TEXAS A&M UNIVERSITY AT GALVESTON

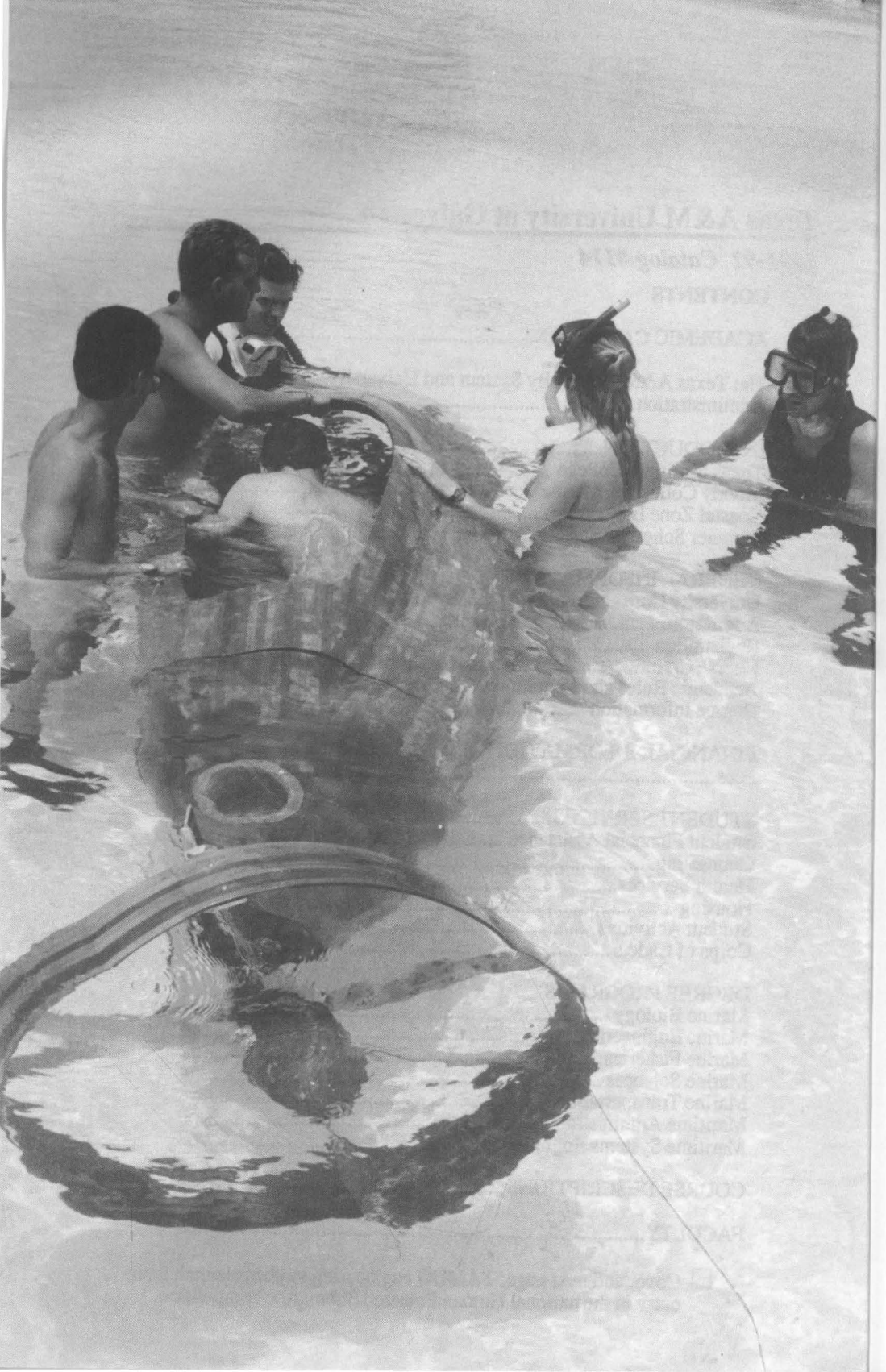
1991-92 Catalog

Texas A&M University at Galveston

1991-92 Catalog #114

CONTENTS

☐ Cover and next page: TAMUG engineering students launch their entry in the national Human Powered Submarine competition.



