

Moody College of Marine Sciences and Maritime Resources

TEXAS A&M UNIVERSITY
1974-75



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UNIVERSITY SYSTEM**

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**TEXAS A&M UNIVERSITY
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AND MARITIME RESOURCES**

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James M. McCloy, Ph.D. Assistant Dean for Academic Affairs

Henry D. Pope, Ph.D. Assistant Dean for Operations

COLLEGE COMPONENTS

TEXAS MARITIME ACADEMY

RADM John W. Smith, M.S.I.A. Superintendent

Capt. Alfred R. Philbrick, M.Ed. Assistant Superintendent

DEPARTMENT OF MARINE SCIENCES

Sammy M. Ray, Ph.D. Head

COASTAL ZONE LABORATORY

William H. Clayton, Ph.D. Acting Director

FISCAL OFFICE

Milton H. Abelow, B.S. Fiscal Officer

STUDENT SERVICES

C. Diane Denman, M.Ed. Director

ACADEMIC CALENDAR FOR 1974-75

SPRING SEMESTER 1974

JANUARY

- 16 - 18 WEDNESDAY THROUGH FRIDAY. DELAYED REGISTRATION
ADDS AND DROPS
- 21 MONDAY. BEGINNING OF SPRING SEMESTER CLASSES, 8 A.M.
- 25 FRIDAY. LAST DAY FOR ENROLLING IN THE UNIVERSITY
FOR THE SPRING SEMESTER OR FOR ADDING NEW COURSES

FEBRUARY

- 5 TUESDAY. LAST DAY IN SPRING SEMESTER FOR DROPPING
COURSES WITH NO RECORD.
- 15 FRIDAY. LAST DAY IN SPRING SEMESTER FOR DROPPING
COURSES WITHOUT PENALTY.

MARCH

- 4 MONDAY. MID-SEMESTER GRADE REPORTS
- 8 FRIDAY. BEGINNING OF SPRING RECESS, 5 P.M.
- 18 MONDAY. END OF SPRING RECESS, 8 A.M.

MAY

- 6 MONDAY. GRADES FOR GRADUATING STUDENTS DUE 10 A.M.
- 10 FRIDAY. END OF SPRING SEMESTER CLASSES, 5 P.M.
- 11 SATURDAY. COMMENCEMENT AND FINAL REVIEW
- 13 MONDAY. FIRST DAY OF SPRING SEMESTER EXAMINATIONS.
- 18 SATURDAY. LAST DAY OF SPRING SEMESTER EXAMINATIONS.
- 20 MONDAY. ALL FINAL GRADES DUE. 10 A.M.



SUMMER SEMESTER 1974

J U N E

- 3 MONDAY. REGISTRATION FOR THE FIRST TERM, INCLUDING SUMMER SCHOOL AT SEA.
- 4 TUESDAY. BEGINNING OF CLASSES, 8 A.M.
- 6 THURSDAY. LAST DAY FOR ENROLLING IN THE UNIVERSITY FOR THE FIRST TERM AND FOR ADDING NEW COURSES.
- 7 FRIDAY. LAST DAY FOR DROPPING COURSES WITH NO RECORD.
- 17 MONDAY. LAST DAY FOR DROPPING COURSES WITHOUT PENALTY

J U L Y

- 4 THURSDAY. INDEPENDENCE DAY HOLIDAY
- 9 TUESDAY. LAST DAY FOR FIRST TERM CLASSES. BEGINNING OF FINAL EXAMINATIONS, 7 P.M.
- 10 WEDNESDAY. LAST DAY FOR THE FIRST TERM FINAL EXAMINATIONS.
- 11 THURSDAY. REGISTRATION FOR THE SECOND TERM.
- 12 FRIDAY. BEGINNING OF CLASSES, 8 A.M. ALL FINAL GRADES DUE, 10 A.M.
- 16 TUESDAY. LAST DAY FOR ENROLLING IN THE UNIVERSITY FOR THE SECOND TERM AND FOR ADDING NEW COURSES.
- 17 WEDNESDAY. LAST DAY FOR DROPPING COURSES WITH NO RECORD.
- 25 THURSDAY. LAST DAY FOR DROPPING COURSES WITHOUT PENALTY.

A U G U S T

- 12 TUESDAY. GRADES FOR GRADUATING STUDENTS DUE, 10 A.M.
- 15 THURSDAY. LAST DAY OF SECOND TERM CLASSES. BEGINNING OF FINAL EXAMINATIONS, 7 P.M.
- 16 FRIDAY. LAST DAY OF SECOND TERM FINAL EXAMINATIONS. COMMENCEMENT FOR FIRST AND SECOND TERM GRADUATING STUDENTS, 8 P.M.
- 19 MONDAY. ALL FINAL GRADES DUE, 10 A.M.

FALL SEMESTER 1974

AUGUST

26 - 30 MONDAY THROUGH FRIDAY. DELAYED REGISTRATION, ADDS AND DROPS.

SEPTEMBER

2 MONDAY. BEGINNING OF FALL SEMESTER CLASSES, 8 A.M.
6 FRIDAY. LAST DAY FOR ENROLLING IN THE UNIVERSITY FOR THE FALL SEMESTER OR FOR ADDING NEW COURSES.
17 TUESDAY. LAST DAY FOR DROPPING COURSES WITH NO RECORD.
27 FRIDAY. LAST DAY FOR DROPPING COURSES WITHOUT PENALTY.

OCTOBER

21 MONDAY. MID-SEMESTER GRADE REPORTS.

NOVEMBER

28 - 31 THURSDAY - SUNDAY INCLUSIVE. THANKSGIVING HOLIDAYS.



DECEMBER

- 9 MONDAY. GRADES FOR GRADUATING STUDENTS DUE, 10 A.M.
- 13 FRIDAY. END OF FALL SEMESTER CLASSES, 5 P.M.
- 14 SATURDAY. COMMENCEMENT.
- 16 MONDAY. FIRST DAY OF FALL SEMESTER EXAMINATIONS.
- 20 FRIDAY. LAST DAY FOR FALL SEMESTER EXAMINATIONS.
- 21 SATURDAY. ALL FINAL GRADES DUE, 1 P.M.

SPRING SEMESTER 1975

JANUARY

- 15 - 17 WEDNESDAY THROUGH FRIDAY. DELAYED REGISTRATION, ADDS AND DROPS.
- 20 MONDAY. BEGINNING OF SPRING SEMESTER CLASSES, 8 A.M.
- 24 FRIDAY. LAST DAY FOR ENROLLING IN THE UNIVERSITY FOR THE SPRING SEMESTER OR FOR ADDING NEW COURSES.

FEBRUARY

- 4 TUESDAY. LAST DAY FOR DROPPING COURSES WITH NO RECORD.
- 14 FRIDAY. LAST DAY FOR DROPPING COURSES WITHOUT PENALTY.

MARCH

- 10 MONDAY. MID-SEMESTER GRADE REPORTS.
- 14 FRIDAY. BEGINNING OF SPRING RECESS, 5 P.M.
- 24 MONDAY. END OF SPRING RECESS, 8 A.M.

MAY

- 5 MONDAY. GRADES FOR GRADUATING STUDENTS DUE, 10A.M.
- 9 FRIDAY. END OF SPRING SEMESTER CLASSES, 5 P.M. COMMENCEMENT.
- 10 SATURDAY. COMMENCEMENT AND FINAL REVIEW.
- 12 MONDAY. FIRST DAY OF SPRING SEMESTER EXAMINATIONS.
- 17 SATURDAY. LAST DAY OF SPRING SEMESTER EXAMINATIONS
- 19 MONDAY. ALL FINAL GRADES DUE, 10 A.M.

UMMER SESSION 1975

U N E

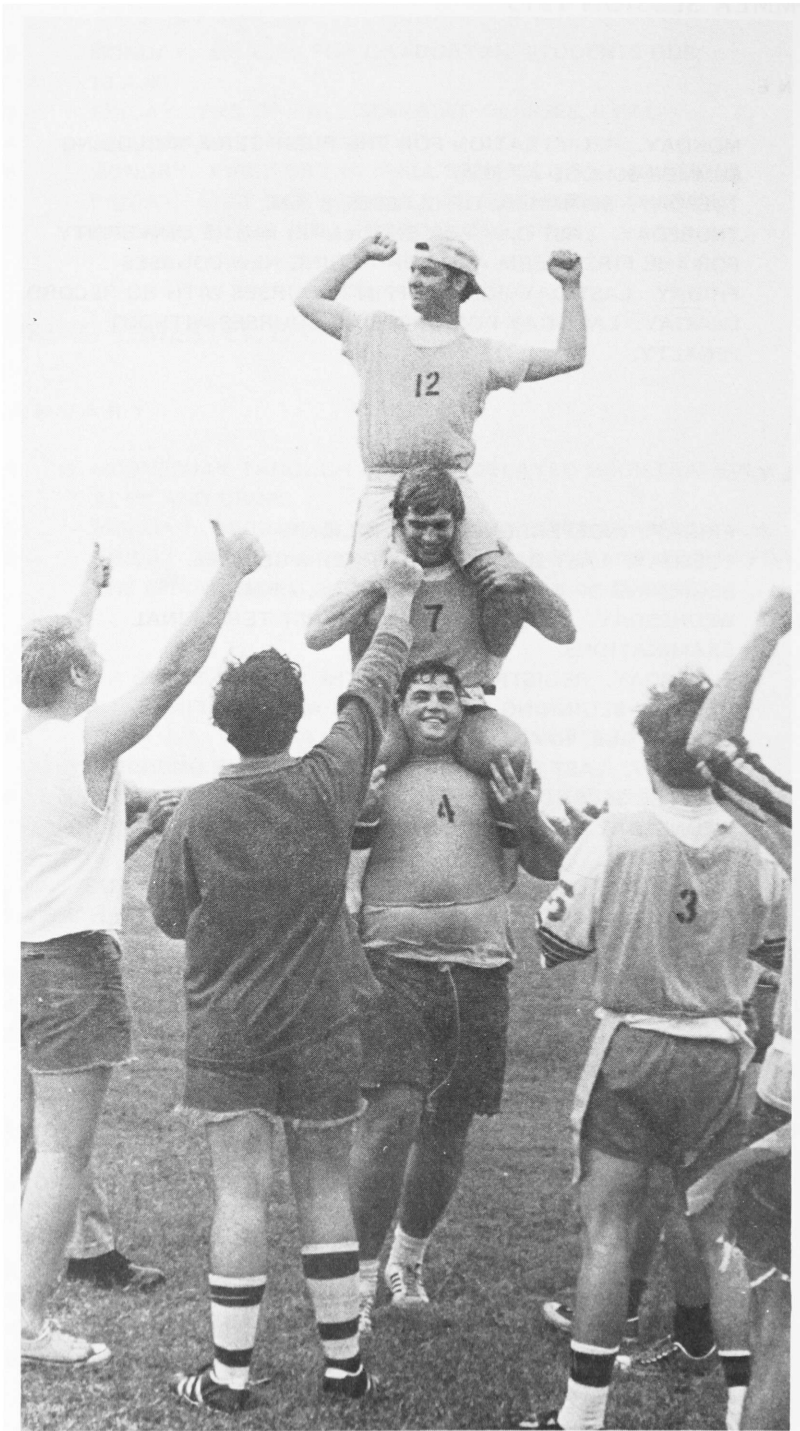
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- 3 TUESDAY. BEGINNING OF CLASSES, 8 A.M.
- 5 THURSDAY. LAST DAY FOR ENROLLING IN THE UNIVERSITY FOR THE FIRST TERM AND FOR ADDING NEW COURSES
- 3 FRIDAY. LAST DAY FOR DROPPING COURSES WITH NO RECORD.
- 3 MONDAY. LAST DAY FOR DROPPING COURSES WITHOUT PENALTY.

U L Y

- 1 FRIDAY. INDEPENDENCE DAY HOLIDAY.
- 3 TUESDAY. LAST DAY FOR FIRST TERM CLASSES. BEGINNING OF FINAL EXAMINATIONS, 7 P.M.
- 1 WEDNESDAY. LAST DAY FOR THE FIRST TERM FINAL EXAMINATIONS.
- 1 THURSDAY. REGISTRATION FOR THE SECOND TERM.
- FRIDAY. BEGINNING OF CLASSES, 8 A.M. ALL FINAL GRADES DUE, 10 A.M.
- 3 TUESDAY. LAST DAY FOR ENROLLING IN THE UNIVERSITY FOR THE SECOND TERM AND FOR ADDING NEW COURSES.
- 3 WEDNESDAY. LAST DAY FOR DROPPING COURSES WITH NO RECORD.
- 1 THURSDAY. LAST DAY FOR DROPPING COURSES WITH NO PENALTY.

U G U S T

- 2 TUESDAY. GRADES FOR GRADUATING STUDENTS DUE, 10 A.M.
- 1 THURSDAY. LAST DAY OF SECOND TERM CLASSES. BEGINNING OF FINAL EXAMINATIONS, 7 P.M.
- 3 FRIDAY. LAST DAY OF SECOND TERM FINAL EXAMINATION. COMMENCEMENT FOR FIRST AND SECOND TERM GRADUATING STUDENTS.
- 3 MONDAY. ALL FINAL GRADES DUE, 10 A.M.



General Information

A new campus and an evolving curriculum meeting the needs of Texas and its seaward economic ties mark the development of the Moody College of Marine Sciences and Maritime Resources -- Texas A&M University's marine arm in Galveston.

The Mitchell Campus houses facilities of the Moody College, created in September 1971 as a part of the Texas A&M University System. Working in conjunction with other colleges and programs of the University at undergraduate and graduate levels, and in concentrated research programs, Moody College emphasizes TAMU's commitment to greater participation in crucial marine affairs questions -- onshore and off.

Coordination of other A&M programs is also maintained by Moody College -- Community Education, Educational Administration and other training programs typify the regional participation of the University in the Galveston community.

The Moody College offers degree programs only in marine-related fields. The Moody College is composed of the Department of Marine Sciences, the Galveston Coastal Zone Laboratory, and the Texas Maritime Academy.

Broad spectrums of programs are being established within the marine fields to enhance the current degree offerings of Bachelor of Science in Marine Engineering, B.S. in Marine Transportation and B.S. in Marine Sciences.

Graduate programs at the masters level may be completed entirely at the Galveston campus, and Ph.D. programs may be partially completed at the Moody College with additional work at the College Station campus.

From Galveston to College Station, close contact is maintained between Moody College and the academic departments which offer like courses in both campus locations leading to completion of doctoral degree programs.

Approximately \$900,000 in research funds was committed and work was in progress during 1973 through graduate and undergraduate programs of the College and within the Galveston Coastal Zone Laboratory. Much of this research is tied to TAMU's status as a Sea Grant College, the marine resources counterpart of Texas A&M's long tradition as a land grant institution.

Campus Building Program

The 100-acre Mitchell Campus of Moody College is on Pelican Island in Galveston Bay. Legislation passed in 1973 authorized the TAMU System Board of Directors to sell \$7.5 million in tuition-backed bonds for a major building program. Construction is to begin during the next two years augmented by gifts and pledges, bringing the total building program costs to \$8.1 million.

Accreditation

Texas A&M University is fully accredited by the Southern Association of Colleges and Schools. As one of its components, the Moody College is accorded the same accreditation as other academic units of TAMU.

Library Facilities

The Moody College of Marine Sciences and Maritime Resources has accelerated its library acquisitions. To supplement its specialized holdings, an overnight delivery service is maintained by teletype with the TAMU library in College Station.

The holdings in College Station number more than 700,000 volumes and more than 12,000 serial titles. In addition to principal research collections, designation as a federal depository assures access to publications and documents of the U.S. government.

Undergraduate Admission

Texas A&M University is a co-educational institution admitting all qualified applicants on an equal basis without regard to sex, race, creed, color or national origin.

Applications for admission are welcome at any time. Those who meet the standards will be admitted as long as space is available, until the last day for enrollment during the session requested.

Applications for admission to the Moody College of Marine Sciences and Maritime Resources should be addressed to the Office of Admissions, Texas A&M University, College Station, Texas 77843.

Completed application forms, accompanied by transcripts of credit if entering directly from high school, or two complete, official transcripts if transferring from another college or university should be submitted to the Office of Admissions. All other colleges and universities attended must be included in the application.

Admission of High School Graduates

An applicant must have graduated from a properly accredited secondary school with a minimum of sixteen units (credits) which are acceptable to the University for entrance purposes. Students who have a superior high school record and wish to enter higher education without graduating from high school may apply under the following conditions: present the desired 16 credits as outlined below, score at least 1100 on the SAT and rank in the highest quarter of their high school class. In addition to the above, they must be recommended by their high school principal. A personal interview with the Director of Admissions will be required prior to admission.

The unit requirements for admission to the University are designed to insure adequate preparation for the various curriculums offered by the University. To give deserved recognition to proven ability as reflected by high academic achievement, a student may enter the University even though he has not completed all the required high school subjects as listed below. An applicant who ranks in the highest quarter of his class and scores a minimum total score on the CEEB Scholastic Aptitude Test of 1000 may be granted admission with credit deficiencies.

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

Subject	Units of Credit Required	Remarks
English	4	Required of all students. Two units in a single foreign language may be substituted for one unit in English

Subject	Units of Credit Required	Remarks
Social Science	2½	Required of all students
Mathematics:		
Algebra	2	Required of all students
Plane Geometry	1	Required of all students
Science	2	Required of all students. It is preferred that these two units include biology, chemistry, or physics.
Electives	4½	Recommended from the following subject areas: Foreign languages, mathematics, science, social science, speech. Not more than three vocational units may be submitted as electives. Applicants for admission to the Moody College of Marine Sciences and Maritime Resources are strongly advised to include at least ½ unit elective in advanced mathematics.
Total	16	

EARLY DECISION PROGRAM

In order to recognize and reward superior academic performance, Texas A&M has instituted an early decision program that permits a student to apply for admission after he has completed his junior year of high school. To be eligible for this program a student must rank in the highest quarter of his 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.

