAR

E.T. 309 Machine Prod. Tech.(0-3)	1	E.T. 310 Machine Prod. Tech.(0-3)	1
Hist. 105 History of the U.S.(3-0)	3	Hist. 106 History of the U.S.(3-0)	3
MARE 206 Engr. Mechanics II(3-0)	3	MARE 207 Electricity & Magnetism(3-2)	4
MARE 209 Mechanics of Materials ..(3-0)	3	MARE 303 Marine Thermodynamics .(3-0)	3
Math. 307 Calculus(3-0)	3	MARE 310 Engr. Computation(3-0)	3
Phys. 219 Electricity(3-3)	4	Math 308 Differential Equations(3-0)	3
	17		17

Summer Session
 (Ten weeks at sea on the T.S. TEXAS CLIPPER)
 MARE 300 Intermediate Operations, Credit 4

JUNIOR YEAR

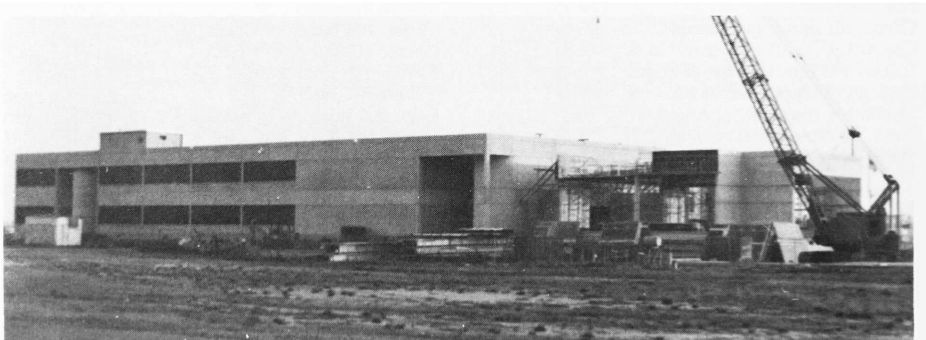
Econ. 203 Principles of Economics(3-0)	3	MARE 308 Electrical Machinery(3-2)	4
MARE 210 Mar. Construction Mat. ..(3-2)	4	MARE 410 Marine Power Plants(2-2)	3
MARE 304 Marine Thermodynamics(3-0)	3	M.E. 344 Fluid Mechanics(3-0)	3
MARE 307 Electrical Circuits(3-2)	4	MARE 305 Intro. to Marine Nuclear Engr.(3-3)	4
Elective ²	3	Elective ²	3
	17		17

Summer Session
 (Ten weeks at sea on the T.S. TEXAS CLIPPER)
 MARE 400 Advanced Operations, Credit 4

SENIOR YEAR

License Prep.(4-0)	R	MARE 412 Ship Struct. & Stability(3-0)	3
MARE 301 Fluid Mech. & Heat Trans.(3-0)	3	MARE 415 Intro. to MARE Systems Design(3-0)	3
MARE 411 Marine Mech. Design Tech.(3-0)	3	MARE 416 Engineering Lab(0-4)	1
MARE 414 Ship Automation(4-0)	4	Ocn. 401 Intro. to Oceanography(3-0)	3
Pol. S. 206 American Nat. Gov't.(3-0)	3	Technical Elective	3
Elective ²	3	Elective ²	3
	16		16

NOTES: 1. NAUT 103 for Coast Guard license candidates.
 2. NAVS 210, 315, 316, and 411 for Coast Guard license candidates. If the Naval Science sequence is not elected, then one of these electives must be Pol. S. 207.
 All electives must be chosen in consultation with, and approved by, the student's advisor.
 The license option of the Marine Engineering curriculum is open only to U.S. Maritime Service cadets.
 Total hours: License Option — 146
 Non-License Option — 134



Curriculum in MARINE SCIENCES (MARS)

This program takes advantage of the coastal location of the College to provide the student with extensive hands-on experience in addition to a solid base of formal academic instruction in the science of the coastal, estuarine, and marine environments. This curriculum emphasizes mathematics, life sciences, physical sciences and earth sciences.

FRESHMAN YEAR

Fall Semester	(Th-Pr)	Cr	Spring Semester	(Th-Pr)	Cr
Biol. 113 Introductory Biology	(3-0)	3	Biol. 114 Introductory Biology	(3-0)	3
Biol. 123 Introductory Biology Lab	(0-3)	1	Biol. 124 Introductory Biology Lab	(0-3)	1
Chem. 101 Fund. of Chemistry I	(3-0)	3	Chem. 102 Fund. of Chem. II	(3-0)	3
Chem. 111 Fund. of Chemistry Lab I	(0-3)	1	Chem. 112 Fund. of Chemistry Lab. II	(0-3)	1
Engl. 103 Composition I Rhetoric	(3-0)	3	Engl. 104 Composition & Rhetoric	(3-0)	3
Math. 104 Analytic Geometry	(3-0)	3	Math. 209 Calculus	(3-0)	3
Naval Science or Elective		1	Naval Science or Elective		1
		15			15

SOPHOMORE YEAR

Chem. 227 Organic Chemistry I	(3-0)	3	Chem. 228 Organic Chemistry II	(3-0)	3
Chem. 237 Organic Chemistry Lab I	(0-3)	1	Chem. 238 Organic Chemistry Lab II	(0-3)	1
Hist. 105 History of U.S.	(3-0)	3	C. S. 203 Intro. to Computing	(3-0)	3
Math. 210 Calculus	(3-0)	3	Hist. 106 History of U.S.	(3-0)	3
Phys. 201 College Physics	(3-3)	4	Phys. 202 College Physics	(3-3)	4
Pol. S. 206 American Nat'l. Gov't	(3-0)	3	Pol. S. 207 State & Local Gov't.	(3-0)	3
Naval Science or Elective		1	Naval Science or Elective		1
		18			18

JUNIOR YEAR

Engl. 301 Technical Writing	(3-0)	3	Econ. 203 Principles of Economics	(3-0)	3
Geog. 210 Marine Geography	(3-0)	3	C.S. 204 Computers & Programming	(3-0)	3
Geol. 101 Physical Geol.	(3-2)	4	MARS 310 Field Methods	(1-6)	3
Electives*		6	MARS 440 Marine Biology	(3-3)	4
		16	Met. 301 Atmospheric Sciences	(3-0)	3
			Electives*		3
					19

SENIOR YEAR

MASE 375 Science of Fluids	(3-0)	3	MARS 485 Problems in Marine Sciences	(3-0)	3
MARS 481 Seminar in Marine Sciences	(2-0)	1	Ocn. 410 Intro. to Physical Ocn.	(2-0)	2
Ocn. 440 Intro. to Chem. Ocn.	(2-0)	2	Ocn. 430 Intro. to Geol. Ocn.	(2-0)	2
Stat. 302 Statistical Methods	(2-2)	3	Electives*		9
Electives*		9			16
		18			

Total Hours — 135

*All electives must be chosen in consultation with, and approved by, the student's advisor.

Curriculum in MARINE SCIENCES WITH A LICENSE OPTION

This option leading toward a U.S. Coast Guard license is available to U.S. Maritime Service cadets in the Marine Sciences program. The student who successfully completes the license program will be qualified to sit for the U.S. Coast Guard license examination for a license as a Third Mate, Steam and Motor Vessels, Oceans, Unlimited.

FRESHMAN YEAR

Fall Semester	(Th-Pr)	Cr	Spring Semester	(Th-Pr)	Cr
Biol. 113 Introductory Biology	(3-0)	3	Biol. 114 Intro. Biology	(3-0)	3
Biol. 123 Introductory Biology Lab.	(0-3)	1	Biol. 124 Intro. Biol. Lab	(0-3)	1
Engl. 103 Composition & Rhetoric	(3-0)	3	Engl. 104 Comp. & Rhetoric	(3-0)	3
Hist. 105 Hist. of U.S.	(3-0)	3	Math. 209 Calculus	(3-0)	3
Math. 104 Analytic Geometry	(3-0)	3	NAUT 203 Seamanship I	(2-3)	3
NAUT 103 Mar. Orientation & Lifesaving	(2-3)	3	NAUT 204 Terrestrial Navigation	(2-2)	3
16			16		

Summer Session

(Ten weeks at sea on the T.S. TEXAS CLIPPER)
NAUT 200 Basic Communications, Navigation & Seamanship, Credit 4

SOPHOMORE YEAR

Chem. 101 Fund. of Chem. I	(3-0)	3	Chem. 102 Fund. of Chem. II	(3-0)	3
Chem. 111 Fund. of Chem. Lab I	(0-3)	1	Chem. 112 Fund. of Chem. Lab. II	(0-3)	1
Math. 210 Calculus	(3-0)	3	C.S. 203 Intro. to Computing	(3-0)	3
NAUT 210 Naval Architecture I	(3-2)	4	NAUT 202 Naval Architecture II	(3-0)	3
NAVS 112 Naval Ships Systems	(3-0)	3	NAUT 303 Celestial Navigation	(2-3)	3
Phys. 201 College Physics	(3-3)	4	Phys. 202 College Physics	(3-3)	4
18			18		

Summer Session

(Ten weeks at sea on the T.S. TEXAS CLIPPER)
NAUT 300 Intermediate Communications, Navigation & Seamanship, Credit 4

JUNIOR YEAR

Engl. 301 Technical Writing	(3-0)	3	MARS 310 Field Methods in MARS	(1-6)	3
Geol. 101 Physical Geology	(3-2)	4	MART 321 Maritime Law I	(3-0)	3
MART 302 Cargo I	(3-3)	4	Met. 302 Weather Report/Forec.	(3-0)	3
Pol. S. 206 Am. Nat'l. Gov't.	(3-0)	3	NAUT 301 Seamanship II	(2-3)	3
Stat. 302 Statistical Methods	(2-2)	3	NAUT 304 Electronic Navigation	(2-2)	3
			NAVS 316 Nav. Op. & Analysis	(3-0)	3
17			18		

Summer Session

(Ten weeks at sea on T.S. TEXAS CLIPPER)
NAUT 400 Advanced Communications, Navigation & Seamanship, Credit 4
MARS 485 Problem in Marine Science, Credit 3

SENIOR YEAR

License Prep.	(4-0)	R	Hist. 309 Am. Military Hist.	(3-0)	3
MARS 481 Sem.in Marine Science	(2-0)	1	MARS 440 Marine Biology	(3-3)	4
MART 406 Cargo II	(2-2)	3	NAVS 210 Naval Ships Systems II	(3-0)	3
NAUT 302 Seamanship III	(1-3)	2	NAVS 411 Organization & Mgmt.	(3-0)	3
NAUT 404 The Navigator	(2-3)	3	Ocn. 410 Intro. to Physical Ocn.	(2-0)	2
Ocn. 440 Intro. to Chem. Ocn.	(2-0)	2	Ocn. 430 Intro. to Geol. Ocn.	(2-0)	2
Elective*	(3-0)	3			
14			17		

NOTE: The license option in the Marine Sciences curriculum is open only to U.S. Maritime Service cadets.

Total Hours — 148

*All electives must be chosen in consultation with, and approved by, the student's advisor.

**Curriculum in
MARINE TRANSPORTATION
(MART)**

This program combines studies in the humanities and sciences with instruction and training in maritime disciplines to provide the U.S. Maritime Service cadet with a broad-based education. The student who successfully completes the license program will be qualified to sit for the U.S. Coast Guard license examination for a license as a Third Mate, Steam and Motor Vessels, Oceans, Unlimited.