ACADEMIC CALENDER

FALL SEMESTER 1991*

August 28-30 Wednesday-Friday. Registration and drop/add for all students.

September 2 Monday. First day of fall semester classes.

September 2-6 Monday-Friday. Late registration and drop/add for all students.

September 6 Friday. Last day for enrolling in the University for the fall semester and for adding new courses.

September 17 Tuesday. Last day for dropping courses with no record. Census day.

September 20 Friday. Last day to apply for all degrees to be awarded in December.

October 4 Friday. Last day to drop courses with no penalty (Q-drop).

October 18 Friday. Mid-semester grades due in Admissions and Records, 1 p.m.

November 11-25 Monday-Monday. Preregistration for 1992 spring semester by classification.

November 28-29 Thursday-Friday. Thanksgiving holiday.

December 11 Wednesday. Last day of fall semester classes.

December 12 Thursday. Reading day, no classes or examinations. Last day to withdraw officially.

December 13, 16-18** Friday, Monday-Wednesday. Fall semester final exams for all students.

December 20 Friday. Final grades for all students due in Admissions and Records, 1 p.m.

December 21 Saturday. Commencement, 9 a.m. at G. Rollie White, College Station.

SPRING SEMESTER 1992*

January 20-21 Monday-Tuesday. Open registration for all new students.

January 22 Wednesday. First day of spring semester classes.

January 22-28 Wednesday-Tuesday. Late registration and drop/add for all students.

January 28 Tuesday. Last day for enrolling in the University for spring semester and for adding new courses.

February 6 Thursday. Last day for dropping courses with no record. Census day.

February 14 Friday. Last day to apply for degrees to be awarded in May.

February 25 Tuesday. Last day to drop courses with no penalty (Q-drop).

March 12 Thursday. Mid-semester grades due in Admissions and Records, 1 p.m.

March 16-20 Monday-Friday. Spring break.

April 13-24 Monday-Friday. Preregistration for first summer session, 10-week term and fall 1992 semester by classification.

May 6 Wednesday. Last day of spring semester classes.

May 7 Thursday. Reading day, no classes or examinations. Last day to officially withdraw.

May 8, 11-13** Friday, Monday-Wednesday. Spring semester final exams for all students.

May 15 Friday. Final grades for non-graduating students due in Admissions and Records, 1 p.m.

May 16 Saturday. Commencement, 9 a.m.

SUMMER SESSIONS 1992*

May 29 Friday. Open registration and drop/add for first summer session and 10-week session.

June 1 Monday. First day of first summer session and 10-week semester classes.

June 4 Thursday. Last day for enrolling in the University for first summer session and 10-week term and for adding new courses. Last day for dropping courses with no record for the first summer session and 10-week term. Census day.

June 11 Thursday. Last day to drop courses with no penalty (Q-drop) for first summer session.

June 12 Friday. For students completing degree requirements the first summer session, last day to apply for degrees to be awarded in August.

June 24 Wednesday. Last day to drop courses with no penalty (Q-drop) for the 10-week term.

July 2 Thursday. Registration and drop/add for second summer session. Last day of first term classes

July 3 Friday. Independence Day holiday.

July 6 Monday. First term final examinations. No 10-week semester classes.

July 7 Tuesday. First day of second summer session classes.

July 9 Thursday. First summer session final grades due in Admissions and Records, 1 p.m.

July 10 Friday. Last day for enrolling in the University for the second summer session and for adding new courses. Last day to drop courses with no record for the second summer term. Census day. Last day to apply for all degrees to be awarded in August for students completing degree requirements in the second summer session or 10-week term.

July 17 Friday. Last day to drop courses with no penalty (Q-drop) for the second summer session.

August 7 Friday. Last day of second summer session and 10-week term classes.