TESTS REQUIRED OF NEW STUDENTS

Texas A&M University requires certain College Entrance Examination Board (CEEB) tests as part of its admission requirements for students entering college for the first time. Results of these tests are used for admission, counseling, and placement purposes.

The following tests are required: Scholastic Aptitude Test (SAT), English Composition Achievement Test, Mathematics Achievement Test (Level I or II). CEEB offers these examinations at testing centers throughout the United States and in major cities of many foreign countries. Testing dates, locations, and fees are described in an information bulletin which may be obtained by writing the College Entrance Examination Board, Box 1025, Berkeley, California, 94701. The CEEB reporting number for the Moody College of Marine Sciences and Maritime Resources is R6835.

The University will accept scores in either Mathematics Test, Level I, or 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 their high school counselor or mathematics teacher.

It is the applicant's responsibility to make arrangements for taking the examination. Arrangements are to be made directly with the College Entrance Examination Board, not through Texas A&M University.

The minimum test scores 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 (SAT). As reported by the board, the total of the verbal and mathematical scores becomes a criterion for admission.

Entering freshmen must meet the following SAT minimums:

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

Admission of Transfer Students

Admission may be granted to undergraduate students who begin at other colleges and who meet admission requirements. Applicants may not disregard their academic record at any other institution.

Applicants must be eligible to return to the school from which they seek to transfer. Formal application must be made and submitted with two official transcripts from each school previously attended.

The applicants must achieve an overall grade point ratio of at least 2.00 (C average) on a four point scale and they must have surpassed that average for the most recent two semesters of attendance, if they have completed that much college work. (A 12-week summer session with a normal load of course work is considered a full semester).

Transfer applicants who have attempted 18 semester hours or less must achieve the 2.0 standard and also comply with requirements for entering freshmen. High school records, college records and test results will be used to determine admission status. Either the CEEB Scholastic Aptitude Test (SAT) or the American College Testing (ACT) program will be acceptable for determination of transfer admission status.

On the basis of credentials submitted, credit will be given for satisfactory work completed at another accredited institution, so far as the work completed is equivalent in character and extent to similar offerings of Texas A&M University. Transfer credits are provisional and may be cancelled at any time if the student's work at Texas A&M 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 University will not apply toward satisfying the degree requirements of that curriculum.

International Students

All international students who are transferring from another college or university in the United States of America must have completed at least two semesters prior to transferring to Texas A&M in addition to the other requirements stated above. International students must also demonstrate a high degree of proficiency in the English language. Proof of this proficiency may be shown by scoring at least 500 for the Fall Semester or 550 for other semesters on the "Test of English as a Foreign Language" or by making at least a C average on six semester hours of regular college English work at an accredited college or university in the United States.

ADMISSION OF GRADUATE STUDENTS

To be admitted to the Graduate College (except under double registration), an applicant

- 1) must hold a baccalaureate degree from a college or university of recognized standing;
- 2) must show promise of ability to satisfactorily pursue advanced study and research;
- 3) must have had adequate preparation to enter graduate study in the chosen field;
- 4) must furnish two official transcripts of all college and university work; and
- 5) must submit with the application acceptable scores for the Aptitude Test of the Graduate Record Examination (GRE).

The GRE test must be taken within five years of application to the Graduate College.

Applicants in the Department of Biology are also required to submit scores on the appropriate Advanced Test. Approximately six weeks are required for scores to be received by the Graduate College after the test is administered making early testing important.

Scores made on the Graduate Record Examination more than five (5) calendar years prior to application for admission to the Graduate College may not be used to satisfy the GRE requirements. More complete information is provided in the Graduate College Catalog which is available through the Office of the Registrar, Texas A&M University, College Station, Texas 77843.

APPLICATION FOR ADMISSION TO TEXAS MARITIME ACADEMY

In addition to the normal requirements for admission, a student seeking to enroll in the Texas Maritime Academy in the Federal Subsidy license oriented program must satisfy the following requirements:

- I. Be a citizen of the United States
2. Be unmarried. (Regulations require that the Maritime Cadet remain unmarried until graduation),

Non-subsidy students are under no restrictions regarding age, sex, physical fitness, national origin or marital status.

READMISSION OF FORMER STUDENTS

Any former student who has resigned, been dropped from the rolls, or has not attended A&M for at least one full semester must fill out a Former Student Application for Readmission and submit it to the Office of Admissions. If the student has attended any other institutions since enrollment at A&M, two official transcripts from each of these schools must be submitted when applying for readmission.

SPECIAL ADMISSIONS

Admission by Individual Approval

An undergraduate applicant who has not recently attended school and who cannot satisfy the entrance requirements in full may be admitted, subject to the following requirements:

- I. Make application on the official entrance blanks.
2. Furnish evidence that preparation is substantially equivalent to that required of other applicants and that he or she possesses the ability and seriousness of purpose necessary to pursue studies with profit and to the satisfaction of the University.

University Requirements

Students enrolled in the Moody College of Texas A&M University follow the same University requirements for graduation as students enrolled on the College Station campus. These requirements are detailed in the Texas A&M University Catalog. Students are advised to study these requirements as well as the publication, University Regulations, which concerns other aspects of student life.

FINANCIAL INFORMATION

Payments

Payments to the Fiscal Office may be by cashier's check, personal check, or money order payable to Texas A&M University. All checks and money orders are accepted subject to final payment.

Fees

Fees listed for 1974-75 are strictly approximation subject to change. The fees listed are for all students except those in the Texas Maritime Academy License Program. The tuition fee is based on a resident student registered for 17 semester hours (except for the summer cruise, which is based on 4 semester hours).

	Fall 1974	Spring 1975
Tuition	\$ 68.00	\$ 68.00
Student Services*	18.00	18.00
Board**	336.00	336.00
Identification Card	2.00	2.00
	<hr/>	<hr/>
	\$424.00	\$424.00

The estimated fees in the Texas Maritime Academy License Option Program are shown below:

	Fall 1974	Spring 1975	Summer 1975
Tuition	\$ 85.00	\$ 85.00	\$ 60.00
Student Services	18.00	18.00	17.00
Room	135.00	135.00	135.00
Board**	336.00	336.00	336.00
Room Deposits***	75.00		
Identification Card	2.00		
Cruise Fee	<hr/>	<hr/>	<hr/>
	\$651.00	\$574.00	\$858.00

*Charge of \$2.20 per hour with maximum of \$18.00 during fall and spring semesters; \$4.40 per hour for summer session (summer cruise is considered two (2) sessions).

**Board is optional to all students except the Texas Maritime Academy License Option students, who are required to have room and board on campus.

***A deposit of \$75.00 is required of all new students requesting a dormitory room. \$45.00 will be applied against the first semester room rent.

If payment for board is made by installments, a \$1.00 service charge for each installment will be assessed. A late fee of \$1.00 per day to maximum of \$10.00 will be charged for installments made after the due date. Students who are more than ten (10) days delinquent with installment payments, will be dropped from the rolls of the University.

EXPLANATION OF FEES

Tuition

Resident tuition students other than Texas Maritime Academy License Option students pay \$4.00 per semester hour, but the minimum total of the charge will not be less than \$50.00 per semester.

Non-resident students other than Texas Maritime Academy License Option students pay \$40.00 per semester hour.

Both resident and non-resident students of the Texas Maritime Academy License Option Program pay \$5.00 per semester hour with a minimum of \$60.00 per semester.

Former students who do not register when specified pay an additional fee of \$4.00.

Student Services

The student service fee is required of all students and covers student services outlined elsewhere in this catalog.

Room, Rent and Board

All Texas Maritime Academy License Option students are required to pay room and board. Room rent includes heat, light, and cleaning of the corridors, but not the rooms. Rooms are furnished with beds, mattresses, desks, chairs and dressers. Students are expected to furnish pillows, blankets, and linens.

Room Deposit

A deposit of \$75.00 is required to reserve a dormitory room. When a student enrolls, \$45.00 will be applied against the first semester room rent, \$30.00 will be retained as a deposit against damage and breakage. Returning students will not be required to increase the deposit they have previously made. The deposit will be refunded upon request prior to July 31, for the fall semester and December 31, for the spring semester for those students not planning to re-enroll. Refunds will be made in accordance with the college policy for those students graduating or withdrawing from school, upon their request, after clearance by the Assistant Dean's Office.

Identification Card

All students must have an identification card, used in registration procedures, collection of fees, cashing of checks, dining hall privileges and other uses.

Laboratory Fees

A fee ranging from \$2.00 to \$8.00 is charged for each laboratory course per semester, with some exceptions in which no fee is charged.

Parking Permit

All students driving motor vehicles must pay a \$5.00 fee for registration and parking on campus each semester.

Textbooks and Supplies

The cost of textbooks and supplies are approximately \$200.00 for the combined fall and spring semester, but will vary depending upon the course of study and quality of supplies purchased. The College operates a bookstore with limited availability of texts and supplies.

Uniforms

TMA license option students must purchase uniforms costing approximately \$350.00 when entering the program.

Refunds

Any student officially withdrawing (a) during the first week of classwork in a semester will receive an 80% (4/5) refund of tuition; (b) during the second week will receive a refund of 60% (3/5); (c) during the third week, he will receive a 40% (2/5) refund; (d) a final refund of 20% (1/5) is made at the end of the fourth week of class. After that time, no refund will be made. After fees are paid three weeks must elapse before refunds are made.

Students withdrawing from a laboratory course during the first week of classwork in a semester will receive a refund of 100% of the laboratory fee paid. After the first week of class, no refunds are made.

Students withdrawing officially from school during the first week of a semester will receive a refund of 100% of the student services fee. No other refund is made.

Board payments will not be refunded except when there is a consecutive absence of ten (10) days due to illness of the student, immediate family, or other unavoidable cause.

There will be no refund of room rent for students withdrawing or moving off campus after classes begin.

Reductions

No reduction will be made in the charge for room rent or board in cases of entrance within ten (10) days after the opening of a semester, nor will a refund be made in case of withdrawal during the last ten (10) days of a semester.

Unpaid Check

If a check accepted by the Fiscal Office is returned unpaid, the writer of the check will be required to pay a penalty of \$5.00. The penalty increases to \$10.00, ten (10) days after the date of the first return. If the check is not redeemed within twenty (20) days after notice, the student may be suspended and the check may be turned over to the county attorney for collection.

Duplicate Receipts

Duplicate receipts for fees paid by the students will be issued on payment of \$1.00.

Day Students

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

Fee Exemptions

- I. Statutory provisions -- A student may qualify for legislative exemption from the payment of tuition and certain fees and charges as one of the following:
 - A. Exempted from tuition
 1. Highest ranking high school graduate
 2. High school graduates of State homes
 3. Veterans and veteran dependents no longer eligible under Federal Veterans Administration programs
 4. Dependent children of disabled or killed-on-duty firemen and peace officers
 5. Blind and deaf students
 6. Individuals eligible under "low-income-family" exemption
 7. Students of other nations of the American Hemisphere
 8. Firemen enrolled in fire sciences courses
 9. Children of prisoners of war or persons missing in action



- B. Exempted from lab fees
 1. High school graduates of State homes
 2. Veterans and veteran dependents no longer eligible
 3. Dependent children of disabled or killed-on-duty firemen and peace officers
 4. Blind and deaf students
 5. Individuals eligible under “low-income-family” exemption
 6. Firemen enrolled in fire sciences courses
 7. Children of prisoners of war or persons missing in action
 - C. Exempted from student fee
 1. Student services fee
 - a. High school graduates of State homes
 - b. Blind and deaf students
 - c. Individuals eligible under “low-income-family” exemption
 - d. Children of prisoners of war or persons missing in action
 2. General property deposit -- blind and deaf students
 - D. Room and Board -- No student is exempt unless he is not housed in campus housing or makes no use of dining facilities.
- II. Board of Director’s provisions -- The Board of Directors has provided certain exemptions from student fees in addition to statutory provisions -- student services fee.
- A. Full-time System employees
 - B. Students registered in absentia

Claims for exemption from any charges and/or fees must be supported by evidence sufficient to enable the registrar to verify the student’s exempt status and to determine the exemption and the fees and charges to which it is applicable.

STUDENT SERVICES

The Office of Student Services is responsible for the development and welfare of students in non-academic areas. Emphasis is placed on activities which provide for physical, emotional and social needs of students.

Counseling

Limited specialized counseling of students is available upon request by the Office of Student Services. Referral by university representatives, parents or other persons is also possible.

Personal and other problems will be handled in confidence by professional counselors. The Office of Student Services may also call upon other resources of the University in helping students adjust to particular problems.

Guidance

Short periods of training related to study, college orientation, or vocational guidance are sometimes conducted by the student services staff.

STUDENT ACTIVITIES

Clubs

There are four major clubs on the Moody campus. *The Yacht Club* owns and operates several small sailing vessels and competes in various races. *The Outdoor Sportsman's Club* enjoys several trips a year in gulf, bay, and inland waters. *The Propeller Club, Student Port of Texas Maritime Academy* received its charter from the Propeller Club of the U.S. in 1962. Membership in the Student Port provides students with an opportunity to meet and become acquainted with potential employers in the maritime industry through close cooperation with the local chapter of the U.S. *The Marine Science Club* arranges field trips and meetings to stimulate further interest in marine activities.



Dances and Social Affairs

Social life at Moody College is enhanced by functions throughout the year, sponsored by several clubs or classes. Three or four dances, several beach parties or picnic affairs are open to all students. All parties and other social functions, whether held on or off campus, must be approved by the University.

Student Publications

“Channel Chatter” is the student newsletter, published weekly. Further, TAMU’s weekly newspaper, “The Battalion,” and yearbook, the “Aggieland,” are available to all students. A yearbook is also published by the students of the Moody College of Marine Sciences and Maritime Resources.

Student Government

The evolving student government of Moody College is embodied in the Student Advisory Committee to the Provost. Members are elected each year on the basis of class and division. The College’s seat in the TAMU Student Senate is filled by a student from the committee.

The Student Advisory Committee serves as a direct communications link with the administration on student affairs. It also conducts many programs of service to the students such as assistance in voter registration.

SCHOLARSHIPS AND FINANCIAL AID

The TAMU Scholarship Program is administered by the Faculty Scholarships Committee. The overall program is designed to encourage and reward scholastic effort on the part of all students, to enable outstanding students to do their best work by removing financial handicaps, and to enable those who might be denied an education for financial reasons to secure an education at Texas A&M University.

In general, there are three types of grants-in-aid available: (1) Valetictory Scholarships and Opportunity Awards – limited to entering freshmen; (2) scholarships designed for more advanced undergraduate students; and (3) fellowships for graduate students. As a College of Texas A&M University, students at Moody College are eligible to participate fully in all of the scholarship and financial assistance programs.

This scholarship is offered to the valedictorian who graduates from a secondary school accredited by the Texas Education Agency and who qualifies for admission to the University. The successful applicant must earn the recognition by having among all students, the highest grade record and must be certified to the University through the Texas Education Agency.

A Valedictory Scholarship will exempt a recipient from payment of tuition during both semesters of the first long session immediately following graduation. When the circumstances of an individual case (usually military service) merit such action this exemption may be granted by the University President for any one of the first four long sessions following graduation from high school.

The Opportunity Award Program for Entering Freshmen

This annual program provides approximately 400 four-year awards to high school graduates who are capable of outstanding scholastic achievement and who may need financial assistance to attend Texas A&M University.

Financial benefits range in value from \$400 to \$3,800 with recipients receiving from \$100 to \$750 each year for four years.

Most awards are unrestricted as to course of study or degree objective. Educational Opportunity Grants made available under the Higher Education Act of 1972 are also administered through this program.

Graduates of accredited high schools who have not attended another college or university and who are single are eligible to make application for an Opportunity Award Scholarship.

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

Application blanks are made available upon request. Requests for additional information and application forms should be addressed to the Director, Student Financial Aid, Room 303, Y.M.C.A. Building, Texas A&M University, College Station, Texas 77843.

Scholarships for Advanced Undergraduate Students

Scholarships ranging in value from \$100 to \$1,000 are available to students already enrolled in the University. 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. Each year, recipients are chosen by the Faculty Scholarships Committee in May. The basis of selection is determined by the nature and intent of the award.

Some of these scholarships are given as “rewards for a job well done” and are intended to recognize outstanding scholastic achievement or other meritorious accomplishments.

In addition to the reward type of scholarship, others are made available to outstanding students who must have financial assistance in order to remain in college.

There are also a limited number of college level scholarships awarded through the Scholarships and Awards Committee of Moody College. These awards are, in large part, made possible through annual donations from organizations, such as the Women’s Propeller Clubs of Galveston and Sabine and the Women’s Organization of the Propeller Club of New Orleans.

Information regarding scholarships for advanced undergraduate students may be obtained from the Director, Student Services, Moody College of Marine Sciences and Maritime Resources, Galveston, Texas 77550.

Employment for Students

Part-time employment of students is coordinated by the Office of Student Services. To become eligible for employment, a student must have been admitted to the University by the Dean of Admissions and have an accepted application on file with the Office of Student Services.

Texas A&M University participates in the College Work-Study Program authorized by the Economic Opportunity Act of 1964.