**Marine Transportation
License Option**

FRESHMAN YEAR

Fall Semester	(Th-Pr)	Cr	Spring Semester	(Th-Pr)	Cr
Chem. 106 General Chemistry	(3-0)	3	Engl. 104 Comp. & Rhetoric	(3-0)	3
Chem. 116 Gen. Chem. Lab.	(0-3)	1	Mgmt. 105 Intro. to Business	(3-0)	3
E.D.G. 105 Engineering Graphics ..	(0-6)	2	Math. 104 Analytic Geometry	(3-0)	3
Engl. 103 Comp. & Rhetoric	(3-0)	3	NAUT 203 Seamanship I	(2-3)	3
MARE 101 Engineering Analysis	(0-3)	1	NAUT 204 Terrestrial Navigation	(2-2)	3
Math. 106 Plane & Spherical Trig.	(4-0)	4	NAVS 112 Naval Ships Systems	(3-0)	3
NAUT 103 Mar. Orientation & Lifesaving	(2-3)	3			18
		17			

Summer Session

(Ten weeks at sea on the T.S. TEXAS CLIPPER)

NAUT 200 Basic Communications, Navigation & Seamanship, Credit 4

SOPHOMORE YEAR

Econ. 203 Principles of Economics	(3-0)	3	Econ. 204 Principles of Economics	(3-0)	3
Hist. 105 History of the U.S.	(3-0)	3	Math. 210 Calculus	(3-0)	3
Math. 209 Calculus	(3-0)	3	NAUT 301 Seamanship II	(2-3)	3
Met. 302 Weather Reports & Forecasting	(3-0)	3	NAUT 303 Celestial Navigation	(2-3)	3
Phys. 201 College Physics	(3-3)	4	Phys. 202 College Physics	(3-3)	4
		16			18

Summer Session

(Ten weeks at sea on the T.S. TEXAS CLIPPER)

*NAUT 300 Intermediate Communications, Navigation & Seamanship, Credit 4

JUNIOR YEAR

Econ. 321 Internl. Trade & Finance	(3-0)	3	MARE 310 Engr. Computations	(3-0)	3
Hist. 106 History of U.S.	(3-0)	3	MART 321 Maritime Law I	(3-0)	3
MART 301 Ocean Trans. I	(4-0)	4	MART 406 Marine Cargo Ops. II	(2-2)	3
MART 302 Marine Cargo Ops. I	(3-3)	4	NAUT 202 Naval Architecture II	(3-0)	3
NAUT 201 Naval Architecture I	(3-2)	4	NAUT 304 Electronic Navigation	(2-2)	3
		18	NAVS 316 Naval Operations & Analysis	(3-0)	3
					18

Summer Session
(Ten weeks at sea on the T.S. TEXAS CLIPPER)
*NAUT 400 Advanced Communications, Navigation, & Seamanship, Credit 4

SENIOR YEAR

License Prep.(4-0)	R	B. Ana 303 Statistical Methods(3-3)	4
Engl. 301 Technical Writing(3-0)	3	MART 416 Port Ops.,	
MART 421 Maritime Law II(3-0)	3	Admin. and Econ.(3-0)	3
NAUT 302 Seamanship III(1-3)	2	NAVS 210 Naval Ships Systems II ... (3-0)	3
NAUT 404 The Navigator(2-3)	3	Ocn. 401 Intro. to Oceanography(3-0)	3
NAVS 411 Prin. of Naval		Pol. S. 206 American Natl. Govt.(3-0)	3
Org. and Mgmt.(3-0)	3		
	14		16

Total Hours — 145

**Curriculum in
MARITIME ADMINISTRATION
(MARA)**

This curriculum, administered by the Department of Marine Transportation, is designed to prepare the graduate for work in the administration of the marine and maritime industries or governmental organizations involved in coastal, marine, and maritime affairs. The curriculum provides a strong foundation in management, finance, marketing, accounting, and economics. This foundation then becomes the basis for courses that specialize in various aspects of marine and maritime industries such as port operations, brokerage and chartering, maritime law, and inland waterways.

FRESHMAN YEAR

First Semester	(Th-Pr)	Cr	Second Semester	(Th-Pr)	Cr
Chem. 101 Fund. Chem. I(3-0)		3	Chem. 102 Fund. of Chem. II(3-0)		3
Chem. 111 Fund. of Chem. Lab I ..(0-3)		1	Chem. 112 Fund. of Chem. Lab II ..(0-3)		1
Engl. 103 Composition and			Engl. 104 Composition and		
Rhetoric(3-0)		3	Rhetoric(3-0)		3
Hist. 105 History of U.S.(3-0)		3	Hist. 106 History of U.S.(3-0)		3
Math. 130 Mathematical Concepts ..(3-0)		3	Math. 230 Mathematical		
NAUT 103 Maritime Orientation and			Conc./Calculus(2-2)		3
Lifesaving(2-3)		3	Psy. 107 General Psychology(3-0)		3
*P.E. 101 Required P.E.		1	*P.E. 102 Required P.E.		1
Naval Science or Elective**		1	Naval Science or Elective**		1
		18			18

SOPHOMORE YEAR

First Semester			Second Semester		
Acct. 229 Intro. Accounting(4-0)		4	Acct. 230 Intro. Accounting(3-0)		3
Econ. 203 Principles of Economics ..(3-0)		3	Econ. 204 Principles of Economics ..(3-0)		3
Geog. 210 Marine Geography(3-0)		3	¹ MARA 211 Legal and Social Environment		
Geol. 101 Physical Geology(3-2)		4	of Business(3-0)		3
*P.E. 201 Required P.E.		1	MARE 310 Engineering		
Naval Science or Elective**		1	Computations(3-0)		3
		16	Met. 302 Weather Reports and		
			Forecasting(3-0)		3
			*P.E. 202 Required P.E.		1
			Naval Science or Elective**		1
					17

JUNIOR YEAR

First Semester		Second Semester	
Econ. 321 International Trade and Finance	(3-0) 3	B. Ana 303 Statistical Methods	(3-3) 4
² MARA 363 The Organizing Process	(3-0) 3	Fin. 341 Business Finance	(3-0) 3
MART 301 Ocean Transportation I	(4-0) 4	MART 304 Ocean Transportation II	(3-0) 3
NAUT 201 Naval Architecture	(3-2) 4	Mktg. 321 Marketing	(3-0) 3
Pol. S. 206 American National Government	(3-0) 3	Pol. S. 207 State and Local Government	(3-0) 3
	17		16

SENIOR YEAR

First Semester		Second Semester	
B. Ana. 304 Bus. Cycles and Bus. Meas.	(3-0) 3	Econ. 311 Money and Banking	(3-0) 3
Engl. 301 Tech. Writing	(3-0) 3	⁶ MARA 402 Inland Waterways	(3-0) 3
³ MARA 401 Brokerage and Chartering	(3-0) 3	⁷ MARA 460 Mgmt. Systems and Control	(3-0) 3
⁴ MARA 422 Personnel Mgmt.	(3-0) 3	⁸ MARA 466 Mgmt. Policy	(3-0) 3
⁵ MARA 423 Organization Behavior	(3-0) 3	MART 416 Port Ops., Admin. and Econ.	(3-0) 3
MART 421 Maritime Law II	(3-0) 3	Pol. S. 340 Intro to Publ. Admin. ..	(3-0) 3
	18		18

Total Hours — 138

*Required Physical Education is presently waived for Moody College because of a lack of facilities.

**All electives must be chosen in consultation with, and approved by, the student's advisor.

¹Crosslisted with Mgmt. 211

²Crosslisted with Mgmt. 363

³New Course

⁴Crosslisted with Mgmt. 422

All crosslistings are with Texas A&M University courses.

⁵Crosslisted with Mgmt. 423

⁶New Course

⁷Crosslisted with Mgmt. 460

⁸Crosslisted with Mgmt. 466



Curriculum in MARITIME SYSTEMS ENGINEERING (MASE)

The Maritime Systems Engineering curriculum concentrates on fundamental engineering design in combination with humanities, sciences, and various marine subjects. A general core of courses in humanities, sciences, and engineering during the freshmen and sophomore years provides a foundation for specialization in one of the options during the junior and senior years. The program is designed to train students for work or further study in any marine-oriented engineering field. A thorough preparation in mathematics, sciences and basic and applied engineering subjects is recommended for students pursuing this degree program.

FRESHMAN YEAR

Fall Semester	(Th-Pr)	Cr	Spring Semester	(Th-Pr)	Cr
Chem. 101 Fund. of Chem. I	(3-0)	3	Chem. 102 Fund. of Chem. II	(3-0)	3
Chem. 111 Fund. of Chem. Lab. I	(0-3)	1	Chem. 112 Fund. of Chem. Lab II	(0-3)	1
E.D.G. 105 Engineering Graphics	(0-6)	2	E.D.G. 106 Eng. Design Graphics	(0-6)	2
Engl. 103 Composition & Rhetoric	(3-0)	3	MARE 105 Eng. Mechanics I	(3-0)	3
MARE 101 Engineering Analysis	(0-3)	1	Math. 210 Calculus	(3-0)	3
Math. 104 Analytic Geometry	(3-0)	3	MASE 100 Intro. to M.S. Eng.	(2-3)	3
Math. 209 Calculus	(3-0)	3	Naval Science or Elective*		1
Naval Science or Elective*		1			16
		17			

SOPHOMORE YEAR

Econ. 203 Principles of Econ.	(3-0)	3	MARE 210 Mar. Const. Materials	(3-2)	4
MARE 206 Eng. Mechanics II	(3-0)	3	MARE 303 Marine Thermodynamics	(3-0)	3
MARE 209 Mech. of Materials	(3-0)	3	MARE 310 Eng. Computations	(3-0)	3
Math. 307 Calculus	(3-0)	3	Math. 308 Differential Equations	(3-0)	3
NAUT 201 Naval Architecture I	(3-2)	4	Phys. 219 Electricity	(3-3)	4
Naval Science or Elective*		1	Naval Science or Elective*		1
		17			18

JUNIOR YEAR

Engl. 203 Intro. to Literature	(3-0)	3	C.E. 462 Hydromechanics	(3-0)	3
Hist. 105 History of the U.S.	(3-0)	3	Hist. 106 History of the U.S.	(3-0)	3
Option Requirements**		13	Option Requirements**		12
		19			18

SENIOR YEAR

Engl. 301 Technical Writing	(3-0)	3	O.E. 401 Measurements in the Ocean	(2-6)	4
O.E. 300 Dynamics of Waves and Structures	(3-0)	3	Pol. S. 207 State & Local Gov't	(3-0)	3
Pol. S. 206 American Nat'l Gov't	(3-0)	3	Option Requirements**		9
Option Requirements**		6			16
		15			

*All electives must be chosen in consultation with, and approved by, the student's advisor.

**Option Requirements — There are three options to the Maritime Systems Engineering Degree Program — Ocean Engineering, Coastal Structures, and Hydromechanics.

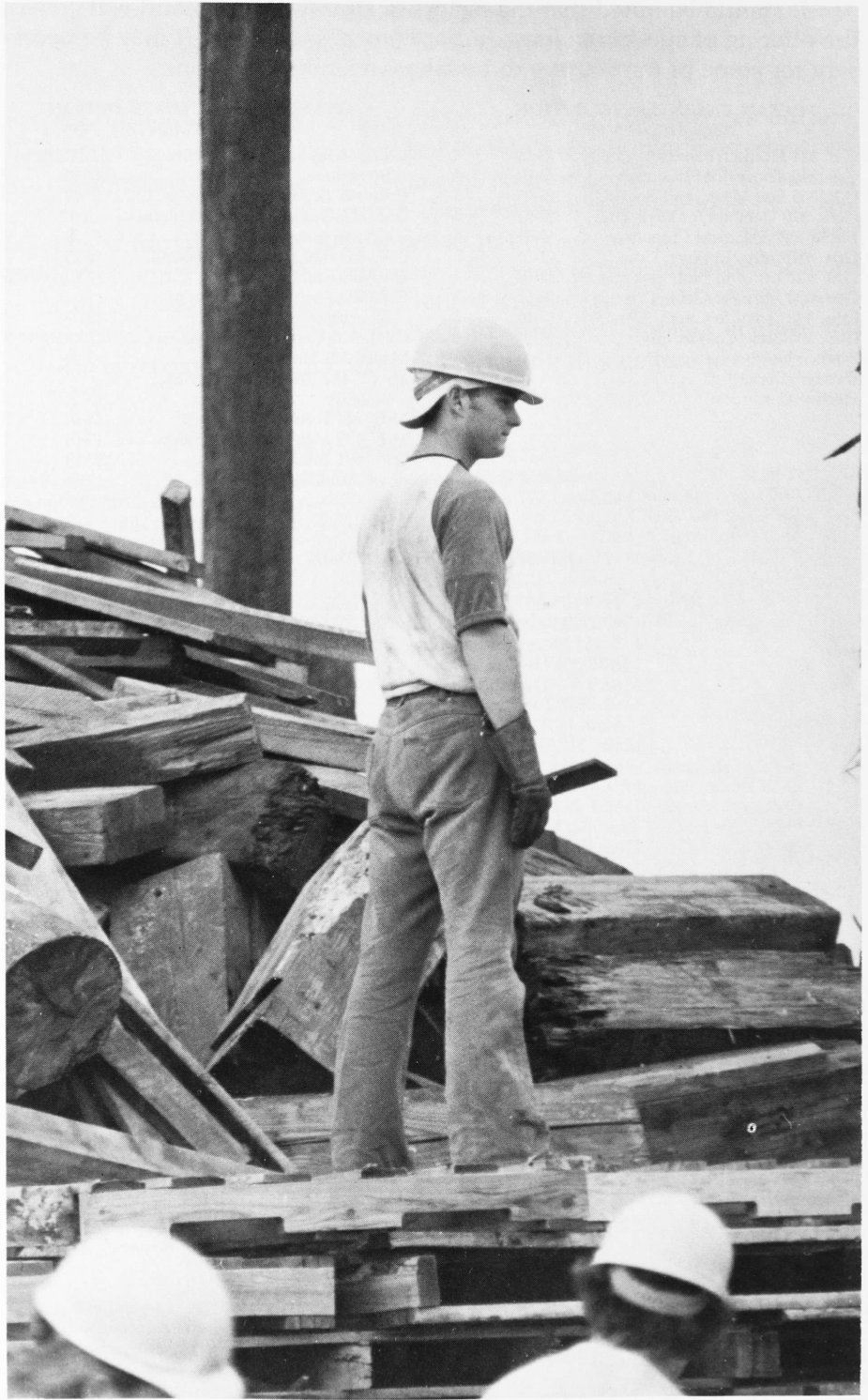
Total hours — 136

It should be noted that the factors of supply and demand will govern the offering of specific courses and options at Galveston. It may be necessary for some of the courses to be taken at College Station.