August 10 Monday. Beginning of final exams for the second summer session and 10-week term,

August 11. Tuesday. Second summer session and 10-week term final exams continue.

August 12 Wednesday. Graduating senior grades for second summer term and ten-week term due in Admissions and Records, 1 p.m.

August 14 Friday. Final grades due in Admissions and Records, 1 p.m.

August 15 Saturday. Commencement, 9 a.m. at G. Rollie White, College Station.

*These dates are subject to change.

**Due dates for final grades for degree candidates will be published with the final exam schedule.

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TEXAS A&M UNIVERSITY AT GALVESTON

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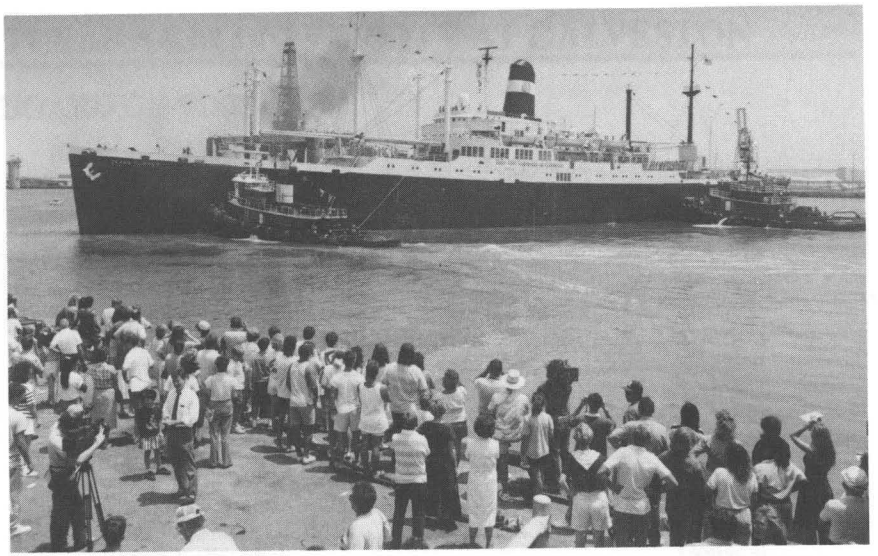
William E. Evans.....Dean of the Texas Maritime College
William A. Seitz.....Dean of the Moody College of Marine Technology
Choo-Seng Giam.....Director of the Coastal Zone Laboratory
Milton H. Abelow.....Assistant to the President for Budget and Planning



☐ A crowd of friends, relatives, and sweethearts gathers at the Mitchell Campus to witness the departure of the TEXAS CLIPPER at the beginning of the summer cruise.

☐ TAMUG students are entertained by the Texas Southern University award winning jazz ensemble during African American History month.

INTRODUCTION

The purpose of this catalog is to provide information about the academic programs of Texas A&M University at Galveston to students and prospective students as well as the faculty and staff of the University. Included is information concerning admission, academic regulations and requirements, services available to students, academic offerings and a list of administrative officers and faculty of the University.

Texas A&M University at Galveston is the marine and maritime component of The Texas A&M University System. The University provides academic instruction in seven marine and maritime-related degree programs leading to Bachelor of Science degrees from Texas A&M University.

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

Texas A&M University at Galveston includes one of five state operated maritime educational institutions in the nation. Federal support for the University's U.S. Maritime Service Cadet Training Program is provided in the form of a Training Ship, annual appropriations for ship maintenance, $100,000 per year in operating funds, and student incentive payments to offset the cost of textbooks, uniforms and subsistence to selected eligible U.S.M.S. cadets. In conjunction with the formal academic instruction, an active program of research and extension service is conducted throughout the University. Texas A&M University at Galveston also coordinates Texas A&M University System programs in the Galveston area.

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

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

Accreditation

Texas A&M University at Galveston is fully accredited by the Southern Association of Colleges and Schools. In addition, the Marine Engineering curriculum is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. Documents certifying accreditation may be viewed in the Office of the Vice President for Academic Affairs.