The University is participating in both the Hinson-Hazlewood College Student Loan program, Federally Insured and the United Student Aid Fund, Inc., student loan programs. Repayment on the loans begins after graduation. Applications for these loans must be submitted 60 days prior to the time of need. Inquiries should be addressed to the Fiscal Officer, Moody College of Marine Sciences and Maritime Resources, Galveston, Texas 77550.

For students of the Texas Maritime Academy in the license program, the Superintendent's Loan Fund also grants loans of up to \$500 to be repaid after graduation. Smaller emergency loans are also available to all enrolled students. These loans are limited to \$20.00 for 30 days. The loans are available to students on presentation of identification card and current fee slip. A small service charge is made for these loans.

Loan eligibility is based upon the student's satisfactory record, and the amount of each loan depends upon the student's actual needs.

Vocational Rehabilitation Aid

The Texas Education Agency, through the Vocational Rehabilitation Program, offers assistance for tuition and required fees to certain students in Texas colleges and universities. Eligibility for such assistance is based on permanent physical disabilities.

Application should be made to the Texas Rehabilitation Commission, Room 309, YMCA Building, Texas A&M University, College Station, Texas 77843 or to the Texas Rehabilitation Commission, 1600 West 38th Street, Austin, Texas 77831.

ATHLETICS

Intercollegiate

Texas A&M University is a member of the Southwest Conference, which includes nine leading universities -- the University of Texas, Texas A&M University, Baylor University, Rice University, Texas Christian University, Southern Methodist University, the University of Arkansas, Texas Tech University, and the University of Houston.

The TAMU intercollegiate program includes football, basketball, track, cross country, baseball, swimming, tennis, and golf.

Varsity teams in each sport are known as the Texas Aggies, and the uniforms used by the players are the school's colors, maroon and white. Student tickets to all University athletic events are available through the Director, Student Services. Presently, the Moody College does not participate in any intercollegiate sports program.

Intramural

The Intramural Program attempts to provide each student with the opportunity to participate in organized activities regularly according to time and interest. Teams are organized in flag football, basketball, softball, table tennis, and volleyball.

HOUSING

Housing and meals for Texas Maritime Academy students in the license programs are mandatory on the T/S TEXAS CLIPPER. On-campus housing for other students is planned, but will not be open before the 1975-76 academic year. Assistance in locating community housing or finding student roommates is available through the Office of Student Services.

All students may arrange for meals, singly or by semester, aboard the T/S TEXAS CLIPPER.

HEALTH SERVICES

No health facilities or care is available except that TMA license-option students receive care through the U.S. Public Health Service. However, student health insurance is available. For further details, contact the Director of Student Services.

PLACEMENT OF GRADUATES

Moody College assists in the placement of its graduates and fulfillment of this program is a continuing interest of the faculty in each discipline. Active contact is maintained with prospective employers so that graduates will be directed to the best career opportunities.

UNIVERSITY POLICE

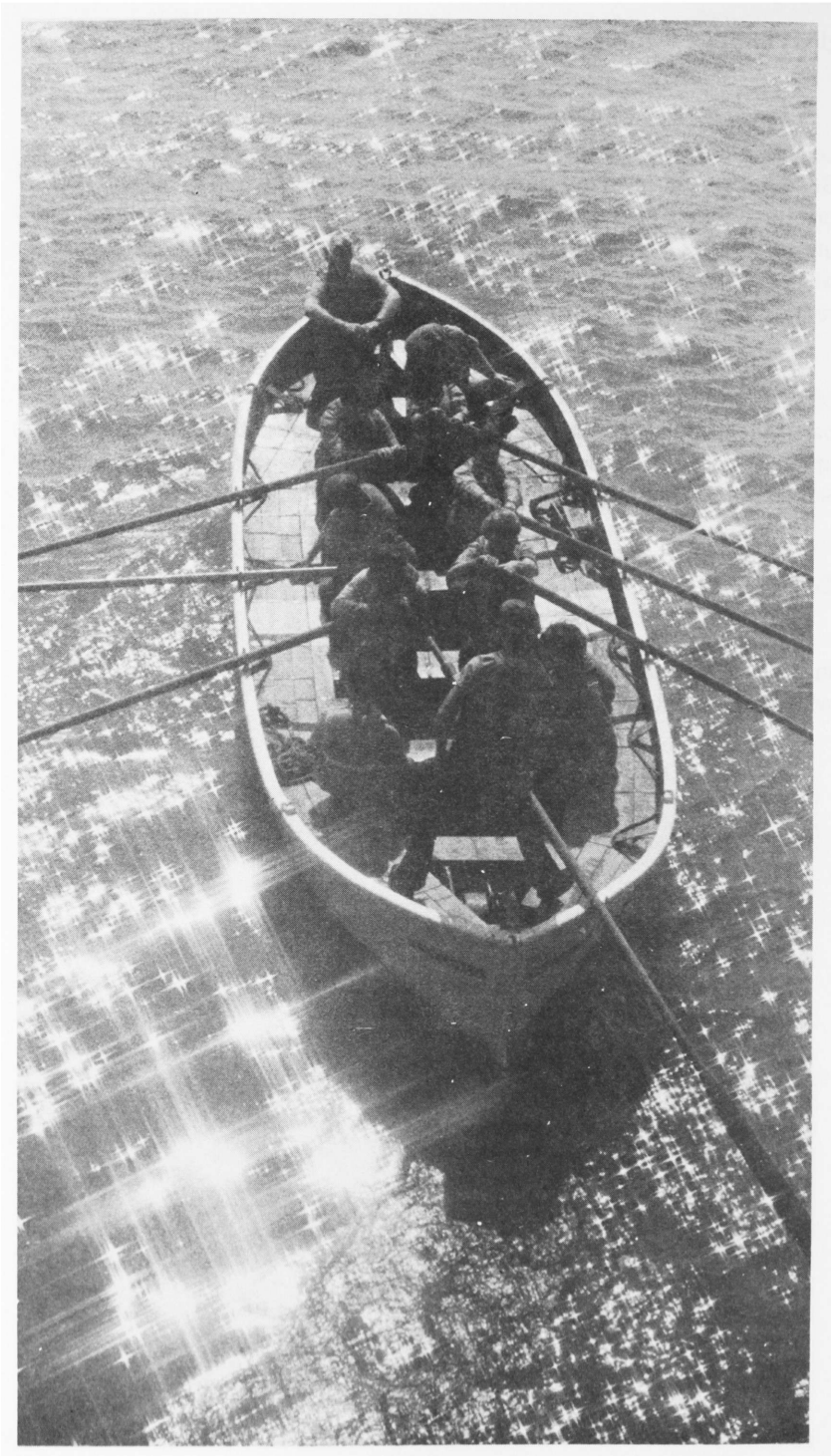
As a state institution on state property, security is maintained by the college police department on campus. An office located in the Engineering Building on Pelican Island is responsible for the protection of all public and private property on the campus, and for the maintenance of state laws and university laws and regulations. Personnel are commissioned peace officers of Texas, trained to conduct their operations in a manner which merits the respect and confidence of the College and its community.

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

The department also operates the “Lost and Found” Office for the College.

Members of the college police department also conduct safety meetings, drug abuse discussions, and engage in other educational activities when requested by recognized student groups.





Texas Maritime Academy

Texas A&M University, acting for the State of Texas, entered into an agreement with the United States Maritime Administration in 1962 whereby the Federal Government would support the Texas Maritime Academy, Texas A&M University to the extent of providing a suitable training ship on a loan basis; assuming the yearly sea-worthy repairs of such training vessel; providing \$75,000 to the Texas Maritime Academy program each year; and providing a subsidy to each cadet in the program of \$50.00 per month. The Texas Maritime Academy thus came into being in 1962 as the 5th State Maritime Academy and is an integral part of the Moody College of Marine Sciences and Maritime Resources of Texas A&M University.

COURSES OF STUDY

Two courses of study are offered -- Marine Engineering and Marine Transportation. These programs are offered to both federally subsidized and non-subsidized students. Each study course consists of four years of college and professional education. Upon successful completion of the prescribed course of study the graduate will receive a Bachelor of Science degree from Texas A&M University in Marine Engineering or in Marine Transportation. A license option student that meets U.S. Coast Guard requirements is eligible to take the U.S. Coast Guard examination for Third Mate or Third Assistant Engineer upon recommendation of the Texas Maritime Academy Administration.

ACADEMIC PROGRAM

The academic program consists of two semesters for four years and three summer training cruises. The cruises are aboard the training ship TEXAS CLIPPER, a 15,000 ton vessel utilized as a passenger-cargo liner. Cruises are of about 10 weeks duration and include visits to ports in Europe, the Mediterranean and South America. Each year the cruise is scheduled to different parts of the world. Classes are conducted aboard ship, and each student performs duties which supplement theoretical studies ashore.

Classes for the long sessions are held on the Mitchell Campus of Texas A&M University at Galveston on the shores of the Gulf of Mexico. Classrooms and dormitories are modern and air-conditioned.

CAREER OPPORTUNITIES

Career opportunities in this profession for well-educated and experienced persons are unlimited. Recent graduates of the Texas Maritime Academy who elect sea-going employment after graduation have found salaries in the range of \$17,000 per year, plus liberal paid vacations of up to 120 days per year, and additional fringe benefits such as hospitalization and retirement. Shoreside career opportunities are also available in large numbers with starting salaries averaging \$1,000 per month.

Promotion for graduates of the Texas Maritime Academy, while based primarily on the individual's performance, have been rapid and have resulted in graduates becoming Masters and Chief Engineers within five years of graduation. Current annual salaries for Masters and Chief Engineers are in the \$30,000 to \$40,000 range. Past graduates of maritime academies are in key positions in steamship lines, ocean terminals, shipyards, international transportation agencies and are administrators in all branches of the maritime industry.

ADMISSION

All students must meet the general admissions requirements for Texas A&M University and the Moody College of Marine Sciences and Maritime Resources as outlined on pages 15-20.

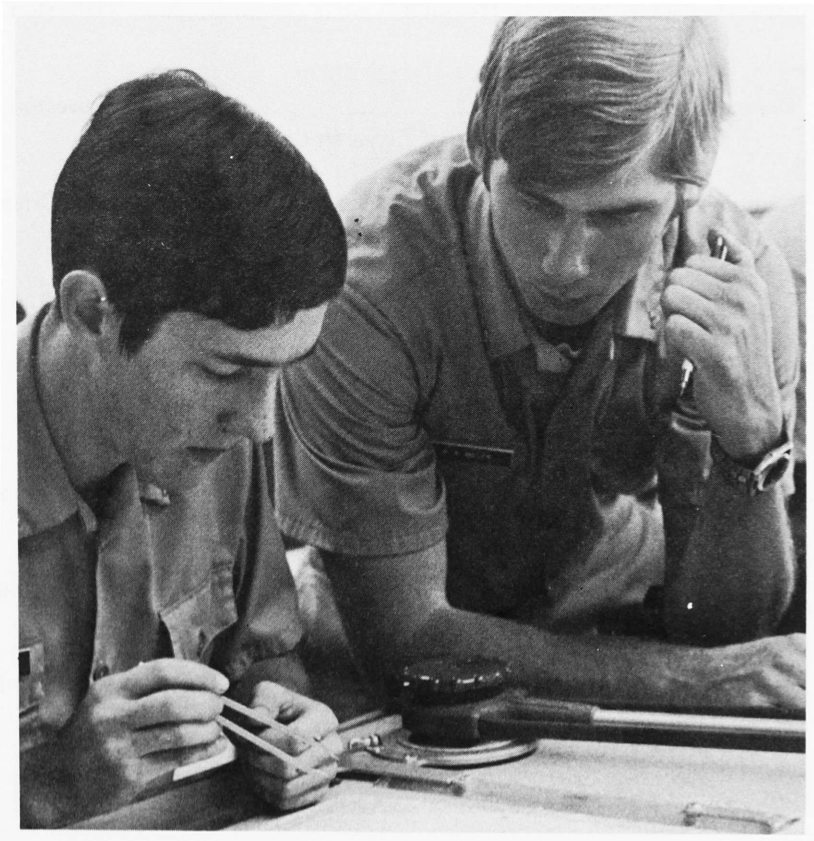
An applicant who wishes to participate in the Federal Subsidy license oriented program must be a United States citizen and physically fit at the time of admission. The student must be a member of the Corps of Cadets, unmarried, and agree to remain unmarried while enrolled, as well as reside in prescribed living quarters, presently aboard the training ship TEXAS CLIPPER.

An applicant for an original U.S. Coast Guard license as a mate must have 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 engineer 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 pseudo-isochromatic plate test, but any applicant who fails this test will be eligible if he can pass the "Williams" lantern test or equivalent.

Non-subsidized students pursuing a degree in either Marine Engineering or Marine Transportation are under no restrictions regarding physical fitness, marital status or living domicile.

ADMISSION OF TRANSFER STUDENTS

Transfer students who have satisfactorily completed previous college work may be accepted for admission. If eligible, the transfer student may participate in the summer training cruise.



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 College Board's Scholastic Aptitude Test may be granted admission with credit deficiencies.

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

Subject	Credit Required Units	Remarks
English	4	Two units in a single foreign language may be substituted for one unit or 3 quarter units in English.
Social Science	2½	
Mathematics:		
Algebra	2	
Geometry	1	
Science	2	It is preferred that these two units include biology, chemistry, or physics.
Electives	4½	Recommended from the following subject areas: foreign languages, mathematics, science, social science, speech. Not more than three 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 electives in advanced mathematics.
TOTAL	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. Candidates must be mentally and physically sound. The vision 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 "Farnsworth" lantern test or equivalent. Engineering officer candidates must be able to identify colors of red, green, blue and yellow. 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.

The U.S. Maritime Administration requires that candidates must agree in writing to apply before graduation for a commission as Ensign in the U.S. Naval Reserve (Inactive) and to accept the commission if offered.

THE NAVAL RESERVE COMMISSION

The Navy's interest in State Maritime Colleges stems from the National defense requirement for an adequate merchant marine, manned by well-trained officers who possess an understanding of naval procedures, so that merchant vessels are capable of operating with the Navy in time of peace, national emergency, or war. The Navy provides active duty officers and Chief Petty officers to instruct cadets in Naval Science and administer the Reserve Commissioning Programs.

Specific requirements for the 16×5 Reserve Commissioning Program are listed below.

16×5 PROGRAM

Cadets under this program receive a reserve commission as a restricted line officer. They must fulfill these obligations:

- (1) Sail on their license at sea for at least four months each two consecutive anniversary years.
- (2) Complete two weeks of active duty for training in the Navy annually.
- (3) Maintain commission for 6 years.

Active duty may be requested under this program and cadets also have the option to apply for an active duty commission in the Coast Guard.

THE U.S. COAST GUARD COMMISSION

The U.S. Coast Guard MARGRAD program offers licensed graduates of the State Maritime Colleges the opportunity to apply for direct commissions involving extended active duty in the Coast Guard Reserve. Applications may be initiated either during a cadet's final year prior to graduation or after graduation provided the age requirements are met.

Some specific requirements of the MARGRAD program are:

- (1) Age: As of July 1 of the year of commissioning an applicant must be between 21 and 26 for appointment as ensign and between 21 and 27 for appointment as lieutenant (junior grade).
- (2) Education: Must be a graduate of a State or Federal maritime college.
- (3) Experience and professional qualifications: (a) Must hold a Third Mate's or Third Assistant Engineer's license to apply for the grade of ensign. (b) In addition to (a) above, applicants for appointment to grade of lieutenant (junior grade) must have served one or more years onboard vessels of the United States in the capacity of licensed officers.
- (4) Must be a citizen of the United States.
- (5) Must be physically qualified.

THE SPECIAL FRESHMAN CRUISE PROGRAM

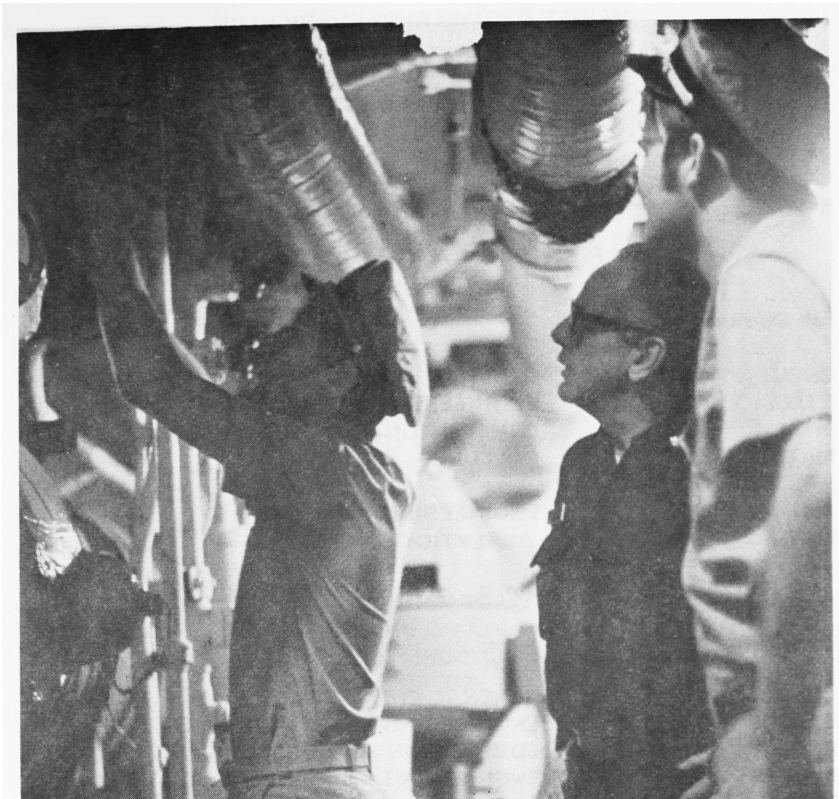
Quite distinct and apart from the regular curriculum and training program is the special cruise program for incoming freshmen. In this plan, high school graduates who are eligible for admittance to Texas A&M University are given an opportunity to make a cruise with the regular students. In this program the freshman is enrolled in the regular summer session of Texas A&M University. As university students, they pursue two courses from those offered in English, mathematics, history, geography, and management. The student becomes familiar with the sea and ships through lectures and daily participation in ship operations. As a visitor in foreign ports under the guidance of the faculty, they mingle with people of other lands and learn about cultures by visiting foreign cities and countryside.