OCEAN ENGINEERING OPTION REQUIREMENTS		COASTAL STRUCTURES OPTION REQUIREMENTS	
C.E. 311 Fluid Dynamics(3-2)	4	C.E. 344 Reinforced Concrete Structures(2-3)	3
C.E. 345 Theory of Structures(3-0)	3	C.E. 345 Theory of Structures(3-0)	3
C.E. 365 Soil Mech. and Found.(2-2)	3	C.E. 346 Design of Members and Connections(2-3)	3
Geol. 320 Geology for Civil Eng.(2-2)	3	C.E. 365 Soil Mech. and Found.(2-2)	3
MARE 307 Electrical Circuits(3-2)	4	C.E. 435 Soil Engineering(2-3)	3
Ocn. 410 Intro. to Phys. Ocn.(2-0)	2	C.E. 483 Anal. and Design of Structures(2-3)	3
Ocn. 420 Intro. to Biol. Ocn.(2-0)	2	Geol. 320 Geology for Civil Engrs.(2-2)	3
Ocn. 430 Intro. to Geol. Ocn.(2-0)	2	MARE 301 Heat Transfer(3-0)	3
Ocn. 440 Intro. to Chem. Ocn.(2-0)	2	MARE 412 Ship Structures and Stability(3-0)	3
O.E. 400 Basic Coastal Eng.(3-0)	3	M.E. 344 Fluid Mechanics(3-0)	3
Science Elective (Biology)*	3	M.E. 459 Mechanical Vibration(3-0)	3
Elective (Social)*	3	Ocn. 401 Intro. to Ocn.(3-0)	3
Elective (Technical)*	6	Phys. 220 Modern Physics(3-3)	4
	40		40

HYDROMECHANICS OPTION REQUIREMENTS

C.E. 311 Fluid Dynamics(3-2)	4
C.E. 336 Fluid Dynamics Lab(0-2)	1
E.E. 461 Electronic Instrumentation .(2-3)	3
MARE 301 Heat Transfer(3-0)	3
MARE 307 Electrical Circuits(3-2)	4
Math. 311 Topics in Applied Math I(3-0)	3
Math. 312 Topics in Applied Math II(3-0)	3
M.M. 460 Intro. to Contin. Mech.(3-0)	3
NAUT 202 Naval Architecture II(3-0)	3
Ocn. 410 Intro. to Physical Ocn(2-0)	2
Phys. 220 Modern Physics(3-3)	4
Free Electives*	7
	40



COURSE DESCRIPTIONS

All undergraduate courses offered at the College are described on the following pages and are listed by departments, arranged alphabetically.

The course numbering scheme is as follows:

101 to 199, courses primarily open to freshmen.

201 to 299, courses primarily open to sophomores.

301 to 399, courses primarily open to juniors.

401 to 499, courses primarily open to seniors.

Figures in parentheses following the number of the courses indicate the clock hours per week devoted to theory and practice, respectively. Theory includes recitations and lectures; practice includes work done in the laboratory, shop, drawing room or field. The unit of credit is the semester hour, which involves one hour of theory, or from two to four hours of practice per week for one semester of 16 weeks.

When courses are cross-listed, credit cannot be received for both courses.

Any course may be withdrawn from the session offerings in case the number of registrations is too small to justify the offering of the course.

ACCOUNTING

(Acct.)

229. Introductory Accounting. (4-0). Credit 4. Analysis, recording, and reporting of business transactions; partnership and corporation accounting; analysis and use of financial statements.

230. Introductory Accounting. (3-0). Credit 3. Continuation of Acct. 229. Use of budgets; introduction to cost accounting; cost control techniques and methods of measuring performance. Not open to students majoring in accounting. Prerequisite: Acct. 229.

BIOLOGY

(Biol.)

113. Introductory Biology. (3-0). Credit 3. Survey of structures and functions common to living forms in general. The course includes the principles of cell biology, regulation of growth and development, reproduction, evolution, and ecology. Laboratory (Biol. 123) is optional.

114. Introductory Biology. (3-0). Credit 3. Survey of major groups of living forms emphasizing their special structures and functions which enable them to exist. Survey includes prokaryotes, fungi, lower and higher plants, animals and man. Laboratory (Biol. 124) is optional. Prerequisite: Biol. 113.

123. Introductory Biology Laboratory. (0-3). Credit 1. Incorporates demonstrations and student participation covering study of rat and frog anatomy, and development and function of all major organs of body.

Demonstrates principles of genetics and heredity. Effects of pollution and other environmental changes. Prerequisite: Biol. 113 or registration therein.

- 124. Introductory Biology Laboratory. (0-3). Credit 1.** Laboratory supporting Biology 114. Prerequisite: Biol. 113.
- 351. Fundamentals of Microbiology. (3-4). Credit 4.** Basic microbiology; comparative morphology, taxonomy, pathogenesis, ecology, physiology of microorganisms. Prerequisites: Chem. 227, 237; three hours of biology; or approval of instructor.
- 485. Biological Problems Credit 1 to 4.** Problems in various phases of plant, animal and bacteriological science. Prerequisites: Junior classification; approval of Department Head.

BUSINESS ANALYSIS

(B.Ana.)

- 303. Statistical Methods. (3-3). Credit 4.** The collection, tabulation and presentation of numerical data. A study of sampling, estimation of averages and variation, probability and error, hypothesis testing and correlation. Prerequisite: Math. 230.
- 304. Business Cycles and Business Measurement. (3-0). Credit 3.** Empirical and statistical study of economic fluctuations: business barometers and forecasting; statistical techniques for preparing individual organizational forecasts and long-range plans. Prerequisite: B.Ana. 303 or equivalent.
- 485. Problems. Credit 1 to 3 each semester.** Directed study of selected problems in an area of business analysis not covered in other courses. Prerequisite: Approval of Department Head.

CHEMISTRY

(Chem.)

- 101. Fundamentals of Chemistry I. (3-0). Credit 3.** Introduction to modern theories of chemical bonding; chemical reactions; states of matter; solutions and colloids; stoichiometry and equilibrium.
- 102. Fundamentals of Chemistry II. (3-0). Credit 3.** Theory and applications of oxidation-reduction systems; complex equilibria; descriptive inorganic and organic chemistry; introduction to chemical instrumentation; selected topics in biochemistry and nuclear chemistry. Prerequisite: Chem. 101.
- 106. General Chemistry. (3-0). Credit 3.** Survey course in chemistry for students needing a cultural subject; not a basis for advanced work.
- 111. Fundamentals of Chemistry Laboratory I. (0-3). Credit 1.** Introduction to methods and techniques of chemical experimentation with emphasis on qualitative and semi-quantitative procedures applied to investigative situations. Prerequisite: Chem. 101 or registration therein.

- 112. Fundamentals of Chemistry Laboratory II. (0-3). Credit 1.** Introduction to analytical and synthetic methods and to quantitative techniques to both inorganic and organic compounds with emphasis on an investigative approach. Prerequisites: Chem. 101, 111; Chem. 102 or registration therein.
- 116. General Chemistry Laboratory. (0-3). Credit 1.** Survey laboratory course in chemistry for students needing a cultural subject; not a basis for advanced work.
- 227. Organic Chemistry I. (3-0). Credit 3.** Introduction to chemistry of compounds of carbon. Study of general principles and their application to various industrial and biological processes. Prerequisite: Chem. 102 or equivalent.
- 228. Organic Chemistry II. (3-0). Credit 3.** Continuation of Chem. 227. Prerequisite: Chem. 227.
- 237. Organic Chemistry Laboratory I. (0-3). Credit 1.** Operations and techniques of elementary organic chemistry laboratory. Preparation, reactions and properties of representative organic compounds. Prerequisite: Chem. 227 or registration therein.
- 238. Organic Chemistry Laboratory II. (0-3). Credit 1.** Continuation of Chem. 237. Prerequisites: Chem. 228, 237 or registration therein.
- 383. Chemistry of Environmental Pollution. (3-0). Credit 3.** Chemical pollutants in the air, in water and on land: their generation, chemical reactivity, action on environment and disappearance through chemical mechanisms. Chemistry of existing pollution abatement. Prerequisite: Chem. 228 or equivalent.
- 485. Problems. Credit 1 or more.** Introduction to research, library, and laboratory work. Prerequisites: Senior classification; approval of Department Head.

CIVIL ENGINEERING (C.E.)

- 311. Fluid Dynamics. (3-0). Credit 3.** Fluid properties; statics; kinematics; basic conservation principles of continuity, energy and momentum; similitude and hydraulic models; incompressible flow in pipes and open channels; fluid dynamic drag. Prerequisites: Math 308 or equivalent; M.E. 213 or equivalent.
- 336. Fluid Dynamics Laboratory. (0-2). Credit 1.** Introduction to laboratory techniques, calibration principles, reports and fluid measurements. Determination of fluid properties. Visualization of types of flow. Experiments in closed conduit flow of air, water and oil. Fluid drag and turbomachinery tests. Open channel and gravity wave demonstrations. Prerequisite: C.E. 311.
- 344. Reinforced Concrete Structures. (2-3). Credit 3.** Analysis and design of reinforced concrete beams, columns, slabs, and footings using elastic and ultimate strength methods. Prerequisite: C.E. 345.

- 345. Theory of Structures. (3-0). Credit 3.** Introduction to structural engineering; loads, reactions, and force systems; reactions and forces in beams, three-hinged arches, and trussed structures; moment area method applications, moment distribution method of analyzing statically indeterminate structures, forces, and reactions in bents and portals; influence lines and criteria for moving loads. Prerequisite: C.E. 205 or equivalent.
- 346. Structural Steel Design. (2-3). Credit 3.** Materials, types of members, and typical arrangements. Design of tension members, compression members, beams, and beam columns. Design of bolted connections and welded connections. Theory and practice as indicated in typical current specifications. Prerequisite: C.E. 345.
- 365. Introduction to Geotechnical Engineering. (2-2). Credit 3.** Physical properties of soils, classification systems, soil exploration, permeability, consolidation, compaction, and shear strength. Laboratory tests conducted to determine the physical and engineering soil properties needed for application in geotechnical engineering design. Prerequisite: Geol. 320.
- 435. Geotechnical Engineering Design. (2-3). Credit 3.** A design course covering prediction of settlement, analysis of the stability of slopes, prediction of bearing capacity of shallow and deep foundations, and determination of earth pressures acting on retaining structures. A general course in geotechnical engineering design for undergraduates and for graduate students not primarily interested in the geotechnical field, but desiring additional study beyond the introductory undergraduate level. Prerequisite: C.E. 365.
- 462. Hydromechanics. (3-0). Credit 3.** Fundamental concepts of a fluid; properties, and state. Fluid kinematics; finite control volume applications of basic equations for steady and unsteady systems. Fundamental differential equations of continuity and motion, ideal fluids. Boundary layer concepts. Wall turbulence; boundary layers and conduits. Dynamic similitude. Transport analogies. Prerequisite: C.E. 311 or M.E. 344.
- 483. Analysis and Design of Structures. (2-3). Credit 3.** Overall procedure of analysis and design, including functions, loads, layouts of force systems; analysis, design drafting, specifications, cost comparisons, and maintenance as applied to typical simple bridge and building structures. Prerequisites: C.E. 344; 346; 365.
- 485. Problems. Credit 1 to 3 each semester.** Research and design problems of limited scope approved on an individual basis intended to promote independent study. Results of study presented in writing. Prerequisite: Approval of Department Head.

COMPUTING SCIENCE (C.S.)