Mission

Texas A&M University at Galveston is a special purpose institution of higher education for undergraduate instruction in marine and maritime studies in science, engineering, and business and for research and public service related to the general field of marine resources. The institution is under the management and control of the Board of Regents of The Texas A&M University System, with degrees offered under the name and authority of Texas A&M University at College Station.

The Texas Institute of Oceanography (TIO) was established under the auspices of The Texas A&M University System and is located at the Mitchell Campus in Galveston. Its mission is to provide focus for research of the Gulf Coast; to manage and coordinate the academic marine research programs of the State; to assure scientists at Texas universities of suitable multi-user facilities; to manage regional federal programs; and to provide the research and technological base for the development of marine-related businesses in the State of Texas and the Gulf of Mexico.

Compliance Policy

Within published requirements for admission, Texas A&M University at Galveston does not and will not discriminate in admission of students to study at TAMUG, enrollment in classes, housing or use of facilities in the academic program because of race, color, religion, sex, age, marital status, national origin, condition of handicap, veteran or disabled veteran status. TAMUG does not and will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age, marital status, national origin, condition of handicap, veteran or disabled veteran status. TAMUG takes affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, age, marital status, national origin, condition of handicap, veteran or disabled veteran status. Such action includes, but is not limited to, employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for employment training, including apprenticeship.

Limited services and facilities are available to students with handicaps. Individuals should contact the Office of Student Services if they have special needs before they commit to enrollment.

The Compliance Officer of TAMUG is the Director of Personnel. Any questions or complaints relative to discrimination should be referred to the Personnel Office.

The Jack K. Williams Library

The Williams Library is located on the Mitchell Campus and supports the degree programs offered by the University. In addition, it serves the professional, recreational and general reading needs of the students, faculty and staff of the University as well as many people in marine and maritime-related fields of the Galveston area.

The Library has 27,000 square feet of space, with seating for 200 individuals, which includes 80 study carrels.

A Learning Resource Center within the library has 20 microcomputers, with software available for student use. Personal computers and terminals networked to the Computer Center's PRIME 9655 are available. The Public Access Catalog and the computerized card catalog are incorporated into the system, allowing library access to any computer terminal on campus.

Texas Maritime College

The Texas Maritime College offers degree programs in Marine Engineering, Marine Transportation, Maritime Administration and Maritime Systems Engineering, and also administers the Naval Science detachment which offers courses in support of the license option program. Degree programs in Marine Engineering and Marine Transportation offer training toward qualification for professional licenses as engineering or deck officers in the Merchant Marine of the United States.

The engineering programs range from the theory, design, operation and maintenance of maritime power plants to fundamental engineering design, preparing the student for work or further study in marine-oriented engineering fields. Engineering majors require above average ability in mathematics and the sciences and serious intention by the student to invest extra time and effort.

Transportation of foreign and domestic commerce by sea and the management of the maritime industry requires the development of modern management techniques, both afloat and ashore. The need to move foreign and domestic commerce as quickly and as efficiently as possible demands capable leadership at every level of management. Students should have a strong interest in the maritime industry and, if choosing a career path leading to sea, an understanding of the particular demands required of the professional maritime service officer.

Moody College of Marine Technology

In order to ensure his survival and prosperity, man must gain a better understanding of the sea, its opportunities and dangers, its interaction with the land, the air and with all living things.

In order to prepare future scientists to meet this challenge, the Moody College of Marine Technology offers programs in Marine Biology, Marine Fisheries and Marine Sciences leading to the B.S. degree, and also administers the Department of General Academics which offers courses in the liberal arts and mathematics in support of all the University degree programs. The various curricula offer students the combined benefits of rigorous classroom instruction and extensive laboratory and field experience. Graduates are qualified to enter directly into careers in marine biology, chemistry, geology, oceanography, fisheries management and assessment, and aquaculture, depending on their chosen area of specialization. Graduates are also well prepared to enter Master of Science and Doctor of Philosophy programs in fields pertaining to their undergraduate training.