Students who exhibit ability to do college level work and who demonstrate normal adaptability may choose to continue as a student in the Texas Maritime Academy, or they may elect to transfer to other degree programs offered by Texas A&M University or transfer to any other college or university to follow the major of their choice. The courses completed at sea are transferable and are required in any college or university.

This program is made possible by the adoption of a work-study program. Each student will attend classes in the mornings and afternoons. They will be assigned by faculty members to one of the ship's departments for the performance of assigned tasks. They will be required to observe mandatory study periods in their room each evening. Most of the assigned tasks are in the Steward's Department, cleaning of public spaces and state-rooms or in general shipboard cleanliness. Those students who seek a major in engineering will be given an opportunity to carry out tasks in the engine room where they can learn of the plant operations. This experience will prove invaluable in the engineering classroom later. Those who are more interested in navigation may be offered opportunities to work on the bridge and on deck under the supervision of one of the ship's officers.

It is not a prerequisite that a student participate in the special freshman cruise program to enter the Texas Maritime Academy, but it is desirable because students learn very soon whether or not they are interested in the regular program. If they are not, they have lost nothing, and have gained a great deal in preparing themselves for college studies.

The Former Student Association of Texas A&M University provides a \$1000 scholarship for this program to a graduating high school student who has achieved recognition in state or national science fairs. Qualified applicants should contact the Superintendent of the Texas Maritime Academy.



DEPARTMENT OF MARINE ENGINEERING

The Marine Engineering program is designed to provide academic preparation for working with design and development of marine propulsion and auxiliary systems.

While similar to mechanical engineering with regard to academic preparation, the Marine Engineering curriculum emphasizes the analysis of design and application problems specifically related to ship and other marine structures. This includes mechanical systems such as propulsion, piping, air conditioning and refrigeration, or cargo handling machinery.

Qualified students enrolled in the Marine Engineering program may elect to become Merchant Marine Engineering Officer candidates. Students participating in the Merchant Marine Engineering Officer's program must make three summer training cruises to obtain the practical machinery operating experience and maintenance training necessary to be a qualified ship's engineering officer and eligible for the Coast Guard Third Assistant Engineer's license examination.

MARINE ENGINEERING CURRICULUM
LICENSE OPTION

F R E S H M A N Y E A R

Fall Semester

CHEM.	101	GENERAL CHEMISTRY	(3-3)	4
E.D.G.	105	ENGINEERING GRAPHICS	(0-6)	2
ENGL.	103	COMPOSITION AND RHETORIC	(3-0)	3
MATH.	209	CALCULUS	(3-0)	3
P.E.	101		(0-2)	R
MAR. E.	101	ENGINEERING ANALYSIS	(0-3)	1
MATH.	104	ANALYTIC GEOMETRY	(3-0)	3
				16

Spring Semester

CHEM.	102	GENERAL CHEMISTRY	(3-3)	4
E.D.G.	106	ENGINEERING DESIGN GRAPHICS	(0-6)	2
ENGL.	104	COMPOSITION AND RHETORIC	(3-0)	3
MAR. E.	105	ENGINEERING MECHANICS I	(3-0)	3
MATH.	210	CALCULUS	(3-0)	3
NAUT.	103	NAUTICAL ORIENTATION	(2-3)	3
P. E.	102		(0-2)	R
				18

S O P H O M O R E Y E A R

Summer Session I

(Ten weeks at sea on *T/S TEXAS CLIPPER*)
Mar. E. 200 Basic Operations, Credit 4

Fall Semester

HIST.	105	U.S. HISTORY	(3-0)	3
MATH.	307	CALCULUS	(3-0)	3
E. T.	309	MACHINE PRODUCTION TECH.	(0-3)	1
MAR. E.	206	ENGINEERING MECHANICS II	(3-0)	3
MAR. E.	209	MECHANICS OF MATERIALS	(3-0)	3
MAR. E.	219	STRENGTH OF MATERIALS LAB	(0-2)	1
P. E.	201		(0-2)	R
ECON.	203	PRINCIPLES OF ECONOMICS	(3-0)	3
				17

Spring Semester

HIST.	106	HISTORY OF THE U.S.	(3-0)	3
PHYS.	219	ELECTRICITY	(3-3)	4
MATH.	308	DIFFERENTIAL EQUATIONS	(3-0)	3
E. T.	310	MACHINE PRODUCTION TECH.	(0-3)	1
P. E.	202		(0-2)	R
MAR. E.	310	ENGINEERING COMPUTATION	(3-0)	3
MAR. E.	303	MARINE THERMODYNAMICS	(3-0)	3
				17

JUNIOR YEAR

Summer Session II

(Ten weeks at sea on *T/S TEXAS CLIPPER*)

Mar. E. 300 Intermediate Operations, Credit 4

Fall Semester

ENGL.	203	INTRODUCTION TO LITERATURE	(3-0)	3
MAR. E.	304	MARINE THERMODYNAMICS	(3-0)	3
MAR. E.	307	ELECTRIC CIRCUITS	(3-2)	4
PHYS.	220	MODERN PHYSICS	(3-3)	4
N. S.	315	ELECTIVE	(2-3)	3
				17

Spring Semester

MAR. E.	308	ELECTRICAL MACHINERY		4
MAR. E.	410	MARINE POWER PLANTS		3
M. E.	344	FLUID MECHANICS		3
MAR. E.	210	MARINE CONSTRUCTION		
		MATERIALS	(2-2)	3
OCN.	401	GENERAL OCEANOGRAPHY		3
		ELECTIVE		3
				19



S E N I O R Y E A R

Summer Session III

(Ten weeks at sea on *T/S TEXAS CLIPPER*)

Mar. E. 400 Advanced Operations, Credit 4

Fall Semester

POL. S.	206	AMERICAN NATIONAL GOVERNMENT	(3-0)	3
MAR. E.	301	FLUID MECHANICS AND HEAT TRANSFER	(3-0)	3
MAR. E.	411	MARINE MECHANICAL DESIGN TECH.	(3-0)	3
MAR. E.	414	SHIP AUTOMATION	(4-0)	4
		ELECTIVE	(3-0)	3
				16

Spring Semester

MAR. E.	412	SHIP STRUCTURES AND STABILITY	(3-0)	3
MAR. E.	416	ENGINEERING LAB.	(0-4)	1
POL. S.	207	STATE & LOCAL GOVERNMENT	(3-0)	3
MAR. E.	415	INTRODUCTION TO MARINE ENGINEERING SYSTEMS DESIGN	(3-0)	3
		TECHNICAL ELECTIVE	(3-0)	3
		ELECTIVE		
				16

MARINE ENGINEERING CURRICULUM
NON-LICENSE OPTION

F R E S H M A N Y E A R

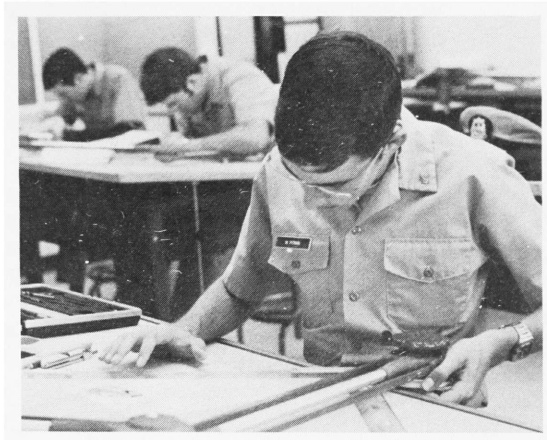
Fall Semester

CHEM.	101	GENERAL CHEMISTRY	(3-3)	4
E.D.G.	105	ENGINEERING GRAPHICS	(0-6)	2
ENGL.	103	COMPOSITION AND RHETORIC	(3-0)	3
MATH.	209	CALCULUS	(3-0)	3
P. E.	101		(0-2)	R
MAR. E.	101	ENGINEERING ANALYSIS	(0-3)	1
MATH.	104	ANALYTIC GEOMETRY	(3-0)	3
				16

Spring Semester

CHEM.	102	GENERAL CHEMISTRY	(3-3)	4
E.D.G.	106	ENGINEERING DESIGN GRAPHICS	(0-6)	2
ENGL.	104	COMPOSITION AND RHETORIC	(3-0)	3
MAR. E.	105	ENGINEERING MECHANICS I	(3-0)	3
MATH.	210	CALCULUS	(3-0)	3
N. S.	112	NAVAL SHIP SYSTEMS	(3-0)	3
P. E.	102		(0-2)	R

18



S O P H O M O R E Y E A R

Fall Semester

HIST.	105	HISTORY OF THE U.S.	(3-0)	3
MATH.	307	CALCULUS	(3-0)	3
E. T.	309	MACHINE PRODUCTION TECH.	(0-3)	1
MAR. E.	206	ENGINEERING MECHANICS II	(3-0)	3
MAR. E.	209	MECHANICS OF MATERIALS	(3-0)	3
MAR. E.	219	STRENGTH OF MATERIALS LAB	(0-2)	1
P. E.	201		(0-2)	R
ECON.	203	PRINCIPLES OF ECONOMICS	(3-0)	3

17

Spring Semester

HIST.	106	HISTORY OF THE U.S.	(3-0)	3
PHYS.	219	ELECTRICITY	(3-3)	4
MATH.	308	DIFFERENTIAL EQUATIONS	(3-0)	3
E. T.	310	MACHINE PRODUCTION TECH.	(0-3)	1
P. E.	202		(0-2)	R
MAR. E.	310	ENGINEERING COMPUTATIONS	(3-0)	3
MAR. E.	303	MARINE THERMODYNAMICS	(3-0)	3

17

JUNIOR YEAR

Fall Semester

ENGL.	203	INTRODUCTION TO LITERATURE	(3-0)	3
MAR. E.	304	MARINE THERMODYNAMICS	(3-0)	3
MAR. E.	307	ELECTRIC CIRCUITS	(3-2)	4
PHYS.	220	MODERN PHYSICS	(3-3)	4
-----	---	OPEN ELECTIVE	(3-0)	3
				17

Spring Semester

MAR. E.	308	ELECTRIC MACHINERY	(3-2)	4
MAR. E.	410	MARINE POWER PLANTS	(2-2)	3
M. E.	344	FLUID MECHANICS	(3-0)	3
MAR. E.	210	MARINE CONSTRUCTION MATERIALS	(2-2)	3
OCN.	401	GENERAL OCEANOGRAPHY	(3-0)	3
-----	---	OPEN ELECTIVE	(3-0)	3
				19

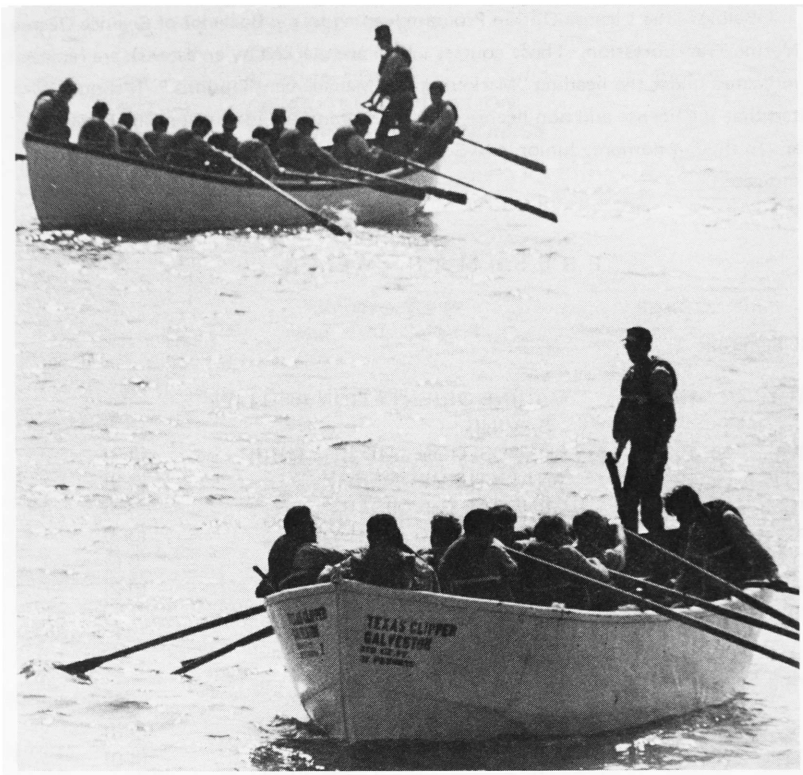
SENIOR YEAR

Fall Semester

POL. S.	206	AMERICAN NATIONAL GOVERNMENT	(3-0)	3
MAR. E.	301	FLUID MECHANICS AND HEAT TRANSFER	(3-0)	3
MAR. E.	411	MARINE MECHANICAL DESIGN TECH	(3-0)	3
MAR. E.	414	SHIP AUTOMATION	(4-0)	4
-----	---	OPEN ELECTIVE	(3-0)	3
				16

Spring Semester

MAR. E.	416	ENGINEERING LAB	(0-4)	1
POL. S.	207	STATE & LOCAL GOVERNMENT	(3-0)	3
MAR. E.	415	INTRODUCTION TO MARINE ENGINEERING SYSTEMS DESIGN	(3-0)	3
MAR. E.	412	SHIP STRUCTURES AND STABILITY	(3-0)	3
-----	---	TECHNICAL ELECTIVE	(3-0)	3
-----	---	OPEN ELECTIVE	(3-0)	3
				16



DEPARTMENT OF MARINE TRANSPORTATION

The Department of Marine Transportation offers three programs, all leading to the Degree of Bachelor of Science in Marine Transportation. One leads to qualification for the U.S. Coast Guard examination for Third Mate license. The other two programs provide the full professional training necessary to be an officer in the U.S. Merchant Marine, but have strong concentrations in principles of Management or principles of Marketing. All programs combine humanities, physical science, social science, and professional training.

License option students must make three training cruises on the **T.S. TEXAS CLIPPER**. Students in the Marketing and Management programs must make one cruise.

At the present time, some of the courses in Management and Marketing are not available at the Galveston campus and must be taken at College Station, either during the summer sessions or during the long session.

MARINE TRANSPORTATION CURRICULUM

Below is the License Option Program leading to the Bachelor of Science Degree in Marine Transportation. Those courses which are marked by an asterisk are replaced as indicated under the heading "Marketing and Management Options." It should be noted that the license and non-license option programs are identical in the Freshman year. In the Sophomore, Junior, and Senior years, deletions and replacements occur as indicated.