- 201. Computer Programming for Engineers. (1-0). Credit 1.** Programming using the FORTRAN language. Actual writing of typical programs and running them on the computer is emphasized.
- 203. Introduction to Computing. (3-0). Credit 3.** Algorithms, programs, and computers. FORTRAN programming and program structure. Data representation. Computer solution of numerical and nonnumerical problems using a high-level programming language.
- 485. Problems. Credit 1 to 3.** Permits work on special project in computing science. Project must be approved by Department Head. Prerequisite: Senior classification.

ECONOMICS (Econ.)

- 203. Principles of Economics. (3-0). Credit 3.** Elementary principles of economics; the economic problem, measurement and determination of national income, money and banking, theory of price. Prerequisite: Sophomore classification.
- 204. Principles of Economics. (3-0). Credit 3.** Analysis of economic aggregates, theory of production and of the firm, international economic relations and labor problems. Prerequisite: Econ. 203.
- 311. Money and Banking. (3-0). Credit 3.** Fundamental principles of money, credit, and banking and their exemplification in modern currency and banking history. Prerequisite: Econ. 204.
- 318. Economics of Labor. (3-0). Credit 3.** Study of the economics of the labor market: factors affecting the economy's demand for labor and the supply of labor; labor market problems such as unemployment and poverty; the economics of trade unions and collective bargaining. Prerequisite: Econ. 204.
- 321. International Trade and Finance. (3-0). Credit 3.** Theory of international trade, barriers to trade, balance of payments and foreign exchange analysis, current policy problems. Prerequisite: Econ. 204.
- 485. Problems. Credit 1 to 3.** Research and design of specific problem areas approved on an individual basis with the intention of promoting independent study and to supplement existing course offerings. Results of study presented in writing. Prerequisite: Approval of Department Head.
- 489. Special Topics in Economics. Credit 1 to 3.** Selected topics in an identified area of economics. Prerequisite: Approval of Instructor.

ELECTRICAL ENGINEERING

(E.E.)

- 461. Electronic Instrumentation. (2-3). Credit 3.** A course for students who are not electrical engineering majors. Concerned with applications of electronic instruments to research problems in field of measurements and control systems. Prerequisites: Math. 308; Phys. 219.
- 485. Problems. Credit 1 to 3 each semester.** Problems of limited scope approved on individual basis intended to promote independent study. Results of study will be presented in writing, and an oral presentation to staff and students will be required. Prerequisites: Senior classification; approval of Department Head.

ENGINEERING DESIGN GRAPHICS

(E.D.G.)

- 105. Engineering Graphics. (0-6). Credit 2.** Introduction to the graphical approach to the engineering design process as applied to elementary systems. Methods of graphical communications, working drawings, data analysis, technical reports, oral presentations. Introduction to team organization and creative problem solving.
- 106. Engineering Design Graphics. (0-6). Credit 2.** Introduction to engineering design with emphasis on product development and team dynamics utilizing graphical methods and descriptive geometry. Special analysis of geometric elements, vectors, data analysis and graphical applications to a variety of engineering areas. Prerequisite: E.D.G. 105.
- 485. Problems. Credit 1 to 3 each semester.** Special problems to fit needs of individual students. Prerequisite: Approval of Instructor.

ENGINEERING TECHNOLOGY

(E.T.)

- 207. Industrial Materials and Manufacturing Processes. (2-3). Credit 3.** Comprehensive study of production, processing, and use of numerous raw materials of industry. Laboratory work consists of problems involving research and experimentation.
- 308. A Study of Modern Industry. (3-0). Credit 3.** Study of political, historical, and geographical factors, including location, machinery, power, raw materials, market, and labor which have direct influence upon development and distribution of industries. Specific studies of individual industries are made such as iron, steel, paper, automobile, petroleum, cement, leather, plastics, and textiles. Prerequisite: E.T. 207 or approval of Department Head.
- 309. Machine Production Techniques. (0-3). Credit 1.** Lecture demonstrations and practice in safety, care of machines and hand tools, shop organization, cutting speeds and feeds, standard machine tool work in

- metals, single point tool grinding, layout, drilling, tapping, shaping, turning, boring, threading and milling. Prerequisite: E.D.G. 105.
- 310. Machine Production Techniques. (0-3). Credit 1.** Continuation of E.T. 309. Machining of metals with both standard and production machine tools. Manufacture of interchangeable parts, jigs, fixtures and fixed gauges. Prerequisite: E.T. 309.
- 326. Metals Technology. (2-3). Credit 3.** Design and construction of power machinery including development of plans for procedures, jigs, and fixtures; study of metallurgy, material and procedures of foundry; numerical control and advanced machine shop. Prerequisites: E.T. 207; E.T. 309.
- 429. Foremanship and Supervision. (3-0). Credit 3.** Study of supervisory duties and responsibilities in industrial organization and procedures for meeting these responsibilities. Prerequisite: Senior classification.
- 481. Seminar. (1-0). Credit 1.** Presentation of selected topics from current literature and related industrial operations in various technical areas. Films showing practical application of manufacturing and industrial processes. Lectures from industrial representatives. Prerequisite: Senior classification.
- 485. Problems. Credit 1 to 3.** Permits work in a special problem area on an individual basis with the intent of promoting independent reading, research, and study; to supplement existing course offerings or subjects not presently covered. Prerequisites: Senior classification and approval of Department Head.

ENGLISH (Engl.)

- 103. Composition and Rhetoric. (3-0). Credit 3.** Composition of short papers, with emphasis on sentence structure, paragraph development and paper organization. Analysis of expository prose.
- 104. Composition and Rhetoric. (3-0). Credit 3.** Continuation of Engl. 103. More complex methods of paper development; investigative papers; readings in prose. Prerequisite: Engl. 103 or advanced standing.
- 203. Introduction to Literature. (3-0). Credit 3.** Readings in following types: plays, stories, novels and poems, chiefly modern. Papers on readings. Prerequisite: Engl. 103 or advanced standing.
- 212. Shakespeare. (3-0). Credit 3.** Study of major plays of Shakespeare with lectures on his art, his language, and his cultural environment. Prerequisite: Completion of freshman program in English.
- 301. Technical Writing. (3-0). Credit 3.** Advanced writing in technical, scientific and business fields; reports, proposals and other papers; correspondence. Prerequisite: Junior class standing.
- 412. Shakespeare. (3-0). Credit 3.** Analysis of plays, texts, language,

dramatic theory; Shakespearean criticism and scholarship. Prerequisite: Engl. 212 or six hours of advanced literature courses.

485. Problems. Credit 1 to 3. Readings for specific needs of major or minor in English. Prerequisite: Approval of Department Head.

489. Special Topics in . . . Credit 1 to 3. Study of selected topics in an identified area of English language and literature. May be repeated for credit. Prerequisite: Approval of Instructor.

FINANCE

(Fin.)

341. Business Finance. (3-0). Credit 3. Financial practices and financial management of modern business corporations, including cash flow, planning, procurement of funds, management of long-term funds and working capital. Prerequisites: Econ. 203 and Acct. 229 or equivalent.

GENETICS

(Gen.)

301. Genetics. (4-0). Credit 4. Fundamental principles of genetics: physical basis of Mendelian inheritance, expression and interaction of genes, linkage, sex linkage, biochemical nature of genetic material and mutation. Prerequisites: Biol. 113 and Sophomore classification.

485. Problems. Credit 1 to 4 each semester. Special problems for advanced undergraduates permitting laboratory investigations of subject matter not included in established courses. Prerequisite: Gen. 301.

GEOGRAPHY

(Geog.)

201. Introduction to Human Geography. (3-0). Credit 3. A systematic comparative survey of the like climatic regions of the world and their dissimilar cultural developments. The respective roles in human geography of physical environment, race, and culture.

210. Marine Geography. (3-0). Credit 3. Introduction to the physical and cultural patterns of the coastal zones of the world. Interrelationships between the physical forms and processes and the cultural patterns will be utilized to analyze the human use and abuse of the sea.

315. Geography of the Sea. (3-0). Credit 3. Introduction to principal characteristics and problems of human use of the sea. Watercraft, exploration, fisheries, minerals, law of the sea, world shipping.

380. Workshop in Environmental Studies. (1-4). Credit 3. The study, understanding, and solution of real man-environment problems based on principles learned in the classroom. Library, laboratory, and field work carried out by individuals and in groups; reports on work accomplished. May be repeated for credit as many as three times. Prerequisite: Approval of Department Head.



485. Problems. Credit 1 to 6 each semester. Individually supervised research or advanced study on restricted areas not covered in regular courses. Prerequisite: Approval of Department Head.

GEOLOGY
(Geol.)

101. Physical Geology. (3-2). Credit 4. General principles of physical geology; structure of the earth, origin of minerals and rocks and geologic processes.

- 102. Historical Geology. (3-2). Credit 4.** Introduction to historical geology, including review of hypotheses of earth's origin, significance of fossils, origin and character of selected geologic formations, and development of North American continent. Prerequisite: Geol. 101 or 320.
- 203. Crystallography and Mineralogy. (2-6). Credit 4.** Crystallography and descriptive mineralogy. Sight recognition of crystal forms and of common minerals. Prerequisites: Chem. 102; Math. 104.
- 306. Stratigraphy and Sedimentation. (3-3). Credit 4.** Principles of stratigraphy and the origin, transportation, and deposition of sediments. Laboratory work in sampling, analyzing, and interpreting sedimentary rocks. Prerequisites: Geol. 245; 303; or approval of Department Head.
- 320. Geology for Civil Engineers. (2-2). Credit 3.** Principles of dynamic and structural geology and study of common minerals and rocks with their relationships and applications to construction, foundations, and excavation. Prerequisite: Sophomore classification in engineering.
- 485. Problems. Credit 1 to 3 each semester.** Advanced problems in geology. Prerequisite: Approval of Department Head.

HISTORY **(Hist.)**

- 105. History of the United States. (3-0). Credit 3.** English colonization; Revolution, adoption of Constitution; growth of nationalism; cotton and slavery problem; war for Southern independence; Reconstruction.
- 106. History of the United States. (3-0). Credit 3.** Since Reconstruction; new social and industrial problems; rise of progressive movement; United States emergence as world power; World War I; reaction and New Deal; World War II; contemporary America.
- 307. History of American Sea Power. (3-0). Credit 3.** Development of American sea power from the 18th Century to the present.
- 309. American Military History Since 1901. (3-0). Credit 3.** Intensive study of American military experience from colonial days to present, emphasizing causes, nature and effect of wars in which the United States has participated. Close attention given to effect of war on American history. Prerequisites: Hist. 106; Junior classification.
- 318. International Developments Since 1918. (3-0). Credit 3.** General survey of world politics since close of World War I. Particular attention given to problems and ideologies of great powers of Europe and to those factors and conditions which explain present political tendencies and policies.
- 485. Problems. Credit 1 to 3.** Seminar instruction in selected fields of History not covered in depth by other courses. Reports, extensive reading, and comprehensive final examination required. Prerequisite: Approval of Department Head.

MANAGEMENT

(Mgmt.)

- 105. Introduction to Business. (3-0). Credit 3.** Provides overall picture of business operation; includes analysis of specialized fields within business organization; identifies role of business in modern society.
- 211. Legal & Social Environment of Business. (3-0). Credit 3.** Role of law in business and society. Legal reasoning, methods of interacting, social policy and legal institutions. Prerequisite: Sophomore classification.
- 363. The Organizing Process. (3-0). Credit 3.** Theories and practices of organizing and managing business organizations and human resources to achieve production and human objectives in a complex, changing economy. Prerequisite: Junior classification.
- 422. Personnel Problems of Industry. (3-0). Credit 3.** Relation of worker to his employer. Job finding and interviewing, occupational trends, functions and structure of personnel departments. Problems of contemporary industrial development. Prerequisite: Mgmt. 363 or Approval of Instructor.
- 423. Human Relations in Business. (3-0). Credit 3.** Study of problems arising from association of people in work environments. Prerequisites: Psy. 107; Mgmt. 363, or Approval of Instructor.
- 460. Management Systems and Control. (3-0). Credit 3.** A study of man-machine systems, with emphasis on the development and use of computer simulation models to provide planning and control information to management. Prerequisites: B.An. 317; Mgmt. 363.
- 466. Management Policy. (3-0). Credit 3.** Policy problems of business organization. Integrates fields of marketing, finance, accounting, economics, law and insurance into decision making. Prerequisites: Mgmt. 363 and Senior classification.
- 489. Special Topics in Management. Credit 1 to 3.** Selected topics in an identified area of Management. Prerequisite: Approval of Instructor.