The Marine Biology and Marine Sciences programs offer, as an additional option, professional training leading toward qualification for U.S. Coast Guard licensing as a deck officer in the U.S. Merchant Marine (see section on Corps of Cadets for discussion of eligibility and additional training requirements).

Graduate Programs

Graduate programs of Texas A&M University in Biology and in Wildlife and Fisheries Sciences are also conducted at Texas A&M University at Galveston. Students already possessing the appropriate B.S. degree are eligible to apply for admission and may arrange to do so by contacting either the Coordinator, Graduate Programs, Texas A&M University at Galveston (409) 740-4525; the Head, Department of Biology, Texas A&M University (College Station); or the Head, Department of Wildlife and Fisheries Sciences, Texas A&M University (College Station).

Coastal Zone Laboratory

The Coastal Zone Laboratory coordinates the research, advisory and extension activities of the University. Research activities have included oyster mariculture, use of offshore oil rigs for oceanographic engineering, distribution of blue crabs in experimental temperature gradients, and various shrimp studies. Currently, research being conducted includes nearshore water and sediment process dynamics, analysis of water-related fatalities in the coastal zone, oyster mortality, geochemical analysis of sedimentation in Galveston Bay, microbiological and zoological studies of continental shelf waters and seabed, toxic chemicals in the marine environment, computer modeling of Galveston Bay, development of a pilot oyster hatchery, and theoretical research in chemistry and physics.

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

Summer School at Sea

Recent high school graduates who have never attended college may participate in the Summer School at Sea program conducted aboard the T/S TEXAS CLIPPER during the annual summer training cruise. Usually, four courses are offered and students enroll in two of the four. In recent summers, courses have been offered in English, Russian, history, oceanography and geography. In addition to daily classes, they are also responsible for assisting the ship's crew in maintaining and operating the TEXAS CLIPPER, assisting with food services and maintaining their quarters during the training cruise.

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

While it is hoped the Summer School at Sea participants will continue their collegiate careers at Texas A&M University at Galveston, the academic credits earned during the summer cruise should be transferable to other colleges and universities which they may attend.

GENERAL INFORMATION

Students who graduate from Texas A&M University at Galveston are awarded the degree of Texas A&M University (College Station). Therefore, students enrolled in Texas A&M University at Galveston must adhere to the same basic academic requirements as students enrolled at Texas A&M University (College Station). Students are advised of these requirements and are encouraged to be familiar with the Texas A&M University at Galveston Academic and Student Life Regulations.

Students are required to complete the courses listed in a curriculum; however, the display of a curriculum does not necessarily indicate the length of time required to complete the degree requirements. Rather, this display is intended as a guide to indicate the preferred order for completion of degree requirements. Exceptions to certain requirements may be made by petition, through the department head to the dean of the academic college.

This catalog was prepared in advance of its effective date; therefore, some course descriptions may vary from actual course content due to advancements in the discipline, interests of individual professors or recent decisions to change the scope of a course. The catalog is not intended to be a contract, but simply an information bulletin and the University reserves the right to change any of the provisions. Some new courses and changes to existing courses are included in this catalog pending their approval by the Coordinating Board, Texas College and University System. A separate class schedule giving course offerings and other pertinent information is published for each semester and session and is available on request from the Admissions and Records Office. Students should refer to the class schedule for the offerings in any given semester. For various administrative reasons, such as insufficient enrollment or because of limited resources, some scheduled courses might not be offered in the announced semester.

Academic Year

The academic year of Texas A&M University at Galveston is divided into the fall and spring semesters and the summer session which consists of either two terms of 5 weeks each or one 10-week summer semester.

During the summer session, most departments offer courses which are selected to meet the needs of the regular university students.

UNIVERSITY CORE CURRICULUM

The Core Curriculum emphasizes competence in the process of learning, the capacity to engage in rigorous and analytical inquiry and the ability to communicate clearly and effectively; it requires an increased knowledge and appreciation of our cultural heritage, our social and moral responsibilities and our interrelations with the economies and cultures of the international community; and it will continue our tradition of providing thorough preparation in the student's selected discipline or profession.