FRESHMAN YEAR

Fall Semester

NAUT.	103	MARINE ORIENTATION AND LIFE SAVING	(2-3)	3
ENGL.	103	COMPOSITION AND RHETORIC	(3-0)	3
MATH.	104	ANALYTIC GEOMETRY	(3-0)	3
CHEM.	106	GENERAL CHEMISTRY	(3-3)	4
MAR. E.	101	ENGINEERING ANALYSIS	(0-3)	1
E.D.G.	105	ENGINEERING GRAPHICS	(0-6)	2
P. E.	101	PHYSICAL EDUCATION	(0-2)	R
				16

Spring Semester

N. S.	112	NAVAL SHIPS SYSTEMS	(3-0)	3
MATH.	106	PLANE & SPHERICAL TRIG.	(4-0)	4
NAUT.	203	SEAMANSHIP I	(2-3)	3
ENGL.	104	COMPOSITION AND RHETORIC	(3-0)	3
MGMT.	105	INTRODUCTION TO BUSINESS	(3-0)	3
NAUT.	204	TERRESTRIAL NAVIGATION	(2-2)	3
P. E.	102	PHYSICAL EDUCATION	(0-2)	R
				19

SOPHOMORE YEAR

Summer Cruise
Naut. 200, Credit 4

Fall Semester

HIST.	105	HISTORY OF THE U.S.	(3-0)	3
ECON.	203	PRINCIPLES OF ECONOMICS	(3-0)	3
MATH.	209	CALCULUS	(3-0)	3
*MET	302	WEATHER REPORTS & FORECASTING	(3-0)	3
PHYS.	201	COLLEGE PHYSICS	(3-3)	4
P. E.	201	PHYSICAL EDUCATION	(0-2)	R
				16

PHYS.	202	COLLEGE PHYSICS	(3-3)	4
MATH.	210	CALCULUS	(3-0)	3
NAUT.	301	SEAMANSHIP II	(2-3)	3
NAUT.	303	CELESTIAL NAVIGATION	(2-3)	3
ECON.	204	PRINCIPLES OF ECONOMICS	(3-0)	3
P. E.	202	PHYSICAL EDUCATION	(0-2)	R
				16

JUNIOR YEAR

*Summer Cruise
Naut. 300, Credit 4

Fall Semester

ECON.	321	INTERNATIONAL TRADE & FINANCE	(3-0)	3
NAUT.	201	NAVAL ARCHITECTURE I	(3-2)	4
MART.	302	MARINE CARGO OPERATIONS I	(3-3)	4
MART.	301	OCEAN TRANSPORTATION I	(4-0)	4
HIST.	106	AMERICAN GOVERNMENT	(3-0)	3
				18

Spring Semester

NAUT.	202	NAVAL ARCHITECTURE	(3-0)	3
MART.	406	MARINE CARGO OPERATIONS II	(2-2)	3
MART.	321	MARITIME LAW I (RULES OF THE ROAD)	(3-0)	3
* N. S.	316	NAVAL OPERATIONS & ANALYSIS	(3-0)	3
NAUT.	304	ELECTRONIC NAVIGATION	(2-2)	3
MAR. E.	310	ENG. COMPUTATIONS	(3-0)	3
				18

SENIOR YEAR

*Summer Cruise
Naut. 400, Credit 4

Fall Semester

ENGL.	301	TECHNICAL WRITING	(3-0)	3
* N. S.	411	ORGANIZATION & MANAGEMENT	(3-0)	3
MART.	421	MARITIME LAW II	(3-0)	3
NAUT.	302	SEAMANSHIP III	(1-3)	2
* NAUT.	404	NAVIGATOR	(2-3)	3
				14

Spring Semester

* OCN.	401	INTRO. TO OCEANOGRAPHY	(3-0)	3
BANA.	303	STATISTICAL METHODS	(3-3)	4
* N. S.	412	WEAPONS	(3-0)	3
POL. S.	206	AMERICAN NATIONAL GOVERNMENT	(3-0)	3
ECON.	485	PROBLEMS		3

16

MARKETING AND MANAGEMENT OPTIONS

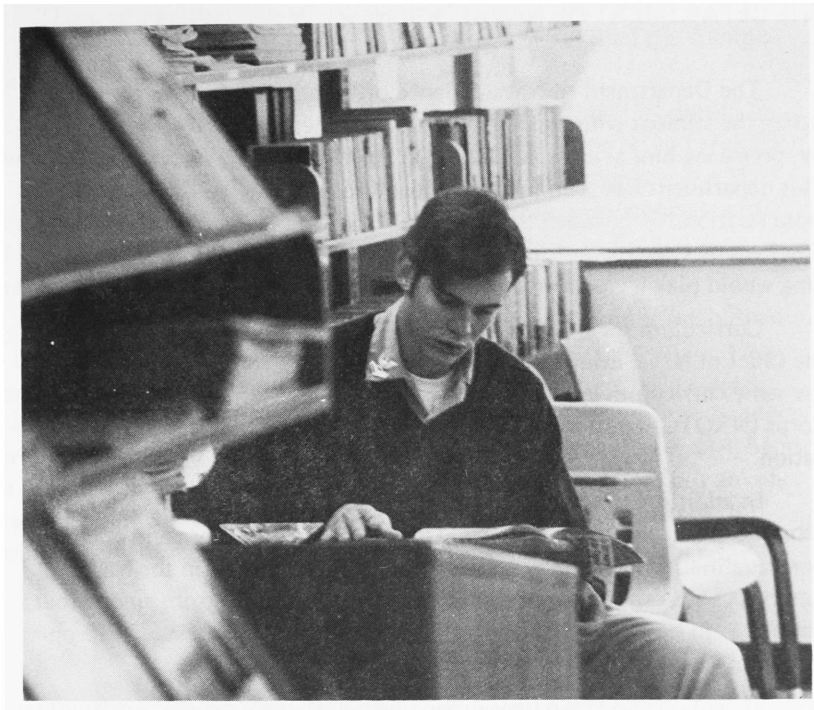
Under both option programs the following courses are deleted from the license program and replaced as indicated. Delete MET 302; N.S. 316; N.S. 411; and N.S. 412; NAUT 300 NAUT 400, and NAUT 404; OCN 401. (Total - 26 hours)

ADD (Marketing):

MKTG 321	-	MARKETING (3-0)	3
MKTG 322	-	CONSUMER BEHAVIOR (3-0)	3
MKTG 344	-	PHYSICAL DISTRIBUTION SYSTEMS (3-0)	3
MKTG 345	-	PROMOTION STRATEGY (3-0)	3
MKTG 445	-	MARKETING RESEARCH (3-0)	3
POLS 207	-	STATE & LOCAL GOVERNMENT (3-0)	3
BANA 304	-	BUSINESS CYCLES & MEASUREMENTS (3-0)	3
HIST 106	-	HISTORY OF THE U.S. (3-0)	3
TOTAL HOURS		21	

ADD (Management):

MGMT 363	-	PRINCIPLES OF MANAGEMENT (3-0)	3
MGMT 211	-	LEGAL AND SOCIAL ENVIRONMENT OF BUSINESS (3-0)	3
MGMT 422	-	PERSONNEL PROBLEMS OF INDUSTRY (3-0)	3
MGMT 423	-	HUMAN RELATIONS IN BUSINESS (3-0)	3
MGMT 459	-	MANAGEMENT PROBLEMS (3-0)	3
	or		
MGMT 460	-	MANAGEMENT SYSTEMS & CONTROL (3-0)	3
MGMT 466	-	MANAGEMENT POLICY (3-0)	3
POLS 207	-	STATE & LOCAL GOVERNMENT (3-0)	3
BANA 304	-	BUSINESS CYCLES & MEASUREMENTS (3-0)	3
HIST 106	-	HISTORY OF THE U.S. (3-0)	3
TOTAL HOURS		27	



DEPARTMENT OF GENERAL ACADEMICS

The General Academics Department of Moody College provides instruction in courses required by degree programs outside the departmental specialty areas.

Courses offered include English, mathematics, chemistry, social studies, economics, statistics, physics, industrial education and physical education.

Approximately 40% of the courses offered at the college are from the General Academics Department, ranging from basic courses to advanced level offerings of special interest.

To maintain the standards set by Texas A&M University, course content and instructional methods in all academic fields are closely coordinated with the respective subject departments on the main campus at College Station.

To complement classroom teaching, faculty members participate in research and consultation relative to their field of interest. Recent projects have included studies in Maritime Research Information Service; experimental Fluid Physics; and shipboard-water-treatment procedures.

THE DEPARTMENT OF NAVAL SCIENCE

The Department of Naval Science offers a program designed to familiarize the student with procedures and fundamentals of Naval Policy; thereby, preparing him as a future Officer in the United States Naval Reserve. This department has been instituted into the Academy to help establish a close relationship between the U.S. Navy and U.S. Merchant Marine Fleet. The Federal Government feels that in time of war Merchant Marine shipping would play a vital role in the overall Naval Seapower program.

Curriculum for the Department of Naval Science is controlled by the Chief of Naval Education and Training in Pensacola, Florida. This is the same curriculum used within the Naval Reserve Officers Training Corps (NROTC) Units at various colleges and universities throughout the nation.

In addition, the Naval Science Department helps students apply for commissions in the Naval Reserve. Upon obtaining a license and graduation, qualified students may be selected for a commission in the Naval Reserve. Those students selected are required to choose from among four options as to how they plan to fulfill their military obligation. These options are:

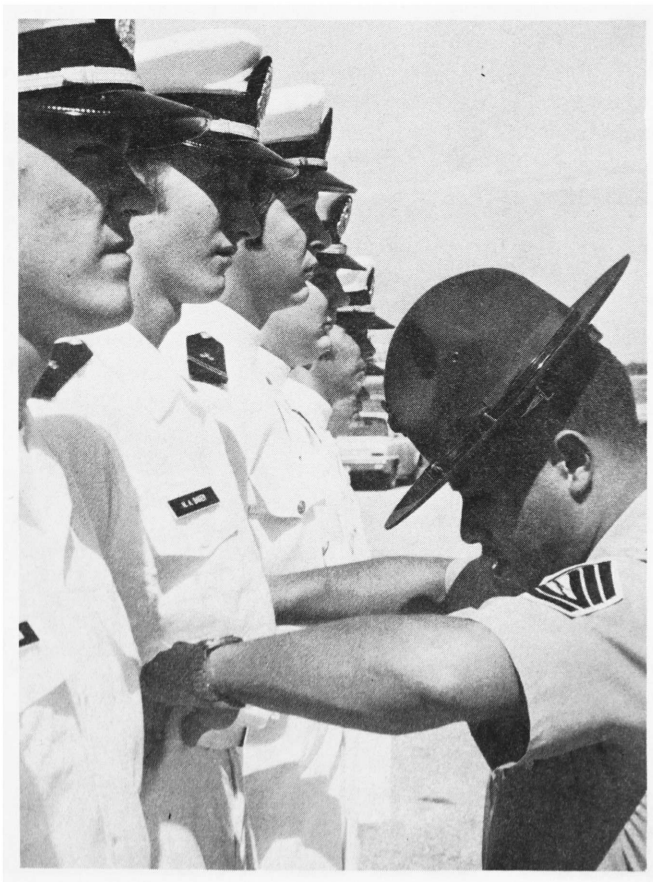
- a) Sail on their merchant marine license for not less than six months each year, for three consecutive years immediately following acceptance of their commissions.
- b) Sail on their merchant marine license for not less than four months each year, for four consecutive years immediately following acceptance of their commissions.
- c) Apply for and serve on active duty for training on board a Navy ship for a minimum period of thirty consecutive days each year for a period of three years immediately following acceptance of their commissions.
- d) Apply for and serve on full time active duty in the Naval Reserve for three consecutive years.

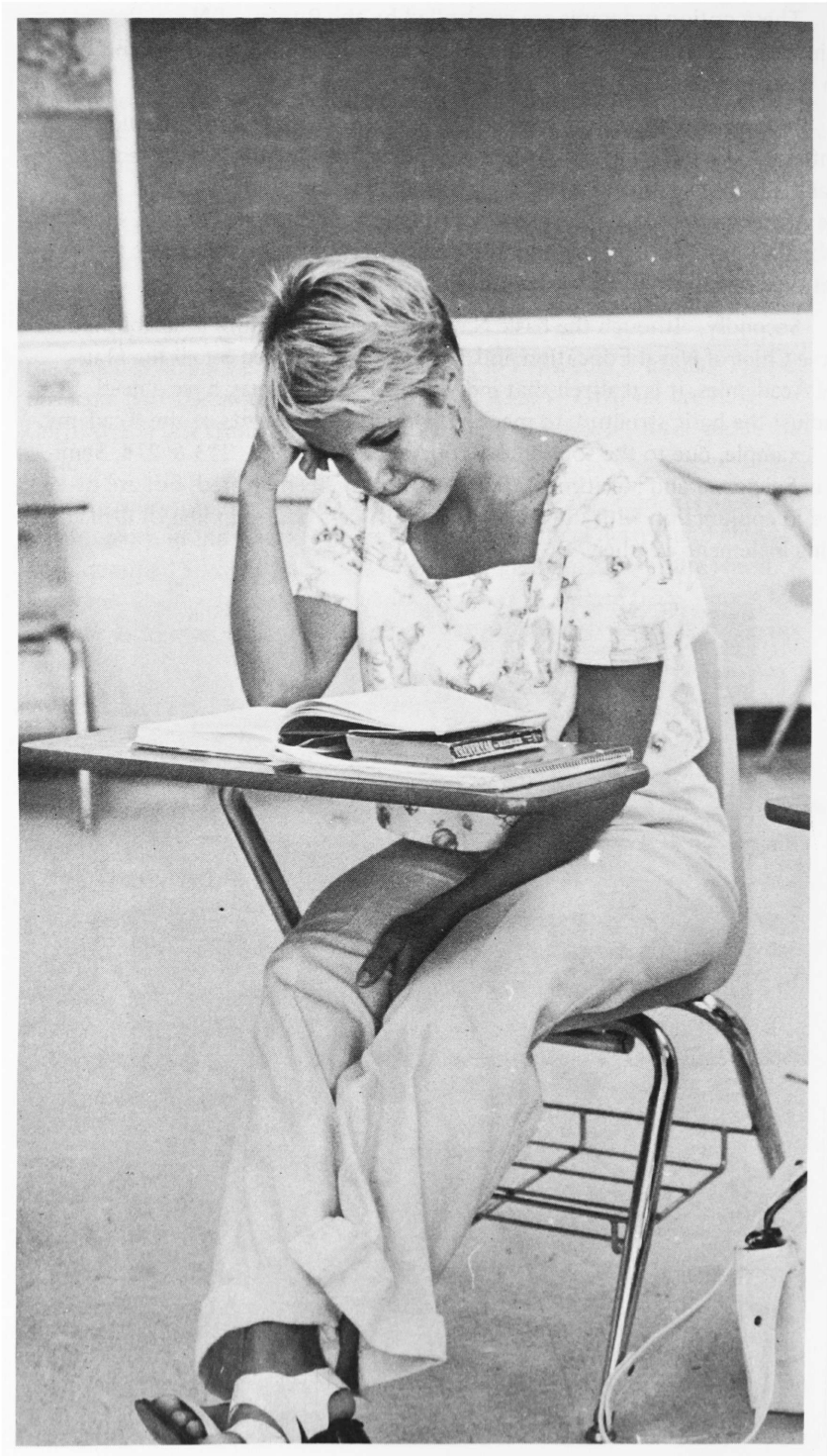


These option programs are controlled by the Bureau of Naval Personnel in Washington, D.C., and should an option not be fulfilled the commission will be revoked.

In reviewing the Naval Science Curriculum, several factors should be mentioned. First, it must be remembered that much of the Navy's technical and advanced subject matter is classified. Because students at the Maritime Academy do not hold proper security clearances, some courses, such as Naval Operations Analysis and Ships System II, must be limited as to what type of information can be promulgated.

Secondly, although the basic Naval Science Curriculum is established by the Chief of Naval Education and Training and adopted by all the Maritime Academies, it is realized that individual academies may have a need to adjust the basic structure to meet individual requirements of the Academy. For example, due to the sophomore course schedule, N.S. 213 & 214, Seminar in Seapower and Maritime Affairs I & II, have been deleted, but are offered in conjunction with the Naval Junior Officers course in lieu of drill during inclement weather.





Department of Marine Sciences

Increasing requirements for manager-scientists capable of balancing economic and environmental needs of the Texas coastal zone have propelled the Moody College of Marine Sciences and Maritime Resources into a leadership role in the academic preparation of those scientists. Its components are scheduled to grow in response to the academic and research needs of the region.

The Department of Marine Sciences, presently housed at Texas A&M University's Fort Crockett facility on Galveston Island, is devoted to year-round research and instruction, both graduate and undergraduate, in various disciplines related to the marine sciences. The program for undergraduates is designed to provide a student with a broad, generalist background which will prepare him for graduate studies in the marine field.

Undergraduate Program

As a new program, the curriculum leading to a Bachelor of Science Degree in Marine Sciences is designed to enable transfer students to enter easily at the junior level where specialization begins. The first two years are similar to other freshman and sophomore courses of study at other schools. All four years of the Marine Sciences degree program are offered at the Mitchell Campus in Galveston.

TAMUG CATALOG 1974-75

DEPARTMENT OF MARINE SCIENCES

FRESHMAN YEAR

Fall Semester

BIOL.	113	INTRODUCTORY BIOLOGY	(3-0)	3
BIOL.	123	INTRODUCTORY BIOLOGY LAB	(0-3)	1
CHEM.	101	GENERAL CHEMISTRY	(3-3)	4
ENGL.	103	COMPOSITION AND RHETORIC	(3-0)	3
MATH.	121	ANALYTIC GEOMETRY & CALCULUS	(4-0)	4
* P. E.	101		(0-2)	R
NAVAL SCIENCE OR ELECTIVE				1
				16

Spring Semester

BIOL.	114	INTRODUCTORY BIOLOGY	(3-0)	3
BIOL.	124	INTRODUCTORY BIOLOGY LAB	(0-3)	1
CHEM.	102	GENERAL CHEMISTRY	(3-3)	4
ENGL.	104	COMPOSITION AND RHETORIC	(3-0)	3
MATH.	122	CALCULUS	(4-0)	4
ENGR.	101	ENGINEERING ANALYSIS	(2-0)	2
* P. E.	102		(0-2)	R
NAVAL SCIENCE OR ELECTIVE				1
				18

SOPHOMORE YEAR

Fall Semester

* POL. S.	206	AMERICAN NATIONAL GOVERNMENT	(3-0)	3
PHYS.	218	MECHANICS	(3-3)	4
HIST.	105	HISTORY OF U.S.	(3-0)	3
CHEM.	227	ORGANIC CHEMISTRY I	(3-0)	3
CHEM.	237	ORGANIC CHEMISTRY LAB	(0-3)	1
GEOG.	210	MARINE GEOGRAPHY	(3-0)	3
* P. E.	201		(0-2)	R
NAVAL SCIENCE OR ELECTIVE				1
				18

Spring Semester

* POL. S.	207	STATE & LOCAL GOVERNMENT	(3-0)	3
PHYS.	219	ELECTRICITY	(3-3)	4
C. S.	203	INTRO. TO COMPUTING	(3-0)	3
* HIST.	106	HISTORY OF U. S.	(3-0)	3
CHEM.	228	ORGANIC CHEMISTRY II	(3-0)	3
CHEM.	238	ORGANIC CHEMISTRY LAB	(0-3)	1
* P. E.	202		(0-2)	R
NAVAL SCIENCE OR ELECTIVE				1
				18

J U N I O R Y E A R

Fall Semester

ENGL.	301	TECHNICAL WRITING	(3-0)	3
BIOL.	440	MARINE BIOLOGY	(3-3)	4
GEOL.	205	PHYSICAL GEOLOGY	(3-2)	4
ELECTIVE (HUMANITIES)				3
STAT.	406	STATISTICAL METHODS	(2-2)	3
				17

Spring Semester

MAR. S.	310	FIELD METHODS IN MARINE SCIENCE	(1-6)	3
ECON.	203	PRINCIPLES OF ECONOMICS	(3-0)	3
MET.	301	ATMOSPHERIC SCIENCES	(3-0)	3
C. S.	204	COMPUTERS & PROGRAMMING	(3-0)	3
ELECTIVE (HUMANITIES)				3
ELECTIVE (PHYSICAL SCIENCE, MARINE SCIENCES, MATH, OR ENGLISH)				3
				18

* REQUIRED BY TEXAS A&M UNIVERSITY FOR GRADUATION

S E N I O R Y E A R

Fall Semester

GEOL.	485	PROBLEMS	(3-0)	3
MAR. S.	420	MARINE ECOLOGY	(2-3)	3
MAR. S.	481	SEMINAR IN MARINE SCIENCES	(2-0)	1
OCN.	410	INTRODUCTION TO PHYSICAL OCEANOGRAPHY	(2-0)	2
OCN.	420	INTRODUCTION TO BIOLOGICAL OCEANOGRAPHY	(2-0)	2
ELECTIVE (SOCIAL SCIENCE)			(3-0)	3
				14

Spring Semester

MAR. S.	485	PROBLEMS IN MARINE SCIENCES	(3-0)	3
OCN.	430	INTRODUCTION TO GEOLOGICAL OCEANOGRAPHY	(2-0)	2
OCN.	440	INTRODUCTION TO CHEMICAL OCEANOGRAPHY	(2-0)	2
ELECTIVE (PHYSICAL SCIENCE)				3
ELECTIVE (SOCIAL SCIENCE)				3
ELECTIVE				3
				16

GRADUATE PROGRAM

Curriculum in Marine Sciences

Residency requirements generally dictate the relative time spent between Galveston and College Station in specific programs. Most Master's of Science programs are fully Galveston-based, Doctoral candidates usually must have additional work at the main TAMU campus in College Station.