MARINE BIOLOGY (MARB)

- 310. Introduction to Cell Biology. (3-3). Credit 4.** Introduction to the basic principles of cell structure and function. Molecular components of the cell, methods for study of the cell, structural bases of the cell cytoplasm and cytoplasmic organelles and their structure and function with particular emphasis on nucleus will be studied. Prerequisites: Biol. 113 or 114 and Chem. 228.
- 311. Ichthyology. (2-3). Credit 3.** Designed to familiarize student with fresh-water and marine fishes. Subject will be mainly systematic, but evolution, ecology, life history, and economics of more important species will be treated. Prerequisite: Biol. 318 or W.F.S. 302 or equivalent; cross-listed with W.F.S. 311.
- 312. Field Ichthyology. (1-6). Credit 3.** Field and laboratory studies on identification and ecology of fresh-water and marine fishes of Texas. Field trips required. Prerequisite: W.F.S. 311. Cross-listed with W.F.S. 312.
- 408. Biology of the Algae. (3-3). Credit 4.** Morphology, taxonomy, ecology, and phylogeny of the fresh water and marine algae. Prerequisites: Biol. 113 and Biol. 114 or approval of instructor. Cross-listed with Biology 408.
- 415. Invertebrate Fisheries. (2-2). Credit 3.** Study of the fisheries of invertebrates as opposed to invertebrate culture. History, present importance and future outlook of invertebrates in the fisheries of various countries. Emphasis on United States and Texas. Prerequisite: A course in invertebrate zoology. Cross-listed with W.F.S. 415.
- 418. Fisheries Population Dynamics. (2-2). Credit 3.** Study of recruitment, growth, natural mortality and exploitation of populations with emphasis on their implications to management of commercial fisheries. Prerequisites: Stat. 201 or 302; Math. 230; or approval of instructor. Cross-listed with W.F.S. 418.
- 420. Comparative Physiology. (3-3). Credit 4.** A study of the principles of animal physiology. Vertebrates and invertebrates will be studied with particular emphasis on marine species. Basic concepts of osmotic and ionic regulation, excretion, respiration, metabolism, nervous integration, muscles, hormones and homeostasis will be considered. Prerequisites: 12 hours, biological sciences; Chem. 228.
- 425. Marine Ecology. (2-3). Credit 3.** Relationship between various marine environments and their inhabitants; intra and interspecific relationships between organisms; structure and function among marine communities. Laboratory emphasis is placed on study of living material and natural habitats in the Gulf of Mexico. Prerequisites: Biol. 114 and 124 or approval of instructor.
- 435. Invertebrate Zoology. (3-3). Credit 4.** General biology of marine invertebrate animals with special emphasis on morphology, evolution

and systematics. Laboratory will stress the studies of local fauna. Prerequisites: Biol. 114 and 124 or approval of instructor. Cross-listed with Biol. 435.

- 450. Developmental Biology of Marine Organisms. (3-3). Credit 4.** Principles of developmental biology and descriptive and analytical embryology of selected marine invertebrates and fishes. Prerequisites: MARB 435 or Biol. 435.
- 481. Seminar in Marine Biology. (1-0). Credit 1.** Problem oriented discussion session — topics and reports selected for current relevance in marine biology. May be repeated once only for credit. Prerequisite: Approval of Department Head.
- 482. Seminar in Marine Biology. (1-0). Credit 1.** Problem oriented discussion session — topics and reports selected for current relevance in marine biology. May be repeated once only for credit. Prerequisite: Approval of Department Head.
- 485. Problems in Marine Biology. Credit 1 to 6 per semester.** Special topics and problems suited to analysis by individuals or small groups concerning aspects of marine biology. Prerequisite: Approval of Department Head.
- 489. Special Topics in Marine Biology. Credit 1 to 4.** Selected topics in identified areas of Marine Biology. Prerequisite: Approval of Instructor.

MARINE ENGINEERING (MARE)

- 101. Engineering Analysis. (0-3). Credit 1.** Methods available for solution of engineering problems. Introduction to numerical analysis, FORTRAN, use of hand-held calculators.
- 105. Engineering Mechanics I. (3-0). Credit 3.** Basic concepts of force, mass, and acceleration are covered for particles and rigid bodies. Center of gravity, analysis of structures, friction, moments of inertia are stressed. Prerequisite: Math 210 or registration therein.
- 200. Basic Operations. Credit 4.** Represents practical application of student's classroom studies while at sea in training ship during sea-training period. Student required to complete several projects relating to engineering plant of ship.
- 202. Introduction to Marine Engineering Operations. Credit 4.** Introduction to the various aspects of shipboard marine engineering operations during the summer training cruise for students not intending to obtain Coast Guard License. Prerequisite: NAVS 112.
- 203. Diesel Engine Technology. (2-2). Credit 3.** Basic principles of two and four-stroke cycle diesel engines; intake, scavenging and exhaust systems; injection systems; starting and reversing methods; cooling and lubricating systems; engine room layout in modern motor vessels.

- 206. Engineering Mechanics II. (3-0). Credit 3.** Dynamics; graphical & algebraic solutions of relative linear velocities and acceleration; kinetics; dynamics of translation and rotation; work; energy; impact; momentum. Prerequisite: MARE 105.
- 207. Electricity & Magnetism. (3-2). Credit 4.** Introduction to basic electricity, electric & magnetic circuits studied under D-C and A-C steady-state condition. Complex numbers, phasor algebra, and three-phase circuits introduced. Prerequisite: Math. 210.
- 209. Mechanics of Materials. (3-0). Credit 3.** Fundamental principles underlying analysis and design of machine members subjected to various combinations of loading. Emphasis given to theoretical and empirical basis for material specification formulas as found in United States Coast Guard Marine Engineering Regulations. Prerequisite: MARE 105.
- 210. Marine Construction Materials. (3-2). Credit 4.** Analysis of properties of solid materials as related to marine engineering design and applications. Introduction to metallurgical processes. Prerequisites: Chem. 102; MARE 209.
- 216. Kinematic Drawing. (0-3). Credit 1.** Problems and drafting involving linkages, cams, centros, relative linear velocities, and relative acceleration. Prerequisite: MARE 206 or registration therein.
- 300. Intermediate Operations. Credit 4.** Training program for second sea training period. Sea projects required of each student under supervision of officer-instructors. Lifeboat and safety training included.
- 301. Heat Transfer. (3-0). Credit 3.** Study of conduction, convection, and radiation separately and in combination. Steady and unsteady states, mathematical treatments, graphical and numerical solutions, dimensional analysis. Prerequisites: MATH 308; M.E. 344 (concurrent registration).
- 303. Marine Thermodynamics. (3-0). Credit 3.** Energy concepts. First and second law of thermodynamics. Carnot and Rankine principles and reversible heat cycles. Properties and processes of vapors, vapor-power cycles and vapor refrigeration cycles. Prerequisite: MARE 206.
- 304. Marine Thermodynamics. (3-0). Credit 3.** Properties and processes of perfect gases, gas compression cycles, gas power cycles, air refrigeration cycles, and processes involving mixture of gases and vapors. Prerequisite: MARE 303.
- 305. Introduction to Marine Nuclear Engineering. (3-3). Credit 4.** Preparation for advanced work in nuclear propulsion in field of marine nuclear engineering. Basic nuclear physics, ship reactors, nuclear instrumentation and radiation health protection. Prerequisites: Physics 219 and Math 210.
- 306. Marine Refrigeration and Air Conditioning. (2-2). Credit 3.** Theory and practice of mechanical refrigeration. Specific topics include: thermodynamics of Reverse Carnot cycle; vapor compression cycles; thermal, physical and chemical properties of refrigerants. Descriptions of

shipboard ventilation and air conditioning.

- 307. Electrical Circuits. (3-2). Credit 4.** Study in fundamental electrical theory as it applies to understanding of behavior, mode of operation, applications, and maintenance of electrical equipment as used aboard ship. Measurements of circuit phenomena, including fundamental amplifiers and rectifiers. Prerequisites: Math 210; Phys. 219; MARE 207.
- 308. Electrical Machinery. (3-2). Credit 4.** Study of principal types of electrical machines aboard ship including their characteristics, applications, and control devices. Laboratory work includes actual operation and testing of electrical machinery and equipment of type installed aboard ships. Prerequisite: MARE 207.
- 310. Engineering Computation. (3-0). Credit 3.** Techniques of problems solving using digital computers; concepts and properties of algorithms; solution of computational problems using algorithms defined by FORTRAN. Flow diagrams and program preparation. Prerequisites: Math. 210; MARE 101.
- 400. Advanced Operations. Credit 4.** Training program for third sea training period. At end of this period each student will have achieved knowledge and will have demonstrated his ability to take complete charge of a modern marine power plant while underway at sea.
- 401. Nuclear Propulsion I. (3-0). Credit 3.** Study of reactor mechanics with emphasis placed on fluid hydraulics, reactor core design, reactor fuels and their properties, shielding, construction and operation of related auxiliary machinery.



- 403. Marine Steam and Gas Turbines. (2-2). Credit 3.** Analysis of gas turbine cycles, high speed gas flow, turbine and compressor kinematics and thermodynamics. Construction of marine steam turbines and their operating principles as applied to main propulsion and auxiliary use aboard ship. Reciprocating engines.
- 405. Steam Generators. (2-2). Credit 3.** Characteristics, historical development, and classification of marine boilers. Construction specifications of U.S. Coast Guard Marine Engineering Regulations. Principles of combustion and boiler heat balance when using fuel oil. Water conditioning and procedures in operation and maintenance.
- 407. Marine Electronics Technology. (3-2). Credit 4.** Study of the theory of operations and characteristics of electron devices and circuits with emphasis on marine applications. Prerequisites: MARE 307; Math. 308.
- 408. Nuclear Propulsion II. (2-2). Credit 3.** Study of reactor controls and instrumentation including basic electronics, design, installation, and maintenance of various types of control systems. Survey of nuclear propulsion and marine industry. Advantage taken of shipyard nuclear facilities in Galveston area for practical field trips.
- 410. Marine Power Plants. (2-2). Credit 3.** Discussion of the selection and application of systems for marine propulsion and auxiliary systems. Analysis of propulsion and auxiliary system requirements. Prerequisite: MARE 304.
- 411. Marine Mechanical Design Technology. (3-0). Credit 3.** Analysis of the design and application of components in marine mechanical systems. Prerequisites: MARE 206; MARE 209.
- 412. Ship Structures and Stability. (3-0). Credit 3.** Introduction to the naval architecture involved in ship design. Topics include geometry of the ship, evaluation of stability, motions in waves, and a study of ships' structures. Prerequisites: MARE 209; M.E. 344.
- 414. Ship Automation I. (4-0). Credit 4.** Study of closed loop devices including electrical, hydraulic, and mechanical systems. Ship application of automation, both current and future. Survey of electron devices, instrumentation, and control. Prerequisites: MARE 308; Math. 308.
- 415. Introduction to Marine Engineering Systems Design. (3-0). Credit 3.** Application of systems engineering techniques in the solution of marine engineering problems regarding reliability, economic, and environmental considerations. Prerequisite: MARE 410.
- 416. Engineering Laboratory I. (0-4). Credit 1.** Analysis of fundamentals of machinery dynamics, heat transfer, fluid friction losses in piping systems, steam nozzles. Steam reciprocating and diesel engines are studied. Prerequisite: Senior classification.
- 417. Engineering Laboratory II. (0-4). Credit 1.** Performance analysis of turbine machinery, air conditioning systems, basic electron-mechanical and pneumatic control systems. Prerequisite: Senior classification.

- 418. Fundamentals of Radiation Control. (3-0). Credit 3.** Radiation control from the standpoint of protection, use of instrumentation, dosimetry, contamination control, waste disposal, radiation accidents and governmental regulations with emphasis on shipboard applications. Prerequisite: MARE 401.
- 420. Ship Automation II. (3-2). Credit 4.** Continuation of MARE 414. Use of frequency response and S-plane methods in control systems design. Laboratory work includes simulation of control systems design. Prerequisites: MARE 407; 414.
- 485. Problems. Credit 1 to 4 each semester.** Special problems in marine engineering not covered by any other course in the curriculum. Work may be in either theory or laboratory. Prerequisite: Approval of Department Head.