Specific Requirements

1. **Computer Usage** Because the computer is a necessary and useful tool in learning, it is important to be proficient in its use.

Students entering the University will have completed at least one course in computer science or will demonstrate proficiency through an examination. An examination to establish computer proficiency will be provided by the Office of

Measurement and Testing at College Station. Otherwise, they will be required to complete a computer usage course for University credit to be selected from AGEC 321; AGRI 201; ANSC 401; BANA 217; CPSC 110, 203; ENGR 109; PHYS 401; RENR 201.

2. **Foreign Language** To understand the major cultures of the world as expressed in art, philosophy, politics or economy, it is necessary to know and appreciate languages other than one's native language:

Students entering the University will have completed two years of a foreign (modern or classical) language in high school or will demonstrate proficiency in a second language other than English. Otherwise, they will be required to take a two semester sequence for University credit.

Notes:

a. International students whose native language is not English will not be required to satisfy the Core Curriculum foreign language requirement.

b. Students who wish to demonstrate foreign language proficiency without taking acceptable high school or college courses may do so through the existing credit by examination process for the first two college courses in the foreign language. In cases where students wish to demonstrate proficiency in a language not taught at Texas A&M, the following procedures shall apply. The student shall request an examination from the Head of the Department of Modern and Classical Languages at College Station. This department will coordinate the administration of special examinations to demonstrate foreign language proficiency. This will include finding an appropriate examination to test the student's proficiency, informing the student how to arrange to take that examination and certifying the results to the student's advisor. All arrangements shall be made and fees paid by the student.

3. The ability to communicate through the use of the spoken or written word requires the development of:

Speech and Writing Skills (6 hours) ENGL 104 (3 hours) and one of the following: ENGL 203, 210, 212, 221, 222, 227, 228, 231, 232, 301, 325 or 341; SCOM 103, 243, 403, 404.

4. Without knowledge of mathematic, the language of science; and logic, the art of critical inquiry; it is not possible to understand or participate in the development of knowledge:

Mathematical/Logical Reasoning (6 hours, at least 3 of which must be in mathematics). To be selected from any mathematics course except MATH 102,103, 104, 130, 150, 165, 365, 366; also may select 3 hours from PHIL 240, 341 or 342.

5. Knowledge and appreciation of science as a significant human activity, rather than merely a listing of results or collection of data, is acquired only by engaging in the activities of science:

Science (8 hours) Two or more science courses which deal with fundamental principles and in which critical evaluation and analysis of data and processes are required.

A minimum of one course shall include a corresponding laboratory. Non-technical or survey courses are specifically excluded. Acceptable courses are BIOL 113/123, 114/124; BOTN 101; CHEM 101/111, 102/112, 103/113, 104/114; GENE 301, 310; GEOG 203/213; GEOL 101, 106; METR 301/304; PHYS (any 200-level course); RENR 205/215; ZOOL 107. Additionally, any science course may be used that requires one of the approved courses as a prerequisite.

6. Knowledge of our culture and its ideals makes possible both social integration and self-realization:

Humanities (6 hours) Courses used to satisfy this requirement shall address one of the following subject areas: history, philosophy, literature, the arts, culture or language (exclusive of courses devoted predominantly to acquiring language skills in a student's native language). Acceptable courses are: AGEC 316; ANTH 202, 215, 302, 303, 306, 307, 308, 313, 315, 316, 350, 351; ARCH 429, 439, 440, 449; ARTS 103, 104, 111, 112, 149, 150, 205, 208, 212, 325, 350; ENDS 103, 149, 150, 249, 311, 312, 329, 353, 359, 446; ENGL 203, 212, 221, 222, 227, 228, 231, 232, 251, 280, 281, 313, 314, 315, 316, 319, 321, 322, 323, 334, 335, 336, 337, 338, 340, 350, 351, 360, 361, 365, 374, 375, 376, 377, 378, 390, 394, 396, 401, 412, 414, 431, 481; GEOG 202, 301, 302, 305, 307, 316, 322, 323, 460; HIST (any course); HORT 203; HUMA 211, 213, 303, 304; LAND 240, 340; LING 307, 410, 431; MUSC 201, 320; MODL (any course from the Department of Modern and Classical Languages, which includes CHIN, CLAS, FREN, GERM, ITAL, JAPN, MODL, RUSS, SPAN); PHIL (any course except 240, 341, 342); SCOM 301, 327, 407; THAR 101, 110, 155, 210, 280, 281, 380.