Through the department of Marine Sciences in Galveston, courses are currently offered in Biology, Civil Engineering (Coastal and Ocean Engineering and Environmental Engineering), Oceanography, Veterinary Microbiology, and Wildlife and Fisheries Science.

Participation by other departments at College Station is projected for Moody College. Preparation for professional fields is heightened in the broad fields, and in specialties such as ecology, marine vehicle dynamics, fluid mechanics, mariculture and the teaching of marine sciences.

RESEARCH ACTIVITIES AND FACILITIES

Controlled environment rooms and aquarium rooms permitting studies of living marine organisms are among the Department of Marine Sciences facilities now at Fort Crockett. Laboratories include capabilities for radioisotope analysis, flow-through and static mariculture research ponds.

Nearshore study and research in trawling, dredging and shallow-water coring are done from small vessels owned by the University and further access to larger testing facilities through the main campus in College Station.

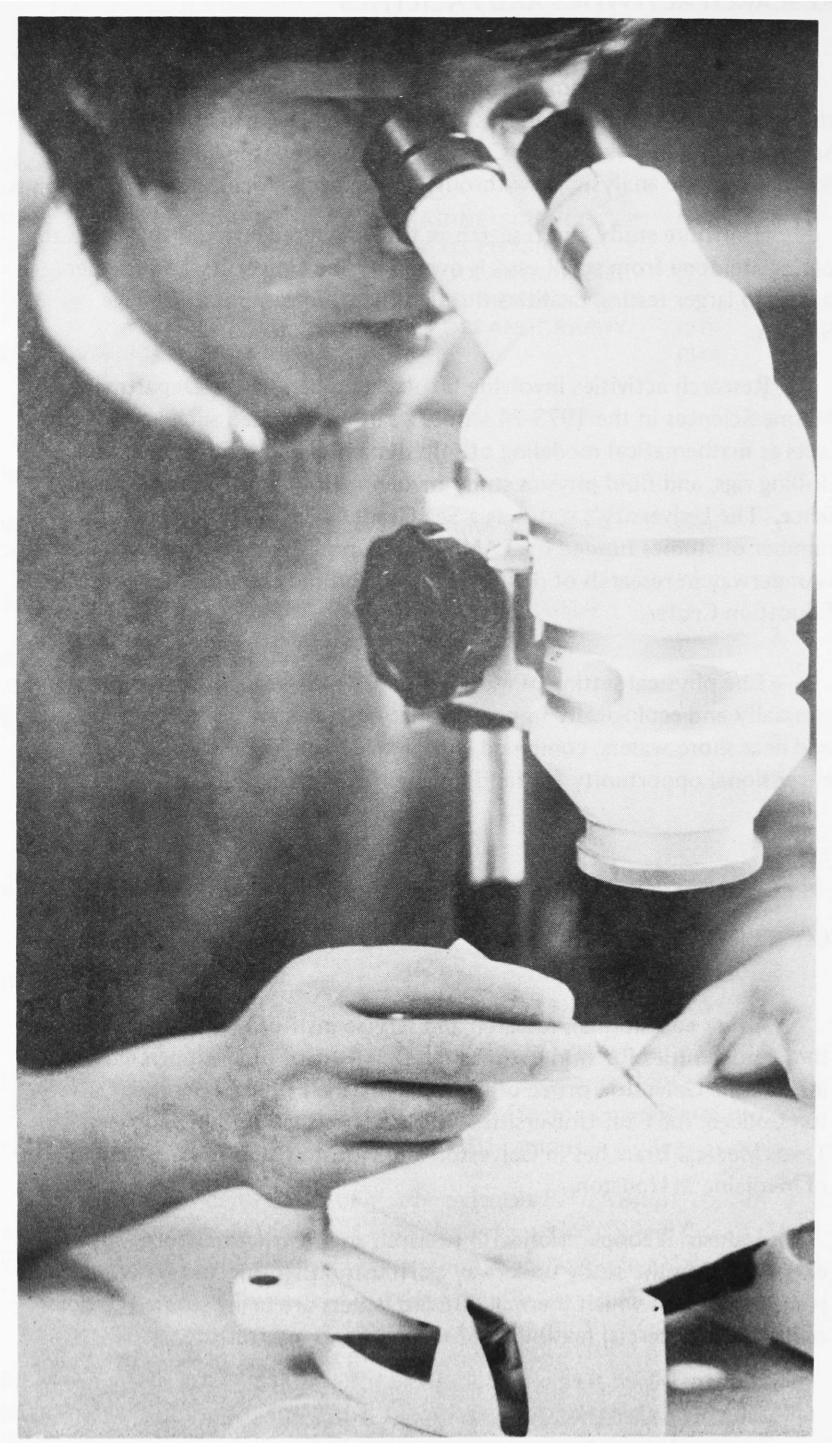
Research activities involving faculty members of the Department of Marine Sciences in the 1973-74 school year has included such varying projects as mathematical modeling of ship dynamics and semi-submersible drilling rigs, and fluid physics study involving flow transition and turbulence. The University's status as a Sea Grant College is reflected in the number of studies funded by TAMU's Sea Grant Program, and expansion is underway in research of diving medicine and the creation of a new Marine Education Center.

The physical setting of Moody College offers a wide variety of commercially and ecologically important marine organisms. The bay, estuarine and near shore waters, combined with a mild year-round climate, offer an exceptional opportunity for field research and instruction.

COOPERATIVE PROGRAMS

Other educational, research and service institutions which amplify the opportunities for study within the Department of Marine Sciences include the Galveston office of National Marine Fisheries Service, Galveston College, the Gulf Universities Research Consortium, the University of Texas Medical Branches in Galveston and Houston, and the Baylor College of Medicine in Houston.

Industrial cooperation with research and instructional programs is exemplified in the study underway at Houston Lighting and Power Company facilities in which thermal effluent waters are being studied to determine the commercial feasibility of shrimp pond mariculture.



Coastal Zone Laboratory

The Galveston Coastal Zone Laboratory is the third major facet of the Moody College of Marine Sciences and Maritime Resources, and a service division for conducting short-term research of an applied nature pertinent to the Galveston coastal zone area. These activities, initiated under the Sea Grant program of the Texas A&M University Center for Marine Resources, are conducted by the faculty of the Moody College and draw upon the expertise, as needed, of researchers from the main University campus. Subsequently, as circumstances justify, it is probable that part-time support of efforts will be sought from other Galveston area non-university research units, such as the National Marine Fisheries Service, and the National Maritime Research Center.

There is a parallelism between the Galveston Coastal Zone Laboratory and the various stations of the extension services of the Texas A&M University System in that the Laboratory restricts itself to research that serves the interest and goals of a particular region. Of course, in some instances, research commonality will apply.

The Galveston Coastal Zone Laboratory recently completed five research projects all sponsored in part through Sea Grant. These included: Oyster Mariculture, the Utilization of Offshore Petroleum Platforms for Oceanographic Engineering, the Distribution of Blue Crab in Experimental Gradients of Temperature, Development of a Pilot Oyster Hatchery, and the Effects of Phytoplankton on the Development and Maturation of Penaeid Shrimp. Additionally, the Moody College is cooperating with the National Maritime Research Center on a joint effort regarding the ship-board self-contained sewage systems that could one day become a requirement for all seagoing vessels.

Additional research areas of general interest being considered for activation in the near future within the Galveston Coastal Zone Laboratory will include Red Tide investigations, and Oil Drum Recovery from the Gulf shrimp beds.

In the future the Galveston Coastal Zone Laboratory will continue to call upon the expertise of the resident Moody College faculty as well as other qualified personnel in the community who can assist in solutions to Galveston area coastal zone problems.

Course Descriptions

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. Prerequisites: Biol. 113; 124 is optional.*

123. INTRODUCTORY BIOLOGY LABORATORY (3 - 0). 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 (3 - 0). Credit 1. *Laboratory supporting Biology 114. Prerequisite: Biol. 113.*

435. ADVANCED INVERTEBRATE ZOOLOGY (3 - 3). Credit 4. *Morphology, taxonomy, biology, and phylogeny of invertebrate animals. Prerequisites: Biol. 114 and 124 or approval of instructor.*

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, distribution, history, ecology, physiology, mutualism, predation, major community types and economic aspects of marine organisms. Prerequisites: Biol. 113, 114, 123, 124 or equivalent; 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 ranking professor in field chosen.*

BUSINESS ANALYSIS (B. Ana.)

303. STATISTICAL METHOD (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. 130.*

304. BUSINESS CYCLES AND BUSINESS MEASUREMENT (3-0). Credit 3. *Empirical and statistical study of economic fluctuations: Theory, causes and control of business cycles; business barometers and forecasting; economic and statistical studies. Prerequisite: B. Ana. 303.*



CHEMISTRY (Chem.)

- 101. GENERAL CHEMISTRY (3 - 3). Credit 4.** *Fundamental laws and theories of chemical activity. Practical applications of chemical processes involving nonmetals briefly described. Laboratory work deals with nonmetals and simple tests of technical importance.*
- 102. GENERAL CHEMISTRY (3-3). Credit 4.** *Fundamental theories of structure and activity. Practical application of chemical processes involving metals described. Organic chemistry outlined. Laboratory work consists of qualitative separation and identification of metallic and nonmetallic ions. Prerequisite: Chem. 101.*
- 106. GENERAL CHEMISTRY (3 - 3). Credit 4.** *Survey course in chemistry for students needing it as a cultural subject and not as 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 104.*
- 228. ORGANIC CHEMISTRY II (3 - 0). Credit 3.** *Continuation of Chem. 227. Prerequisite: Chem. 227.*
- 237. ORGANIC CHEMISTRY LABORATORY (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 (0-3). Credit 1.** *Continuation of Chem. 237. Prerequisites: Chem. 228, 237 or registration therein.*

COMPUTING SCIENCE (C. S.)

- 201. COMPUTER PROGRAMMING FOR ENGINEERS (1-0). Credit 1.** *Study of programming of algorithmic language to solve numerical problems of engineering nature. Emphasizes actual writing and running of typical computer programs. Prerequisite: Sophomore classification.*
- 203. INTRODUCTION TO COMPUTING (3 - 0). Credit 3.** *Introduction to the digital computer field; fundamental concepts; algorithms; computer organization; programming in a higher-level computer language.*
- 204. COMPUTERS AND PROGRAMMING (3 - 0). Credit 3.** *Advanced programming techniques for higher-level languages including FORTRAN and COBOL; debugging and verification; error analysis; program structure; use of peripheral storage; job control.*

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.*

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 union 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.*

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.*

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: I. I. 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 L.T. 309. Machining of metals with both standard and production machine tools. Manufacture of interchangeable parts, jigs, fixtures and fixed gages. Prerequisite: L.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. Prerequisite: 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.*

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.*
- 301. TECHNICAL WRITING (3-0). Credit 3.** *Advanced writing in technical, scientific and business fields; reports, proposals and other papers; correspondence. Prerequisite: Junior Classification in the major department or approval of instructor.*

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 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.

GEOLOGY (Geol.)

205. PHYSICAL GEOLOGY (3-2). Credit 4. *General principles of physical*

geology; structure of the earth, origin of minerals and rocks and geologic processes.

485. PROBLEMS Credit 1 to 3 each semester. *Advanced problems in geology.*

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 re-*

construction; 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. Prerequisite: Hist. 105.

309. AMERICAN MILITARY HISTORY (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 or 206; 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.

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. BUSINESS LAW (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. PRINCIPLES OF MANAGEMENT (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.*
- 423. HUMAN RELATIONS IN BUSINESS (3 - 0). Credit 3.** *Study of problems arising from association of people in work environments. Prerequisite: Psy. 303, Mgmt. 363.*
- 459. MANAGEMENT PROBLEMS (3 - 0). Credit 3.** *Case study approach to management problems with emphasis on quantitative analysis and decision making. Prerequisite: Mgmt. 363.*
- 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. Ana. 337; 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. Prerequisite: Senior Classification in Business Administration; Mgmt. 363.*

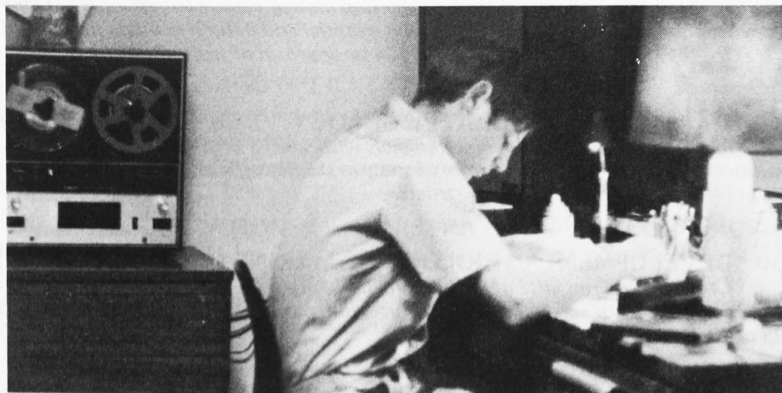
MARINE ENGINEERING (Mar. E.)