MARINE SCIENCES (MARS)

- 310. Field Methods in Marine Science. (1-6). Credit 3.** The field experience will focus primarily on the techniques of documenting collected materials, the methods of reconnaissance and the mapping of traverses in the major coastal environments. Sampling and recording techniques, interview procedures and the use of base maps and remotely sensed imagery will be introduced. Prerequisite: 15 hours of Marine Sciences or the equivalent.
- 320. Coastal Zone Environments. (3-0). Credit 3.** Genesis, description, classification, and geographical distribution of the major coastal zone environments and the processes responsible for both construction and destruction. The interactions of man with both "natural" and "modified" environments will be surveyed.
- 440. Marine Biology. (3-3). Credit 4.** Introduction to biology of common organisms inhabiting bays, beaches, and near-shore oceanic waters, with special reference to Gulf of Mexico biota. Lectures, laboratory studies and field trips will emphasize classification and economic aspects of marine organisms. Prerequisites: Biol. 113, 114, 123, 124 or equivalent; Approval of instructor. Cross-listed with Biol. 440.
- 481. Seminar. (1-0). Credit 1.** Problem oriented discussion session. Topics and reports selected for current relevance. May be repeated once only for credit. Prerequisite: Approval of Department Head.
- 485. Problems. Credit 1 to 6 each semester.** Special topics and problems suited to analysis by individuals or small groups concerning aspects of marine sciences. Prerequisite: Approval of Department Head.
- 489. Selected Topics. Credit 1 to 4.** Selected topics in an identified area of Marine Sciences. Prerequisite: Approval of Instructor.

MARINE TRANSPORTATION (MART)

- 301. Ocean Transportation I. (4-0). Credit 4.** Concerned with shipping in world economy. Production of service, including shipping process, equipment, labor, conferences, rate-making, role of government. Buying of service by shipper, finance of shipping, international conventions and treaties.
- 302. Marine Cargo Operations I. (3-3). Credit 4.** Objectives and problems with break-bulk cargo handling during loading, discharging and in-transit carriage. Requirements of special refrigerated and dangerous cargos. Heavy lift operations with conventional cargo gear and its restraints. Cargo loss prevention, safety and related documentation, as well as log book entries. Modern cargo concepts — containerization, roll-on roll-off, LASH and others. Maximum cargo efficiency with relation to space, cargo gear, crew and labor costs. Practical cargo gear use and cargo observations during lab periods.
- 304. Ocean Transportation II. (3-0). Credit 3.** Covers marine insurance problems and cases and how they relate directly to a ship's officer. Hull, cargo and personal injury cases are examined from the officer's and insurers' points of view. Introduction to Admiralty Law and the court process for seamen's rights and ship owner's privileges. Actual hearings and trials are observed to complete the background. Prerequisite: MART 301 or Approval of Department Head.
- 321. Maritime Law I. (3-0). Credit 3.** Provides a thorough foundation in basic laws governing vessel navigation — with particular emphasis on International and U.S. Inland Rules for the prevention of collision at sea, and the safety of life at sea convention. Prerequisite: NAUT 200.
- 402. Ocean Transportation III. (4-0). Credit 4.** Covers essential principles of Admiralty and Maritime Law, advanced principles of marine insurance. Takes up in detail standard forms and Institute Clauses. Attention paid to nuclear maritime insurance activities. Principles of International Law are discussed. Prerequisite: MART 304.
- 406. Marine Cargo Operations II. (2-2). Credit 3.** Principles and practice of bulk liquid and gas handling and carriage by water craft. Theoretical and practical problems involved in loading, stowing and discharging of petroleum, chemical, elevated temperature and cryogenic cargoes. Attention paid to marine pollution abatement, personnel safety and fire-fighting techniques and systems.
- 416. Port Operations, Administration and Economics. (3-0). Credit 3.** Concept of the port and methods of intermodal transfer are described. Port functions divided and analyzed along business lines — economics, management, finance, accounting and marketing. Case studies. Prerequisites: Econ. 321; Management 105; or approval of Department Head.
- 421. Maritime Law II. (3-0). Credit 3.** Essential principles of admiralty, general maritime and international law as applicable to the marine indus-



try and ocean shipping. Discusses the evolution and state of the law concerning maritime liens, ship mortgages, rights of seamen and harbor workers, limitation of liability, bills of lading and cargo carriage, collision liability, general average, marine salvage, charter parties and international rights and responsibilities of ships and shipping.

481. Seminar. (0-2). Credit 1. Problem oriented discussion session. Topics and reports selected for relevance to current problems. Prerequisite: Approval of Department Head.

485. Problems. Credit 1 to 4 each semester. Directed study in problems in Marine Transportation not covered by other courses in the department. Prerequisite: Senior classification or approval of Department Head.

489. Special Topics in Marine Transportation. Credit 1 to 3. Study of selected topics in an identified area of Marine Transportation and Nautical Science. Prerequisite: Approval of Instructor.

MARITIME ADMINISTRATION (MARA)

211. Legal & Social Environment of Business. (3-0). Credit 3. Role of law in business and society, including legal reasoning, methods of interacting, social policy and legal institutions; law from judicial decisions; law by administrative agencies; regulation of business activity; introduction to anti-trust law; legal aspects of mergers, consolidations, acquisitions, and securities regulation; consumer protection and environmental laws affecting business; methods of resolving disputes. Cross-listed with Mgmt. 211.

- 363. The Organizing Process. (3-0). Credit 3.** Management as an academic discipline is defined and its evolution sketched. Goal setting; planning, controlling, and decision making; models for thinking about organizations; organization design; organization change; models for understanding individual behavior; job performance and job satisfaction; interpersonal behavior, motivation and leadership, behavior in work groups; and careers in management. Prerequisite: Junior classification. Cross-listed with Mgmt. 363.
- 401. Brokerage and Chartering. (3-0). Credit 3.** Studies in the operational and legal environment of ship brokerage and chartering, including responsibilities of owner and charterer under various charter forms; American, British, and Canadian acts governing charters and bills of lading; and rules and regulations concerning loading and discharging. Prerequisite: Senior classification or approval of Department Head.
- 402. Inland Waterways. (3-0). Credit 3.** Studies the development of inland waterways of the U.S. and federal policies relating to them. Areas of interest include port and terminal development, competition with other transportation forms, manpower, rates, environmental concerns, and the impact of waterway systems on regional economies. Prerequisite: Senior classification or approval of Department Head.
- 422. Personnel Management. (3-0). Credit 3.** Relationship of the personnel function to the whole organization, including manpower planning; recruitment; selection including employment application, interviewing, testing, reference checks, probationary period; placement; separation; compensation; training; performance appraisal; labor relations; and safety. Prerequisite: MARA 363 or approval of instructor. Cross-listed with Mgmt. 422.
- 423. Organization Behavior. (3-0). Credit 3.** Analysis of problems arising from the interaction of people in work environments, including individual differences; perception; learning; personality; group dynamics, functions, and goals; norms, reciprocity, inter-group and intra-group relations; motivation; leadership; roles; conflict and change. Prerequisites: Psy. 107 and MARA 363 or approval of instructor. Cross-listed with Mgmt. 423.
- 460. Management Systems and Control. (3-0). Credit 3.** Applications of management planning and control techniques to complex organizational problems and management decision-making tasks, including socio-technical work systems and man-machine systems; basic systems theory and concepts; basic control theory and concepts; systems design process; systems analysis techniques such as simulation models and sensitivity analysis; information technology and management information systems; program and project management; and special-purpose planning and control systems. Prerequisite: MARA 363 or approval of instructor. Cross-listed with Mgmt. 460.
- 466. Management Policy. (3-0). Credit 3.** Policy problems of business

organizations, including top management problem-solving and decision-making; planning; appraising the business environment; the firm's financial, human and physical resources; forecasting, developing objectives and strategies; evaluating alternatives; implementing strategies; measuring results; profitability and social responsibility. Use of case analysis. Prerequisites: MARA 363 and senior classification. Cross-listed with Mgmt. 466.

MARITIME SYSTEMS ENGINEERING (MASE)

- 100. Introduction to Maritime Systems Engineering. (2-3). Credit 3.** Activities and career opportunities in the ocean and maritime industries, including lectures, seminars, and field trips with emphasis on outside speakers and industry contact. Desalination, ocean mining, fish farming, pollution, pipelines, submersibles and habitats, fixed and floating platforms, high-speed marine transportation.
- 375. Science of Fluids. (3-0). Credit 3.** Classical fluid mechanics with emphasis on fundamental physical principles. Fluid statics, principles of fluid motion, frictionless flow, surface waves, viscous flows, turbulence, molecular basis of fluid mechanics. Prerequisite: Math. 210.
- 411. Advanced Hydrodynamics I. (3-0). Credit 3.** Hydrodynamics of ship design, semi-submersible platforms, underwater pipelines, hydrofoils, etc. Prerequisite: C.E. 462.
- 412. Advanced Hydrodynamics II. (3-0). Credit 3.** Continuation of MASE 411 with emphasis on design calculations. Prerequisite: MASE 411.
- 485. Problems in Maritime Systems Engineering. Credit 1 to 4 per semester.** Directed study on selected current problems in the ocean and/or maritime industry. Offered to enable individuals or groups to undertake and complete with credit some specialized investigation not covered by other courses. Prerequisite: Approval of Department Head.
- 489. Special Topics in Maritime Systems Engineering. Credit 1 to 4.** Selected topics in identified areas of Maritime Systems Engineering. Prerequisite: Approval of Instructor.

MARKETING (Mktg.)

- 321. Marketing. (3-0). Credit 3.** Study of institutions, processes, and problems involved in transferring goods from producers to consumers, with emphasis on economic and social aspects. Prerequisite: Econ. 204.
- 322. Consumer Behavior. (3-0). Credit 3.** Acquaints student with individual and group behavior of people performing in consumer role. Behavioral science data employed to discuss and explain consumer behavior. Emphasis placed on integrating this data into current marketing practices. Prerequisite: Mktg. 321.

- 344. Physical Distribution Systems. (3-0). Credit 3.** Considers role of retailers, wholesalers and producers in the physical distribution functions performed in the marketing channel. Prerequisite: Mktg. 321.
- 345. Promotion Strategy. (3-0). Credit 3.** Emphasizes planning, executing and controlling of any demand-stimulation practices. Consideration given to advertising, personal selling, packaging, publicity, and sales promotion. Prerequisite: Mktg. 321.
- 445. Marketing Research. (3-0). Credit 3.** Nature and uses of marketing research in business. Methods of collecting and interpreting marketing information and specific application to problems in marketing. Prerequisites: B.Ana. 303; Mktg. 321.
- 485. Problems. Credit 1 to 3 each semester.** Directed study on selected problems in the area of marketing not covered in other courses. Prerequisites: Senior classification; approval of Department Head; Mktg. 321; 2.0 GPR in major and university course work.

MATHEMATICS

(Math.)

- 104. Analytical Geometry. (3-0). Credit 3.** Rectangular coordinates; equations and sets of points; lines, circles and other conic sections; polar coordinates; solid geometry; introduction to vectors and matrices.
- 106. Plane and Spherical Trigonometry. (4-0). Credit 4.** Definitions of trigonometric functions; evaluation of functions of special angles; fundamental relations; solution of triangles; trigonometric reductions; angular measure; functions of composite angle; logarithms, inverse trigonometric functions; trigonometric equations; basic ideas and formulas of spherical trigonometry; solution of spherical triangles, application to terrestrial and astronomical triangles.
- 130. Mathematical Concepts — Pre-Calculus. (3-0). Credit 3.** Functions and their graphs. Analytic geometry; linear and quadratic functions, polynomial functions. Trigonometric functions. Exponents and logarithmic functions. Inverse trigonometric functions. Prerequisite: High school trigonometry.
- 209. Calculus. (3-0). Credit 3.** Variables, functions and limits. Derivatives and differentials for polynomials and applications. Integration of polynomials and applications. Differentiation of algebraic functions. Prerequisite: Math. 104.
- 210. Calculus. (3-0). Credit 3.** Differentiation and integration involving transcendental functions together with applications. Improper integrals, approximate integration, indeterminate forms, mean value theorems. Prerequisite: Math. 209.
- 230. Mathematical Concepts — Calculus. (2-2). Credit 3.** Limits and continuity. Rates of change, slope. Differentiation: the derivative, maxima and minima, techniques. Integration of the definite and indefinite integral techniques. Curve fitting. Prerequisite: Math. 130 or equivalent.