7. As the human social environment becomes more complex, it is increasingly important for individuals to understand the nature and function of their social, political and economic institutions:

Social Science (6 hours) Courses used to satisfy this requirement shall address one of the following subject areas: anthropology, economics, political science, geography, psychology, sociology or communication. Acceptable courses are: AGEC 105, 350, 429, 430, 452; AGED 340, 440; ANTH 201, 205, 210, 225, 300, 301, 311, 314, 402, 403, 410; ECON (any course); EDCI 322; EPSY 320, 321; GEOG 201, 204, 306, 311, 330, 399, 401, 439, 440; JOUR 102, 301, 401, 440; POLS (any course); PSYC (any course except 203, 204); SCOM 315, 320, 325; SOCI (any course except 220, 307, 420).

8. Mental development cannot be separated from physical development; a sound mind, as the ancients knew, requires a sound body: **Physical Education** (4 hours) To be selected from any KINE 199 course offering. **Not required for TAMUG students at present time.**

9. To be a responsible citizen of the world it is necessary, first, to be a responsible citizen of one's own country and community: **Citizenship** (12 hours, 6 hours of political science and 6 hours of history) POLS 206 and 207 and HIST 105 and 106 or other courses in American and Texas history, except that courses pertaining solely to Texas history may not comprise more than 3 hours.

Notes:

1. Individual degree programs may impose more restrictive requirements in any of these areas. Students should consult the Undergraduate Catalog and their academic advisors to ensure that they are satisfying all requirements of their majors.

2. No course shall be counted twice by the same student toward satisfaction of the Core Curriculum requirements. For example, if a student elects to use ENGL 203 to satisfy the speech and writing skills requirement, the student may not use the course to satisfy the humanities requirement. And, University courses taken to satisfy the foreign language requirement cannot also be used to satisfy the humanities requirement.

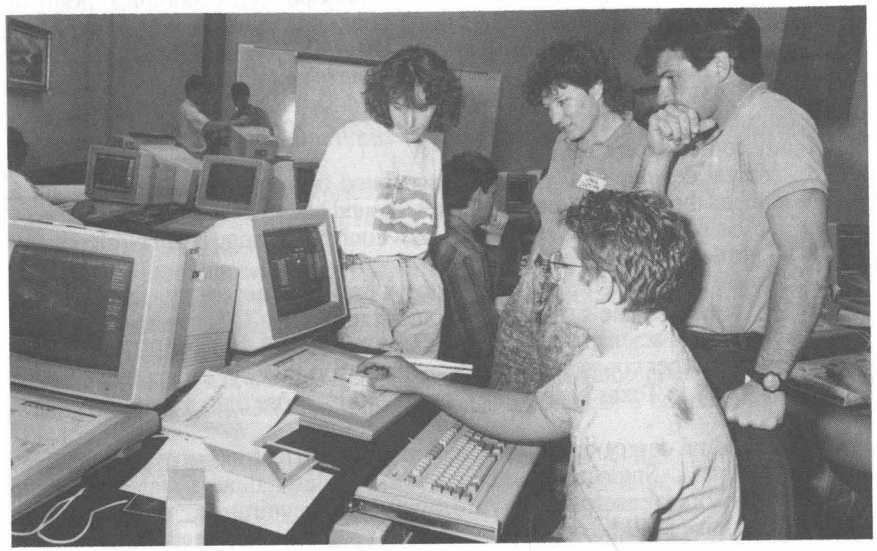
3. Courses numbered 484, 485 or 489 do not satisfy Core requirements.