- 101. ENGINEERING ANALYSIS (0 - 3). Credit 1.** *Methods available for solution of engineering problems. The slide rule, graphical techniques and digital computer techniques included.*
- 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. Prerequisites: Math. 122 or registration therein.*

- 200. BASIC OPERATIONS Credit 4.** *Represents practical application of student's classroom studies aboard 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 U.S. Coast Guard license. Prerequisite: N.S. 112.*
- 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: Mar. E. 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.*
- 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 U.S.C.G. marine engineering regulations.*
- 210. MARINE CONSTRUCTION MATERIALS (3 - 0). Credit 3.** *Analysis of properties of solid materials as related to marine engineering design and applications. Introduction to metallurgical processes.*
- 216. KINEMATIC DRAWING (0-3). Credit 1.** *Problems and drafting involving linkages, cams, centros, relative linear velocities and relative acceleration. Prerequisites: Mar. E. 206 or registration therein.*
- 219. STRENGTH OF MATERIALS LABORATORY (0-2). Credit 1.** *Mechanical behavior of engineering materials. Determination of strength and other properties of selected materials. Prerequisite: Mar. E. 209 or registration therein.*
- 300. INTERMEDIATE OPERATIONS Credit 4. S.** *Training program for second sea training period. Sea projects required of each student under supervision of officer-instructors. Lifeboat and safety training included.*
- 301. FLUID MECHANICS AND HEAT TRANSFER (3 - 0). Credit 3.** *Application of principles of fluid statics and dynamics to marine engineering problems. Study of fundamental laws relating to heat flow. Characteristics of pumps, topics in compressible flow.*
- 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.*

- 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.*
- 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 applicable to understanding of behavior, mode of operation, uses and maintenance of equipment aboard ship. Measurements of circuit phenomena, including fundamental amplifiers and rectifiers. Prerequisites: Math. 308, Phys. 219.*
- 308. ELECTRICAL MACHINERY (3 - 2). Credit 4.** *Study of principle types of electrical machines aboard ship including their characteristics, applications and control devices. Laboratory work includes actual operation and testing of machinery and equipment aboard ships.*
- 310. ENGINEERING COMPUTATION (3 - 0). Credit 3.** *Techniques of problem solving using digital computers; concepts and properties of algorithms; solution for computational problems using algorithms defined by FORTRAN. Flow diagrams and program preparation. Prerequisite: Math. 122.*
- 400. ADVANCED OPERATIONS Credit 4.** *Training program for third sea training period. During this period each student will learn how to operate 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.*
- 402. DIESEL ENGINEERING (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.*
- 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.*
- 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.*
- 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. Field trips to shipyard nuclear facilities in Galveston area.*
- 410. MARINE POWER PLANTS (2 - 2). Credit 3.** *Discussion of the selection and application of systems for marine propulsion and auxiliary systems. Analysis of system requirements. Prerequisites: Mar. E. 304.*
- 411. MARINE MECHANICAL DESIGN ENGINEERING (3 - 0). Credit 3.** *Analysis of the design and application of components in marine mechanical systems.*
- 412. SHIP STRUCTURES AND STABILITY (3 - 0). Credit 3.** *An introduction to naval architecture. Topics include geometry of the ship, evaluation of stability, motions in waves and a study of ship structures. Prerequisite: Mar.E. 209.*
- 414. SHIP AUTOMATION (4 - 0). Credit 4.** *Study of closed loop devices including electrical, hydraulic and mechanical systems. Ship application of automation, current and future. Survey of electron devices, instrumentation and control. Prerequisites: Mar.E. 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: Mar.E. 410.*
- 416. ENGINEERING LABORATORY (0 - 4). Credit 1.** *Applications and operating principles of engineering instrumentation and control system components.*



417. ENGINEERING LABORATORY II (0 - 4). Credit 1. *Performance analysis of turbine machinery, air conditioning systems, basic electromechanical and pneumatic control systems. Prerequisite: Senior Classification.*

420. AUTOMATION II (3 - 2). Credit 4. *A continuation of Mar. E. 414. Use of frequency response and S-plane methods in control systems design. Laboratory work includes simulation of control systems on the analog computer. Prerequisite: Mar.E. 414; Mar.E. 407.*

485. PROBLEMS Credit 1 to 4. *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 SCIENCE (Mar. S.)

310. FIELD METHODS IN MARINE SCIENCE (1-6). Credit 3. *The primary focus is on techniques of documenting collected materials, methods of reconnaissance and mapping of traverses in major coastal environments. Sampling and recording techniques, interview procedures, the use of base maps and remote sensing will be introduced. Prerequisite: 14 hrs. Marine Science or 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. Prerequisite: approval of instructor.*

420. 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. MARINE INVERTEBRATE ZOOLOGY (3 - 3). Credit 4. *General biology of marine invertebrate animals with special emphasis on morphology, evolution and systematics. Laboratory stress on studies of local fauna. Prerequisites: Biol. 114 and 124 or approval of instructor.*

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: Mar. S. 435 or Biol. 435.*

481. SEMINAR IN MARINE SCIENCES (1-0). Credit 1. *Problem-oriented discussion session. Topics and reports selected for current relevance. Prerequisite: Approval of Department Head.*

485. PROBLEMS IN MARINE SCIENCES Credit 1 - 6. *Special topics and problems for individuals or small groups concerning various aspects of marine sciences. Prerequisite: Approval of Department head.*

MARINE TRANSPORTATION (Mar. T.)

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 services by shipper, finance of shipping, international conventions and treaties.*

302. MARINE CARGO OPERATIONS I (3 - 3). Credit 4. *Essential requirements and problems in stowage and carriage of general and dry bulk cargoes. Theoretical and practical problems in receiving, stowing, securing, transporting and discharging all types of cargoes. Laboratory work consists of field trips to ships and various maritime installations.*

304. OCEAN TRANSPORTATION II (3 - 0). Credit 3. *Concerned with carriage of goods under bills of lading and charter parties. Terminal management and operation and types of carriers. Pertinent sections of American and British shipping laws are thoroughly studied. Prerequisite: Mar. T. 301.*

321. MARITIME LAW I (3 - 0). Credit 3. *Provides a thorough foundation in the basic laws governing ship operations. Intensive study of the international and inland rules of the road for the prevention of collision at sea; safety of life at sea convention; and U.S. laws and regulations for merchant seamen. 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: Mar. T. 304.*

406. MARINE CARGO OPERATIONS II (2-2). Credit 3. *Stowage of special cargoes (bulk, liquid, refrigerated and dangerous cargoes), ship's papers, entry and clearance procedures are covered. Laboratory work consists of field trips to different types of ships and studying their methods of handling cargo.*

416. PORT OPERATIONS, ADMINISTRATION AND ECONOMICS (3 - 0). Credit 3. *The concept of the port and methods of intermodal transfer are described. Port functions are divided and analyzed along business lines: economics, management, finance, accounting, and marketing. Case studies supplement course work. Prerequisites: Mar. T. 304, Econ. 321, Mgmt 105.*

421. MARITIME LAW II (3 - 0). Credit 3 *Provides the essential principles of admiralty and maritime law. A thorough study of collision law with emphasis on case histories. Analysis of maritime cases as reviewed by the U.S. Supreme Court in marine insurance, rights of seamen, maritime liens, ship mortgages, salvage and the limitation of liability. Prerequisites: Mar. T. 321.*

485. PROBLEMS Credit 1 to 4. *Directed study in problems in the field of marine transportation not covered by other courses in department. Prerequisite: Senior Classification or approval of Department Head.*

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.*



MATHEMATICS (Math.)

104. ANALYTIC GEOMETRY (3 - 0). Credit 3. *Rectangular coordinates; equations and sets of points; lines, circles and other conic sections; polar coordinates; solid analytic 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.*

121. ANALYTIC GEOMETRY AND CALCULUS (4 - 0). Credit 4. *Rectangular coordinates, equations and sets of points. Lines, conic sections, functions, limits, derivatives of functions, application, integration, areas and volumes by integration. Prerequisites: Math. 102 and 103, or satisfactory performance on a qualifying examination.*

122. CALCULUS (4 - 0). Credit 4. *Comprehensive study of integration; application of integration to moments, arc lengths, areas of surfaces of revolution, liquid pressure and work; improper integrals; indeterminate forms. Prerequisite: Math. 121 or 209.*

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.*

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 210.*

308. DIFFERENTIAL EQUATIONS (3 - 0). Credit 3. *Linear equations, solutions in series, solutions using Laplace transforms, systems of differential equations, introduction to numerical methods, partial differential equations and boundary value problems. Fourier series. Prerequisite: Math. 122 or 210.*

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 AND LIFESAVING (2-3). Credit 3.** *Survey of maritime industry and its trends, with emphasis on opportunities; the seaman's environment and customs of the sea; basic nomenclature and lifesaving.*
- 104. NAUTICAL ORIENTATION II (0 - 3). No Credit.** *Safety at sea is stressed. Instruction in small boat handling under sail.*
- 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 project in communications, navigation, seamanship and rules of the road.*
- 201. NAVAL ARCHITECTURE I (3 - 2). Credit 4.** *Description of the 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 the 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.** *Art of handling small boats under oars, sail, and power. Lifeboat launching and equipment, construction and types of boats. Application of ground tackle, knotting and splicing, blocks and tackle. Communications practice, rules of the road.*
- 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 on ship-board, heavy lifts, accident prevention. Marine inspection laws and communications.*
- 302. SEAMANSHIP III (1 - 3). Credit 2.** *Intermediate projects in communications and rules of the road. Thorough study made of U.S. Public Health requirements in ship sanitation. Marine inspection rules for safety at sea and rules and regulations 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 marine gyro compass, radio direction finder, loran, Omega, and Decca. 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. *Review of the principles of electronic, celestial, and terrestrial navigation in preparation for the U.S. Coast Guard examination for Third Mate.*



NAVAL SCIENCE (N.S.)

- 112. NAVAL SHIPS SYSTEM I (3 - 0). Credit 3.** *The foundation of various ship subsystems – propulsion, auxiliary power, interior communications, and examination of their interrelationships for the establishment of the complete ship's system. Prerequisite: freshman and sophomore cadets.*
- 315. NAVIGATION (2 - 3). Credit 3.** *Study of the theoretical and practical applications of terrestrial and celestial navigation. Prerequisite: engineering cadet.*
- 316. NAVAL OPERATIONS ANALYSIS (3 - 0). Credit 3.** *Naval and Merchant Marine operations including convoy operations, replenishment-at-sea operations, maneuvering board solutions, and the use of probability theory and operations analysis in decision making. Prerequisite: junior cadet.*
- 411. NAVAL ORGANIZATION AND MANAGEMENT (3 - 0). Credit 3.** *Directed study of the principles and practices in the Naval Organization structure and various management techniques. Prerequisite: senior cadet.*
- 412. NAVAL WEAPONS (3-0). Credit 3.** *Essential components of the modern weapons system studied to understand weapons control problems. Prerequisite: Senior cadet.*
- 485. PROBLEMS Credit 1 to 4.** *Directed study in Naval Science. Prerequisite: Senior Classification and approval of the Department Head.*

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. Prerequisite: Approval of instructor; junior or senior classification; Math. 104 or 116; Chem. 104 or 114.*
- 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.*
- 420. INTRODUCTION TO BIOLOGICAL OCEANOGRAPHY (2 - 0). Credit 2.** *Biological aspects of the marine environment. Man's use of the sea; problems of productivity and pollution; and fouling and boring organisms. Prerequisite: Biol. 114 or approval of instructor.*

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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. 205 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.*

PHYSICAL EDUCATION (P.E.)

101. REQUIRED PHYSICAL EDUCATION (0-2). Credit 1.

102. REQUIRED PHYSICAL EDUCATION (0-2). Credit 1.

201. REQUIRED PHYSICAL EDUCATION (0-2). Credit 1.

202. REQUIRED PHYSICAL EDUCATION (0-2). Credit 1.

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. 121 or 209 or registration therein.*

219. ELECTRICITY (3-3). Credit 4. *Continuation of Phys. 218. Sound, light, electricity. Prerequisites: Math. 122 or 210 or registration therein; M.E. 112 or Phys. 218.*

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.*

STATISTICS (Stat.)

302. STATISTICAL METHODS (2-2). Credit 3. *Intended for students in the biological sciences. Nonmathematical introduction to concepts of random sampling and statistical inference; estimation and testing hypotheses of means and variances; analysis of variance; regression analysis; chi-square tests. Prerequisite: Math. 102.*

WILDLIFE AND FISHERIES SCIENCE (W.F.S.)

312. ICHTHYOLOGY (Marine) (2 - 3). Credit 3. *Study of marine fishes of world, emphasizing fishes of Texas. Life history, ecology, distribution, evolution, and economic values of important species. Prerequisite: W.F.S. 311 or approval of instructor.*

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

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. Prerequisite: Stat. 302 or approval of instructor.*

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



BIOLOGY (Biol.)

637. MARINE BOTANY (2 - 6). Credit 4. *Systematics, morphology, ecology, and economics of marine plants including the algae and flowering plants of North American coasts, particularly those around the Gulf of Mexico and along the Texas coast. Prerequisite: Graduate classification in biology or related science.*

662. BIOLOGY OF THE MOLLUSCA (3 - 3). Credit 4. *Classification, life history, morphology, physiology, ecology, diseases, parasites, predators and competitors of molluscs, with special reference to oysters. Prerequisites: B.S. degree in biology or related fields or approval of instructor.*

663. BIOLOGY OF CRUSTACEA (3 - 3). Credit 4. *Classification, life history, morphology, physiology, ecology, diseases, parasites, and predators of crustaceans. Economic aspects of crustaceans considered. Study of original literature emphasized. Prerequisites: Biol. 435 or equivalent; graduate classification or approval of instructor.*

665. INVERTEBRATE ZOOLOGY (3 - 3). Credit 4. *Morphology, taxonomy, biology, and phylogeny of invertebrate animals, including an individual project. Special attention to invertebrates (not including insects) of interest to entomologists, wildlife students, and oceanographers, including economic forms. Prerequisite: Six hours of zoology.*

685. PROBLEMS Credit 1 to 6 each semester. *Limited investigations in fields other than those chosen for thesis or dissertation.*

691. RESEARCH Credit 1 or more each semester. *Research for thesis or dissertation. Prerequisite: Approval of ranking professor in field chosen.*

CIVIL ENGINEERING (C.E.)

603. STREAM QUALITY (3 - 0). Credit 3. *Physical, chemical, radiological and biological properties of streams, impoundments, reservoirs and estuaries and the interrelationships of these properties; local, state, regional and federal water quality standards, legal aspects of water pollution control; quality criteria for beneficial uses of water; evaluation of critical problems. Prerequisite: Graduate standing in engineering or approval of instructor.*

675. COASTAL ENGINEERING I (3 - 0). Credit 3. *Review of small amplitude and finite amplitude wave theories and applications to engineering problems. Wave forces on coastal structures. Wave run-up on uniform and composite beaches. Design of seawalls and breakwaters. Prerequisite: Approval of instructor.*

676. OCEAN ENGINEERING (3 - 0). Credit 3. *Review of wave and tide theories; wind and ocean current forces; storm surge; ocean survey equipment; diffusion processes and marine outfall design; ocean mooring; oil spill containment and collection. Prerequisite: Approval of instructor.*

677. COASTAL ENGINEERING II (3 - 0). Credit 3. *Applications of wave theories to engineering problems; tidal dynamics; sediment transportation along coast and in estuaries; dredging; coastal and estuarine models. Prerequisite: C.E. 675 or approval of instructor.*

678. HYDROMECHANICS (3 - 0). Credit 3. *Continuity; stream and potential functions; irrotational flow; Laplace, Euler and Navier-Stokes equations; standard patterns of flow; conformal transformations; Schwarz-Cristoffel theorem; vortex motion; gravity wave theory. Prerequisite: Approval of instructor.*

685. PROBLEMS Credit 1 to 6 each semester. *Enables majors in coastal and ocean engineering to undertake work on special topics of current importance. Typical subject matter has been areas of advanced fluid dynamics mathematical modeling, ship motion in restricted waterways, dynamics of semi-submersible drilling rigs, statistical fluid mechanics, experimental techniques using hot film anemometrys and ocean applications of fluidics technology.*

OCEANOGRAPHY (Ocn.)

623. MARINE ZOOPLANKTON (2 - 3). Credit 3. *Detailed examination of selected aspects of biological oceanography with particular reference to the zooplankton of the Gulf of Mexico and Caribbean. Prerequisite: Ocn. 620 or equivalent.*

624. MARINE PHYTOPLANKTON (2 - 3). Credit 3. *Detailed studies of phytoplankton with emphasis on physical and chemical factors which affect plankton production. Study of phytoplankton-zooplankton relationship, sampling problems. Prerequisite: Ocn. 620 or equivalent.*

685. PROBLEMS Credit 1 to 4 each semester. *Special topics to suit small group requirements. Deals with problems not within thesis research and not covered by any other course in established curriculum. Prerequisite: General prerequisites for oceanography.*

691. RESEARCH Credit 1 or more each semester. *For thesis or dissertation. Topic subject to approval of Department Head.*

VETERINARY MICROBIOLOGY (V. Mi.)

660. DISEASES OF MARINE INVERTEBRATES (4 - 0). Credit 4. *Response of invertebrates to noninfectious and infectious agents. Subject oriented and phylogenetic within each category. Prerequisites: 12 hours of biological science, including at least 3 hours of histology or microtechniques and approval of instructor.*

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

611. ESTUARINE ECOLOGY (3 - 3). Credit 4. *Principles governing the relationships of estuarine organisms to their environment. Special attention devoted to such areas as productivity, adaptations to environment, community structure and factors affecting the distribution and abundance of biota. Prerequisites: Invertebrate zoology and ichthyology or approval of instructor.*

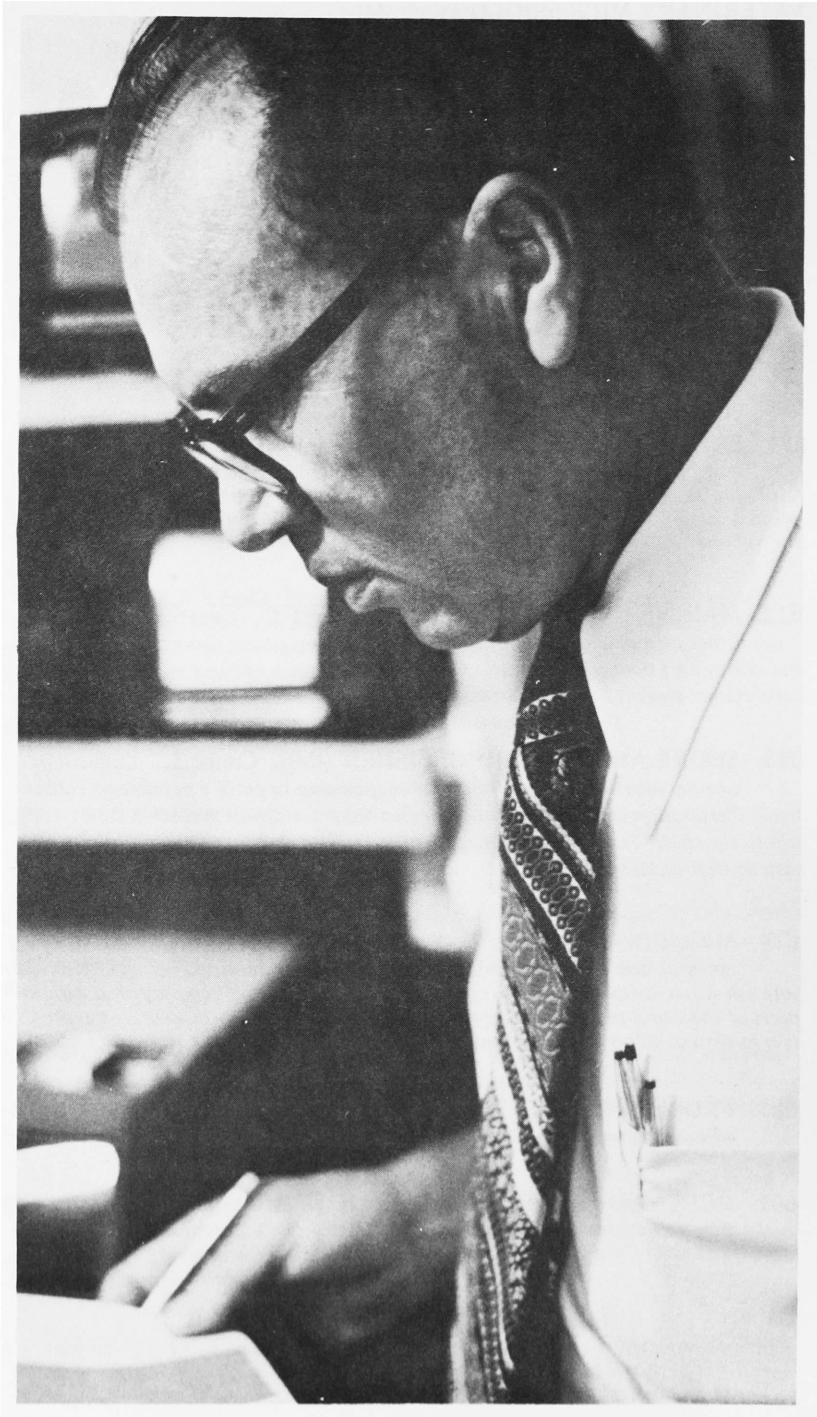
612. MARINE ICHTHYOLOGY (2-3). Credit 3. *Classification of marine fishes including a survey of shallow water forms of the Galveston area. Local and one distant field trip in Texas. Emphasis on habitats of local fishes, how to make collection and use it for reports. Visual recognition of fishes, and the use of keys.*