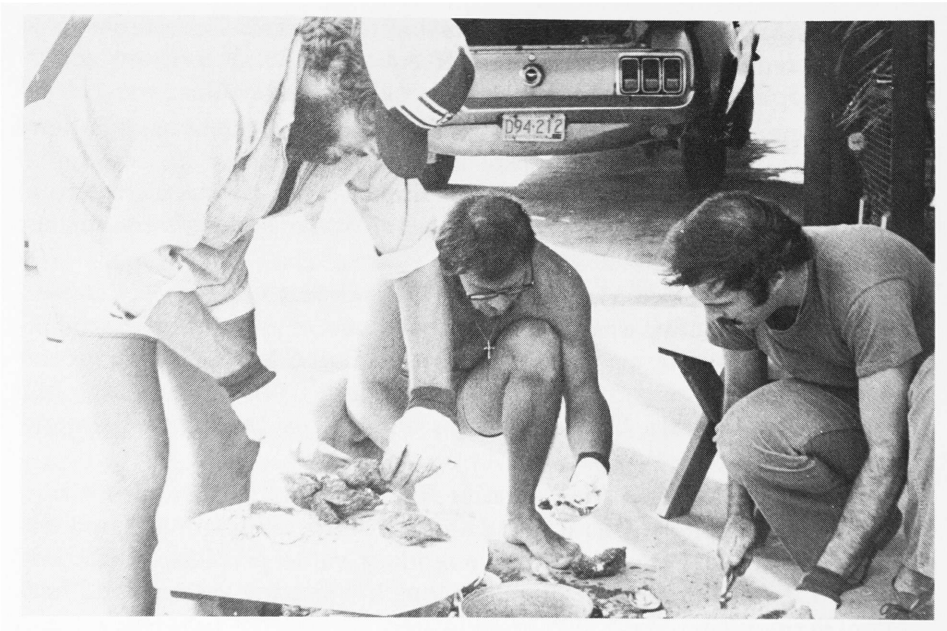
- 307. Calculus. (3-0). Credit 3.** Introduction to series; Taylor's series; partial differentiation; linear differential equations with constant coefficients; applications. Prerequisite: Math. 122 or Math. 210.
- 308. Differential Equations. (3-0). Credit 3.** Linear equations, solutions in series, solution using Laplace transforms, systems of differential equations, introduction to numerical methods, partial differential equations and boundary value problems. Fourier series. Prerequisites: Math. 307 or Math 253 or equivalent.
- 311. Topics in Applied Mathematics I. (3-0). Credit 3.** Matrices, determinants, systems of linear equations, eigenvalues, eigenvectors, diagonalization of symmetric matrices, exposure to numerical methods. Vector analysis, including normal derivative, gradient, divergence, curl, line and surface integrals, Gauss', Green's and Stokes' theorems. Prerequisite: Math. 307 or equivalent.
- 312. Topics in Applied Mathematics II. (3-0). Credit 3.** Fourier series, Gibbs' phenomenon, Fourier integral and transform, orthogonal functions. Partial differential equations and boundary value problems, including Sturm-Liouville systems and applications to vibrating systems and heat flow. Prerequisite: Math. 308 or equivalent.
- 485. Problems. Credit 1 to 4.** Special problems in mathematics not covered by any other course in the curriculum. Work may be in either theory or laboratory. Prerequisite: Approval of Department Head.

MECHANICAL ENGINEERING (M.E.)

- 344. Fluid Mechanics. (3-0). Credit 3.** Application of laws of statics, buoyancy, stability, energy, and momentum to behavior of ideal and real fluids. Study of dimensional analysis and similitude and their application to flow through ducts and piping. Dynamic lift and related problems. Prerequisites: C.S. 201; M.E. 213 and M.E. 323 or M.E. 327; or equivalent.
- 459. Mechanical Vibrations. (3-0). Credit 3.** Basic theory of vibrating systems with single and multiple degrees of freedom and principles of transmission and isolation of vibrations. Prerequisites: Math. 308; M.E. 213; or equivalent.

MECHANICS AND MATERIALS (M.M.)

- 460. Introduction to Continuum Mechanics. (3-0). Credit 3.** Concentrates on the tensor formulation of the underlying physical and mathematical principles pertinent to continuous mass media. Special attention is directed toward solid mechanics and fluid mechanics and their interrelationships. Consideration is limited to Cartesian tensors. Prerequisite: Senior classification.



METEOROLOGY

(Met.)

- 301. Atmospheric Science. (3-0). Credit 3.** Structure, energy, and motions of the atmosphere; prediction; climate; applications; atmospheres of the other planets. Prerequisite: Approval of instructor.
- 302. Weather Reports and Forecasting. (3-0). Credit 3.** Global weather reporting, codes and data transmission, radio-facsimile weather maps. Features of circulation, synoptic weather analysis, avoiding storms at sea.

NAUTICAL SCIENCE

(NAUT)

- 103. Maritime Orientation & Lifesaving. (2-3). Credit 3.** Introduction to the maritime industry, the ships, the seaman and the purpose of the U. S. Merchant Marine. Shipboard nomenclature, cargoes, and recent trends in the marine industry. Practical lifeboat and lifesaving training for certification as Lifeboatman by the U.S. Coast Guard.
- 200. Basic Communications, Navigation, and Seamanship. Credit 4.** Practical application of student's classroom studies aboard training ship during first training cruise. Student completes basic projects in communications, navigation, seamanship and rules of the road.
- 201. Naval Architecture I. (3-2). Credit 4.** Description of ship as self-sustaining unit. Shipbuilding nomenclature and dimensions, types of construction and classification of merchant ships. Classification societies, shipbuilding materials and methods, and structural components of ship.

202. **Naval Architecture II. (3-0). Credit 3.** Ship's lines drawing and form calculations; principles of flotation and buoyancy; inclining experiments, free liquids, transverse stability; motion of ships in waves, seaway and dynamic loads, ship structure tests.
203. **Seamanship I. (2-3). Credit 3.** Intermediate lifeboat, lifesaving and firefighting procedures. Practical use in lab of manila lines, wire, splicing, knots, block and tackle, cargo gear, anchoring, mooring and steering gear operation. Introduction to the International Rules of the Road. Projects aboard merchant, research, and offshore oil vessels in the ports of Galveston and Texas City.
204. **Terrestrial Navigation. (2-2). Credit 3.** Fundamentals of piloting, chart construction and development, aids to navigation, useful publications, principles of magnetism and the magnetic compass, great circle, Mercator, and middle latitude sailing.
300. **Intermediate Communications, Navigation, and Seamanship. Credit 4.** Practical application of student's classroom studies aboard training ship during second training cruise. Student completes intermediate projects in communications, navigation, seamanship and rules of the road. Thorough study made of U.S. Public Health requirements in first aid.
301. **Seamanship II. (2-3). Credit 3.** Mechanical appliances aboard ship, accident prevention, vessel sanitation, Marine Inspection laws and regulations, Search and Rescue Procedures, communications.
302. **Seamanship III. (1-3). Credit 2.** Principles and methods of propulsion and steering of ships. Ship handling in narrow channels and heavy seas, docking, undocking, mooring and towing are stressed.
303. **Celestial Navigation. (2-3). Credit 3.** Study of the full range of celestial navigation. Survey of nautical astronomy, sight reduction, sextants, compass error determination, and solutions of the navigational triangle by various methods.
304. **Electronic Navigation. (2-2). Credit 3.** Theory, operation, and application of marine electronic navigation aids and systems, including the marine gyro compass, radio direction finder, Loran, Omega, Decca, satellite, echo sounder, Doppler and integrated navigation systems. Special emphasis on marine radar theory, operation and interpretation. Student examined for U.S. Coast Guard certification as "Radar Observer."
400. **Advanced Communications, Navigation, and Seamanship. Credit 4.** Represents practical application of student's classroom studies aboard training ship during third training cruise. Student completes advanced projects in communications, navigation, seamanship and Rules of the Road.
401. **Seamanship IV. (2-3). Credit 3.** Principles and methods of propulsion and steering of ships. Ship handling in narrow channels and heavy seas, docking, undocking, anchoring, mooring and towing are stressed.

Also covered is the new equipment introduced into the industry in recent years.

- 404. The Navigator. (2-3). Credit 3.** Intensive, in-depth review of the principles of electronic, celestial and terrestrial navigation in preparation for the U.S. Coast Guard examination for Third Mate.

NAVAL SCIENCE (NAVS)

- 110. Introduction to Naval Science. (0-2). Credit 1.** A general introduction to seapower and the naval service. The instruction places particular emphasis on the mission, organization, regulations, and broad warfare components of the Navy. Included is an overview of officer and enlisted rank and rating structures, procurement and recruitment, training and education, promotion and advancement, and retirement policies. This course also covers the basic tenets of naval courtesy and customs, discipline, naval leadership, and ship's nomenclature. The student is made cognizant of the major challenges facing today's naval officer especially in the areas of equal opportunity and drug/alcohol abuse.
- 112. Naval Ship Systems I. (3-0). Credit 3.** A course designed to familiarize students with the types, structure and purpose of naval ships. Ship compartmentation, propulsion systems, auxiliary power systems, interior communications, and ship control are included. Elements of ship design to achieve safe operations and ship stability characteristics are examined.
- 210. Naval Ship Systems II. (3-0). Credit 3.** Provides an introduction to the theory and principles of operation of naval weapons systems, capabilities and limitations, theory of target acquisition, identification and tracking, trajectory principles, and basics of naval ordnance.
- 212. Seapower and Maritime Affairs. (0-2). Credit 1.** A course created on the premise that the student must develop his knowledge and interest in seapower and maritime affairs. This course is oriented toward the general concept of seapower (including the merchant marine), the role of various components of the Navy in supporting the Navy's mission, the implementation of seapower as an instrument of national policy, and a comparative study of U.S. and Soviet naval strategies.
- 315. Navigation. (2-3). Credit 3.** A comprehensive study of the theory, principles, and procedures of ship navigation. Topics include mathematical analysis, spherical triangulation and practical work involving sight reduction, sextants, publications, and course logs. Rules of the Road, lights, signals, and navigational aids, including inertial systems are also covered.
- 316. Naval Operations Analysis. (3-0). Credit 3.** A comprehensive study of the theory, principles, and procedures of ship movements and employment. Topics include communications, sonar-radar search and screening theory. Tactical formations and dispositions, relative motion,

maneuvering board, and tactical plots are analyzed for force effectiveness and unity.

411. Principles of Naval Organization and Management. (3-0). 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 organizations and practices. This includes 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. Emphasis is placed on management and leadership functions.

414. The Junior Naval Officer. (0-2). Credit 1. This course gives the student a basic background in the duties and responsibilities of a junior officer in the area of training, counseling, and career development. The student becomes familiar with equal opportunity programs, the exemption program and drug/alcohol rehabilitation programs. Principles of leadership are reinforced through leadership case studies.

485. Problems. Credit 1 to 4. Directed study in problems in the field of naval science not covered by other courses in the department. Prerequisites: Senior classification and approval of Department Head.

OCEAN ENGINEERING

(O.E.)

300. Dynamics of Waves and Structures. (3-0). Credit 3. Physical and mathematical fundamentals of ocean wave behavior and description. Introduction to concepts of linear structural dynamics and to the design of ocean structures. Prerequisites: C.E. 311; M.E. 213, or equivalent.

400. Basic Coastal Engineering. (3-0). Credit 3. Consideration of the natural coastal processes and engineering problems related to estuaries, bays and beaches. Prerequisite: C.E. 311 or equivalent.

401. Measurements in the Ocean. (2-6). Credit 4. Elements of measurement technique applied to the evaluation of oceanographic parameters of scientific and engineering interests. Prerequisites: O.E. 300; Phys. 219.

OCEANOGRAPHY

(Ocn.)

401. Introduction to Oceanography. (3-0). Credit 3. Subject matter survey. Discussion of interdisciplinary relationships between biological, physical, meteorological and engineering aspects of field. Prerequisites: Approval of Instructor; junior or senior classification; Math. 104.

410. Introduction to Physical Oceanography. (2-0). Credit 2. Elements of the physics of the sea including descriptive aspects as well as cause and effect relations in respect to currents, thermal structure and waves. Intended for majors in the physical sciences or engineering. Prerequisites: Math 122 or 210; Phys. 219; or equivalent.

- 420. Introduction to Biological Oceanography. (2-0). Credit 2.** Biological aspects of the marine environment. Man's use of the sea and problems of productivity, pollution, and fouling and boring organisms. Prerequisite: Biol. 114; major in Maritime Systems Engineering; or approval of Department Head.
- 430. Introduction to Geological Oceanography. (2-0). Credit 2.** History of oceanography; physiographic provinces of the oceans, their origin and sediments; geological sampling techniques and geophysical methods; coasts and beaches, marine paleontology; global tectonics. Prerequisite: Geol. 101 or approval of instructor.
- 440. Introduction to Chemical Oceanography. (2-0). Credit 2.** Chemical aspects of the marine environment including organic and inorganic constituents, their origin and regulatory processes; primary productivity, the carbon dioxide system, nutrient cycles; stable and radioactive isotopes in the sea. Prerequisite: Chem. 102.