613. SHORE AND ESTUARINE FISHES (0-9). Credit 3. *Collection, sorting, identification of fishes and preparation to enter a permanent collection. Distribution and myristics of a selected fish. Field trips include a 4-day field trip to the south Texas coast and a spring field trip to shallow water habitats in the eastern Gulf of Mexico.*

615. MARICULTURE (3 - 3). Credit 4. *Environmental, physiological, behavioral, and economic factors which determine the success of efforts to cultivate salt-water species having economic importance. Practices employed in various parts of the world to increase sustained yields of fishes, molluscs, and crustaceans. Prerequisites: Ichthyology and invertebrate zoology or approval of instructor.*

685. PROBLEMS Credit 2 to 6 each semester. *Special studies with credit adjusted for each problem.*

691. RESEARCH Credit 1 or more each semester. *For thesis or dissertation on selected wildlife problem.*



Resident Faculty

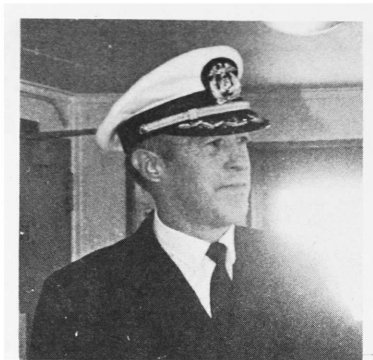
(Correct as of February 1, 1974)

Clayton, William H., Provost, Moody College of Marine Sciences and Maritime Resources and Professor of Oceanography and Meteorology, (1954, 1971). B.S. Bucknell University, 1949; Ph.D. Texas A&M University, 1956.

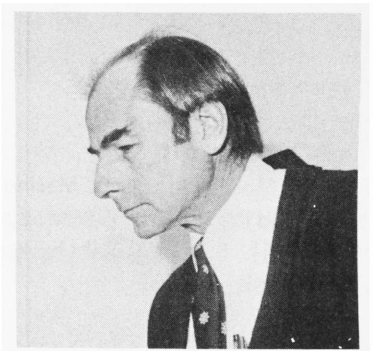


Aldrich, David V., Associate Professor of Marine Sciences, Biology, Oceanography and Wildlife and Fisheries Sciences. (1966, 1969). A.B., Kenyon College, 1950; M.A., Rice University, 1952; Ph.D., 1967.

Arkison, Owen J., Instructor of Marine Engineering, (1973).



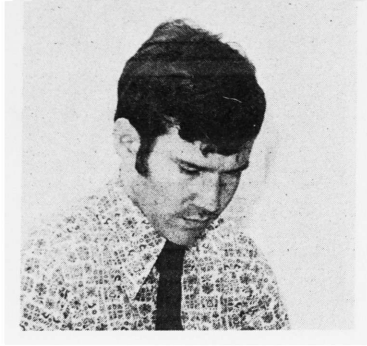
Armstrong, Robert W., Assistant Professor of Marine Transportation. (1967, 1968). B.S., United States Merchant Marine Academy, 1957.



Beckman, Edward L., Professor of Marine Sciences and Marine Physiology, (1972). B.S., Northwestern University, 1939; M.D., University of Southern California, 1949; M.D., Northwestern University Medical School, 1943.

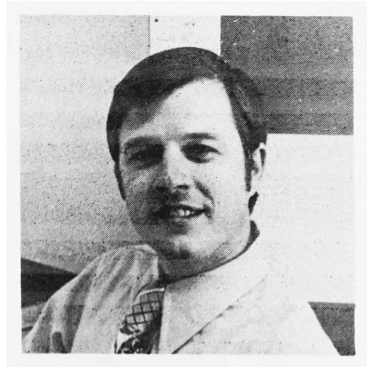


Blankenship, Robert M., LTJG, USN, Assistant Professor of Naval Science, (1973). B.S., Miami of Ohio, 1970.



**Burns, James M., Jr., Assistant Professor of General Academics, (1970).
B.S. East Texas State University, 1959; M.Ed., Southwest
Texas State University, 1962; Ph.D. Texas A&M University,
1969.**

**Carroll, Richard, Instructor of General Academics, (1973). B.S. University
of Houston, 1970.**



**Carter, George H., III, Assistant Professor of General Academics, (1972).
B.S., University of Southern Mississippi, 1963; M.S., 1969.**

**Clyburn, John, Instructor of General Academics, (1973). B.A. University
of Texas, 1961; M.A., University of Houston, 1969.**



Crosby, Gary A., Associate Professor of Marine Engineering, and Head of Department, (1968, 1972). B.S., United States Merchant Marine Academy, 1962, M.S., Northern Illinois University, 1968.



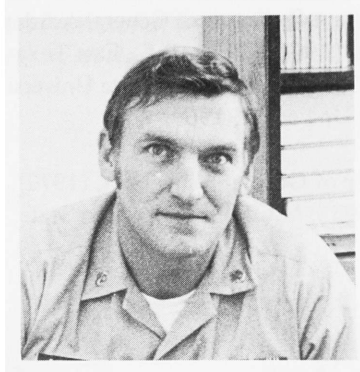
Curley, Stephen J., Instructor of General Academics, (1973). B.A. Fordham University, 1968; Ph.D. Rice University, 1973.



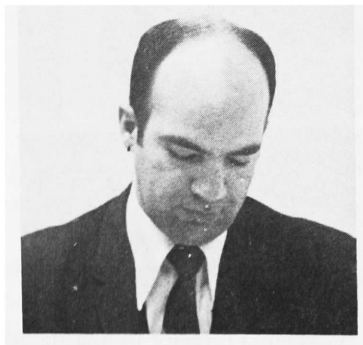
Darling, Larry W., LT, USN, Associate Professor of Naval Science and Head of Department, (1971, 1973). B.A. Rice University, 1968.



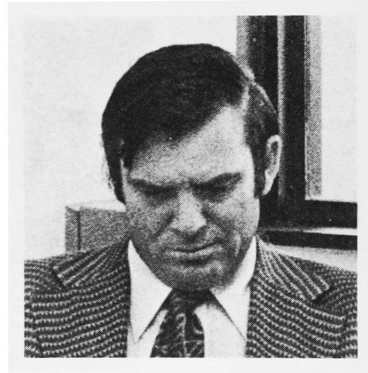
Fanning, Karl, P., Assistant Professor of Marine Transportation, (1971).
B.S., Texas A&M University, 1968.



Gable, Phillip H., MMC, USN, Instructor of Naval Science, (1971).



Gibson, Robert E., Assistant Professor of General Academics, (1969). B.S.
Texas A&M University, 1956; M.S. 1969.



Graves, Robert E., Assistant Professor of General Academics, (1971). B.S. Ouachita Baptist University, 1960; Ph.D., Baylor University, 1973.

Hatley, Jimmy D., Assistant Professor of General Academics and Head of Department, (1968, 1972). B.S., East Texas State University, 1959; M.Ed. Southwest Texas State University, 1962; Ed.D., Texas A&M University, 1969.

Kelley, Lloyd, Instructor of General Academics, (1972). B.S., Sam Houston State, 1953; M.Ed., Sam Houston State, 1965.

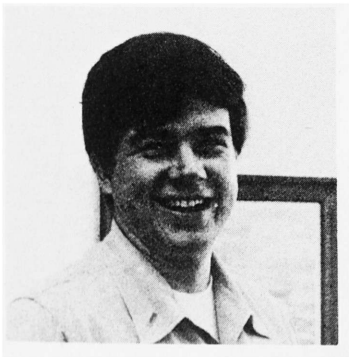


Kistler, Ernest L., P.E., Associate Professor of Marine Sciences and Engineering, (1972). B.S., University of Texas, 1955; M.S., 1957; Ph.D., Rice University, 1969.



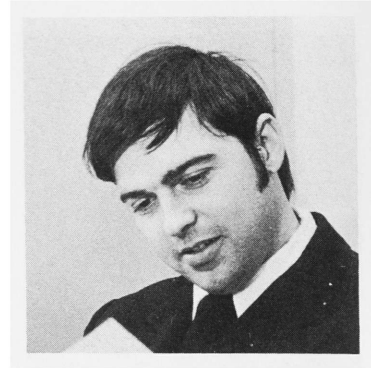
Kuhl, Jean E., Instructor of Library Science, Department of Marine Sciences, (1973). B.A., Sam Houston State College, 1951; M.L.S., University of Texas, 1971.

Lane, John M., Assistant Professor of Marine Transportation, (1969). B.S., State University of New York Maritime College, 1965.



Love, Jack W., Jr., LTJG, USN, Assistant Professor of Naval Science, (1973). B.A., University of New Mexico, 1970.

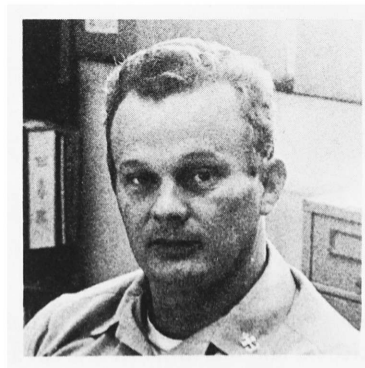
McCloy, James M., Assistant Dean for Academic Affairs, Moody College of Marine Sciences and Maritime Resources and Assistant Professor of Marine Sciences, (1971, 1973), B.A., California State College at Los Angeles, 1961; Ph.D., Louisiana State University, 1969.



McMullen, William T., Assistant Professor of Marine Transportation and Acting Head of Department, (1967, 1972). B.S., State University of New York Maritime College, 1964; M.B.A., University of Houston, 1973.

Marcontell, James H., Assistant Professor of Marine Engineering, (1972). B.S., Texas A&M University, 1967; M. Eng., 1971.

Moore, John A., Lecturer in Marine Engineering, (1965). B.S., Rose Polytechnic Institute, 1934.



Mullins, Donald W., GMGC, USN, Instructor of Naval Science, (1970).

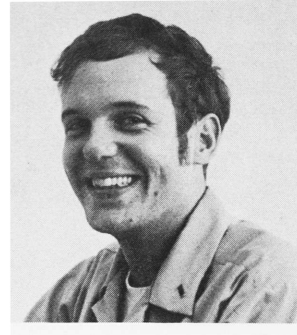
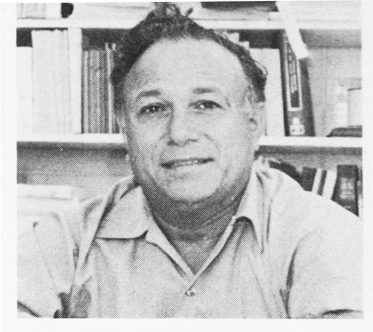


Park, Edward T., Associate Professor of Marine Sciences, Biology, and Oceanography, (1969, 1973). B.S., Pusan Fisheries College (Korea), 1952; M.S., 1957; Ph.D., University of Washington, 1965.

Philbrick, Alfred R., Assistant Superintendent, Texas Maritime Academy; Associate Professor of Marine Transportation, (1967, 1972). B.S., Maine Maritime Academy, 1950; M.Ed., University of Houston, 1971; Master Mariner.



Pope, Henry D., Assistant Dean for Operations, Moody College of Marine Sciences and Maritime Resources, (1974) B.S., Stephen F. Austin State University, 1959; M.E.D., East Texas State University, 1964; Ph.D., Texas A&M University, 1972.

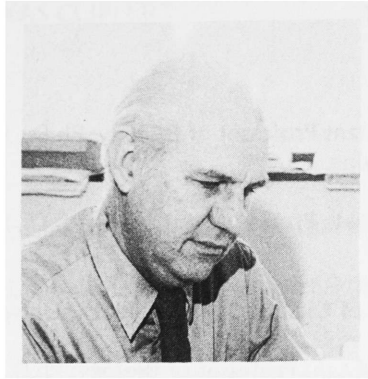


Ray, Sammy M., Professor of Marine Sciences, Biology, Oceanography, and Wildlife and Fisheries Sciences and Head of Department, (1959, 1972). B.S., Louisiana State University, 1942; M.S., Rice University, 1952; Ph.D., 1954.

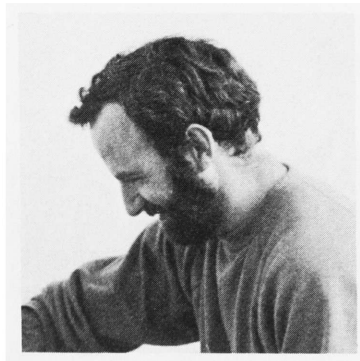
Shaffer, John N., Jr., Assistant Professor of Naval Science, (1974). B.S., United States Naval Academy, 1970.



Smith, John W., RADM, USMS, Superintendent, Texas Maritime Academy; Professor of Marine Transportation, (1973). B.A., Washington College, 1942; M.S.I.A., George Washington University, 1973.



Tormollan, Francis D., P.E., Associate Professor of Marine Engineering, (1964). B.S. University of Texas, 1955; M.S., 1957.



Wardle, William J., Instructor of Marine Sciences, (1973). B.S., Lynchburg College, 1963; M.S., Texas A&M University, 1970.

Wetta, Frank, Instructor of General Academics, (1973). B.S., St. Louis University, 1964; M.A., 1965.

Wilson, William B., Associate Professor of Marine Sciences, Biology, Oceanography, and Wildlife and Fisheries Sciences, (1967, 1970). B.S., Texas A&M University, 1948; M.S., 1950; Ph.D., 1966.

VISITING FACULTY

Anderson, Jack, Assistant Professor of Biology; Ph.D., University of California, Irvine.

Cox, Elenor R., Associate Professor of Biology; Ph.D., University of Texas.

Hann, Roy, Professor of Civil Engineering; Ph.D., University of Oklahoma.

Horvath, Kalman, Assistant Professor of Biology; Ph.D., Rice University.

Jenkins, Omer, Assistant Professor of Business Analysis and Research and of Statistics; Ph.D., Texas A&M University.

Mackin, John G., Professor Emeritus of Biology; Ph.D. University of Illinois.

Moore, Donald, Fishery Biologist (Research), U.S. Department of Commerce, National Marine Fisheries Service; B.S., University of Massachusetts.

Neal, Richard, Supervisory Fishery Biologist, U.S. Department of Commerce, National Marine Fisheries Service; Ph.D., University of Washington.

Sparks, Albert K., Professor of Veterinary Medicine; Ph.D., Texas A&M University.



Swarthout, Timothy J., Research Associate. (1973) B.S., Texas A&M University, 1969.

TRAINING SHIP "TEXAS CLIPPER"

DECK DEPARTMENT

Philbrick, Alfred R., Captain, U.S.M.S., Master; Master Mariner

Armstrong, Robert W., Commander, U.S.M.S., Chief Officer; Master Unlimited.

Lane, John M., Commander, U.S.M.S., Commandant of Cadets; Master Unlimited.

McMullen, William T., Lieutenant Commander, U.S.M.S., Second Mate; Second Mate Unlimited.

Fanning, Karl P., Lieutenant, U.S.M.S., Third Mate; Third Mate Unlimited.



ENGINE DEPARTMENT

Arkison, Owen J., Commander, U.S.M.S., Chief Engineer; Chief Engineer (Steam), Third Assistant Engineer (Diesel) any horsepower.

Oliver, William, Lieutenant Commander, U.S.M.S., First Assistant Engineer; Chief Engineer (Steam), Third Assistant Engineer (Diesel) any horsepower.

Crosby, Gary A., Lieutenant Commander, U.S.M.S., Watch Engineer; First Assistant Engineer (Steam), Third Assistant Engineer (Diesel) any horsepower.

Marcontell, James H., Lieutenant, U.S.M.S., Watch Engineer; Second assistant Engineer (Steam), Third Assistant Engineer (Diesel) any horsepower.