PHYSICS

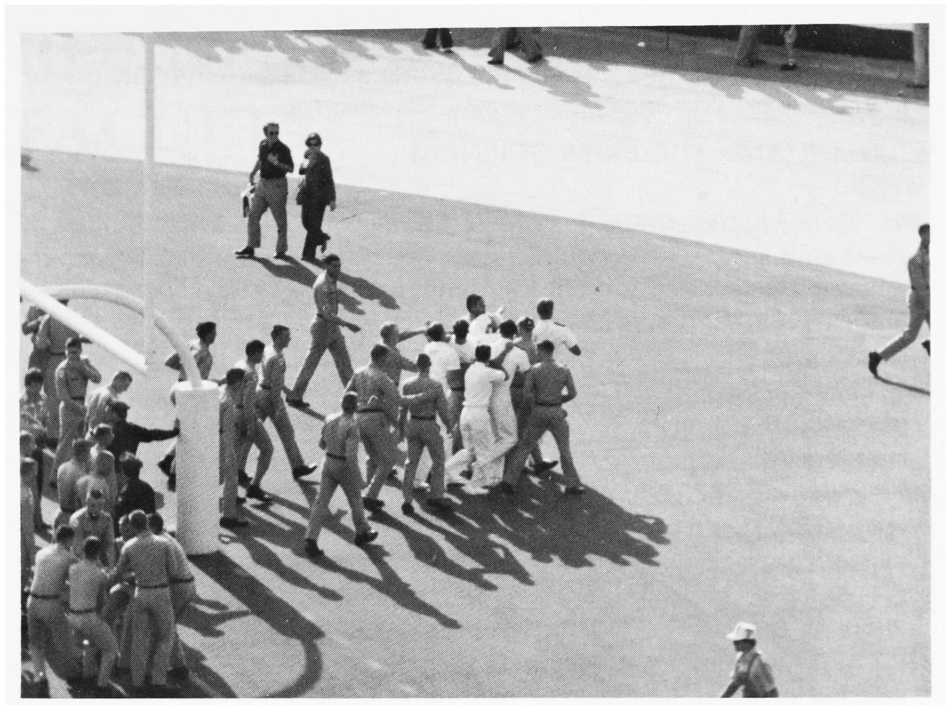
(Phys.)

- 201. College Physics. (3-3). Credit 4.** Fundamentals of classical mechanics, heat and sound. Prerequisite: Math. 103.
- 202. College Physics. (3-3). Credit 4.** Continuation of Phys. 201. Fundamentals of classical electricity and light and introduction to contemporary physics. Prerequisite: Phys. 201.
- 218. Mechanics. (3-3). Credit 4.** Mechanics for students of the physical sciences. Prerequisite: Math. 209 or registration therein.
- 219. Electricity. (3-3). Credit 4.** Continuation of Phys. 218. Sound, light, electricity. Prerequisites: Math. 210 or registration therein; M.E. 112 or Phys. 218 or equivalent.
- 220. Modern Physics. (3-3). Credit 4.** Continuation of Phys. 219. Atomic, nuclear, solid-state physics. Prerequisites: Phys. 219; Math. 210, or equivalent.
- 485. Problems. Credit 1 to 4.** Special work in laboratory or theory to meet individual requirements in cases not covered by regular curriculum. Prerequisite: Approval of Department Head.

POLITICAL SCIENCE

(Pol.S.)

- 206. American National Government. (3-0). Credit 3.** Survey of American national government, politics, and constitutional development.
- 207. State and Local Government. (3-0). Credit 3.** Survey of state and local government and politics with special reference to the constitution and politics of Texas.
- 340. Introduction to Public Administration. (3-0). Credit 3.** Survey of American public administration with emphasis upon development of



public service in the United States, giving special attention to theories of organization and management, executive leadership, policy formation, fiscal policy, personnel practices, and public relations. Prerequisite: Pol.S. 206.

485. Problems. Credit 1 to 6 each semester. Individual instruction in Political Science in selected aspects of Political Science not adequately covered by other courses, with stress on reports and wide reading in fields selected. Prerequisite: Approval of instructor prior to registration.

PSYCHOLOGY

(Psy.)

107. General Psychology. (3-0). Credit 3. Introductory course dealing with elementary principles of human behavior.

STATISTICS

(Stat.)

302. Statistical Methods. (2-2). Credit 3. Intended for undergraduate students in the biological sciences and agriculture (except agricultural economics). Nonmathematical introduction to concepts of random sampling and statistical inference; estimation and testing hypotheses of means and variances; analyses of variance; regression analysis; chi-square tests. Not to be used for graduate credit by statistics majors.

485. Problems. Credit 1 to 6. Special problems in statistics not covered by another course in the curriculum. Work may be in either theory or methodology. Prerequisite: Approval of instructor.

**WILDLIFE AND FISHERIES SCIENCES
(W.F.S.)**

300. Field Studies. Credit 3. Wildlife survey of selected areas. Studies of plant-animal interrelationships, birds, mammals, and other native vertebrates. Experience in collecting and preparing study specimens of birds, mammals, reptiles, and amphibians. Prerequisite: Junior classification or approval of Department Head.

400. Fisheries Survey. Credit 4. Distribution, identification, field and laboratory techniques. Prerequisite: Junior classification or approval of Department Head.

410. Principles of Fisheries Management. (2-2). Credit 3. Basic knowledge from ichthyology, biology of fishes, and limnology related to applied aspects of fresh water and marine fishery science. Emphasis placed on management techniques applicable to streams, ponds, reservoirs, estuaries and the oceans.

485. Wildlife Problems. Credit 1 to 3. Individual study and research on selected problem approved by instructor. Prerequisite: Junior or senior classification.

RESIDENT FACULTY



WILLIAM H. CLAYTON
PRESIDENT

and Professor of Oceanography and Meteorology
(1954, 1971); B.S. Bucknell University, 1949;
Ph.D. Texas A&M University, 1956.

MOODY COLLEGE FACULTY

(Correct as of October 1, 1978)

(Figures in parentheses indicate date of first appointment on the College staff and date of appointment to present position, respectively).

ALDRICH, DAVID V., Professor of Marine Sciences, Biology, Oceanography and Wildlife and Fisheries Sciences and Head of the Department of Marine Biology (1966, 1978). B.A., Kenyon College, 1950; M.A., Rice University, 1952; Ph.D., Rice University, 1954.

ALEXANDER, STEVE, Lecturer in Marine Biology (1978). B.S., University of Houston, 1972; M.S., Louisiana State University, 1973; Ph.D., Louisiana State University, 1976.

AMSBURY, DAVID, Lecturer in Marine Sciences (1978). B.S., Sul Ross State College, 1952; Ph.D., University of Texas at Austin, 1957.

ARMSTRONG, ROBERT, Lecturer in Marine Transportation (1977). B.S., United States Merchant Marine Academy, 1957.

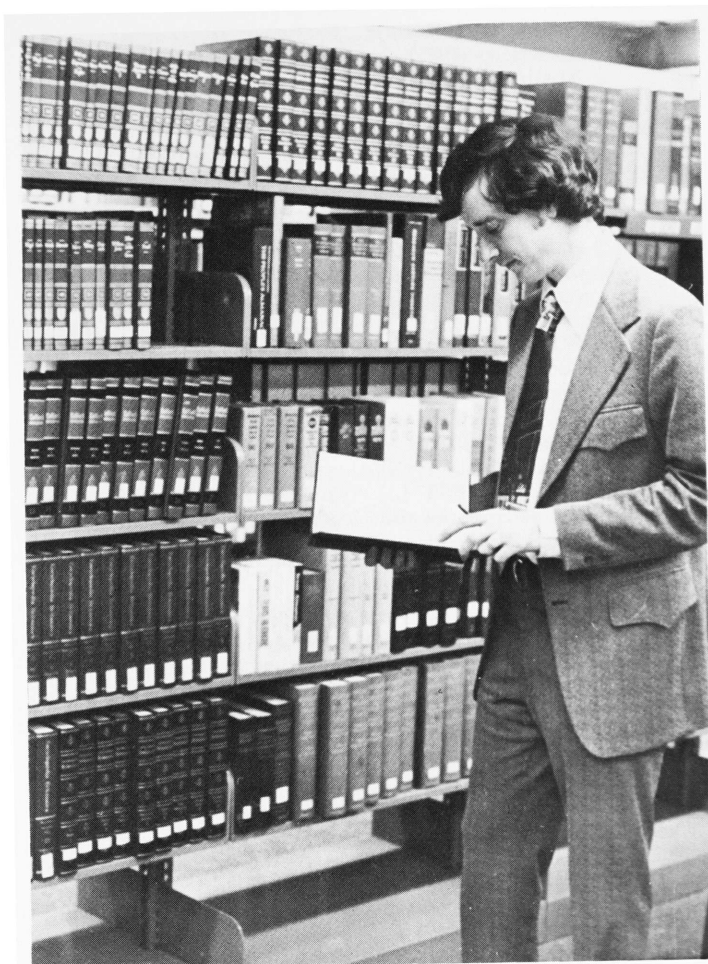
BEYER, DONALD P., Lecturer in Marine Transportation (1978). B.S., Texas A&M University, 1968.

BLOZINSKI, ANTHONY P., Assistant Professor of General Academics (1976). B.S., University of Seattle, 1962; M.S., Purdue University, 1968; Ph.D., Purdue University, 1970.

BREWER, GMGC FRED H., Instructor in Naval Sciences (1977). Electricity, Electronics & Hydraulics School, 1968; Instructor's Training School, 1977.

BROOME, L. EUGENE, Assistant Professor of General Academics (1974, 1975). B.S., Arlington State College 1967; M.A., University of Texas at Arlington, 1968; Ph.D., University of Houston, 1975.

BULLOCH, RICHARD L., Lecturer in Maritime Systems Engineering (1978). B.S., Oklahoma State University, 1963; M.S., Oklahoma State University, 1969.



BUNCE, ROBERT E., Lecturer in Marine Transportation (1978). B.A., University of Texas at Austin, 1968.

CARTER, GEORGE H., Associate Professor of General Academics (1972, 1978). B.S., University of Southern Mississippi, 1963; M.S., University of Southern Mississippi, 1969; Ph.D., Texas A&M University, 1977.

CATE, JERELLA, Lecturer in General Academics (1978). B.B.A., Baylor University, 1968; M.B.A., Baylor University, 1969.

CLYBURN, JOHN H. Lecturer in General Academics (1973). B.A., University of Texas at Austin, 1962; M.A., University of Houston, 1968.

COLEMAN, CHARLES, Lecturer in Marine Sciences (1978). B.S., Texas A&M University, 1975.

CONGLETON, CAROL ANN, Lecturer in General Academics (1974). B.A., North Texas State University, 1968; M.S., North Texas State University, 1970.

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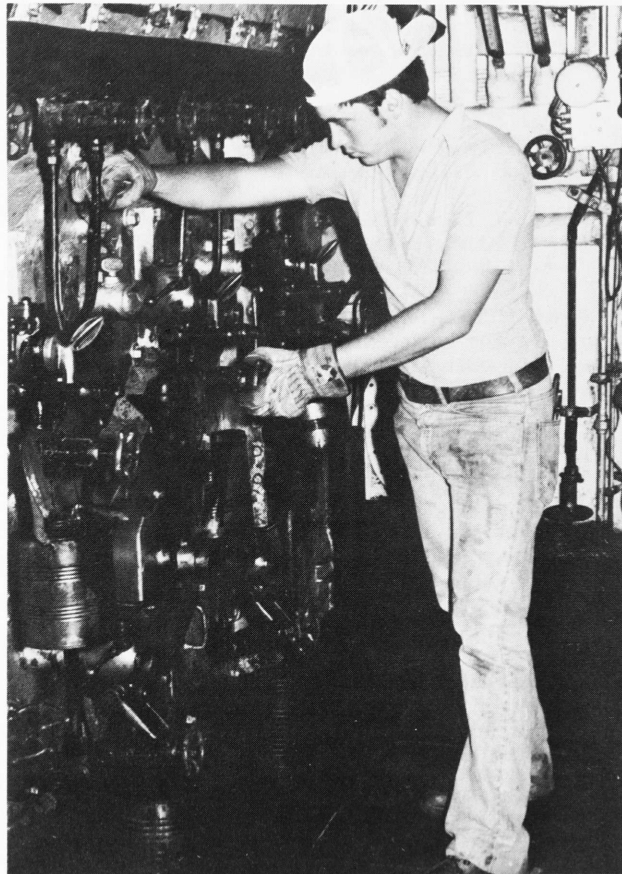
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