4. No student may satisfy all 12 hours of Core course requirements in the categories of Humanities and Social Science by courses having the same prefix.

5. No student may use the first two semesters of University courses (i.e. "Beginning...") in the same language used to satisfy the Foreign Language requirement to satisfy any part of the Humanities requirement of the Core Curriculum. For example, if a student uses two years of Spanish taken in high school to satisfy the Foreign Language requirement, then that student may not use SPAN 101 or 102 in satisfying the Humanities requirement.

6. Students transferring to Texas A&M or Texas A&M at Galveston who entered any institution of higher education as new freshmen after the spring semester of 1988 will be placed under the TAMU catalog that was in effect during the first semester of their freshman year, and they will comply with any Core Curriculum requirements mandated by that catalog. Other transfer students may be placed under Catalog 110 or an earlier catalog, as the student's dean determines is appropriate. Students entering Texas A&M under catalogs that do not require compliance with the Core Curriculum do not become subject to it by changing majors. However, all students graduating from Texas A&M after September 1, 1995 must satisfy Core Curriculum requirements.

☐ Engineering students use computer-assisted drafting equipment (CAD) to design an offshore structure.



ADMISSION

Admission to Texas A&M University at Galveston and any of its sponsored programs is open to qualified individuals regardless of race, color, religion, sex, age, national origin or educationally unrelated handicaps.

Applications for admission to Texas A&M University at Galveston should be completed according to the printed directions and addressed to the Office of Admissions and Records, Texas A&M University at Galveston, P.O. Box 1675, Galveston, TX 77553-1675. Acceptance by the Office of Admissions and Records does not constitute admission to the U.S. Maritime Service License Option Program. (See the section on Admission to the U.S. Maritime Service License Option Cadet Program for information.)

When admission requirements have been satisfied, the Office of Admissions and Records will send the applicant a letter of acceptance. The Office of Student Services will send a medical history and immunization form to the student. State law requires that all students enrolled in an institution of higher education present evidence of immunization against diphtheria, tetanus and, if under 19 years of age, poliomyelitis. Students entering or re-entering Texas A&M University at Galveston must furnish proof of the required immunization by completing and returning the medical history and immunization form prior to the first day of classes.

Steps in Applying for Admission to Texas A&M University at Galveston

1. Application for admission: Write to the University Information Office, P.O. Box 1675, Galveston, Texas 77553-1675 to obtain an application. Applications are also available at high school/college nights or from high school counselors.

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

3. Testing: Arrange through the high school counselor to take the Scholastic Aptitude Test (SAT) or the American College Test (ACT). The English Composition Achievement Test and Mathematics Achievement Test of the College Board (CB) are highly recommended but not required. Designate the scores to be sent to TAMUG (Code 6835 for SAT and Code 6592 for ACT) by the testing agency. It is recommended that the tests be scheduled in the latter part of the junior year or early part of the senior year. The achievement tests are used for counseling and placement purposes and should be taken by January of the senior year. Paper reports not coded for TAMUG or recorded on high school transcripts are not acceptable as official scores. Students are admitted on the basis of specified courses taken in high school, class rank and SAT or ACT scores.

When to Apply

Those who meet the admission standards will be admitted until the last day for enrollment during the semester requested. International students must meet the deadlines specified in the International Admission section of this catalog.

There are two major periods when high school students may apply for admission to Texas A&M University at Galveston. One is for students who are eligible for the early decision program and the other for students who do not meet those requirements.

Early Decision Admission

In order to recognize and reward superior academic performance, the University has an early decision program that allows students to apply for admission at the end of their junior year in high school. To be eligible for this program, students must rank in the highest quarter of their class and score at least 1000 on the SAT or 25 on the ACT. Students who wish to apply under this program may submit their application after their junior year. A list of courses to be taken in the senior year must be included with the transcript. As soon as the applications are processed, letters of acceptance are mailed to those who meet the admission requirements. Acceptance is conditional until students have satisfactorily completed the courses they are scheduled to take their senior year and graduated from high school.

Students who do not meet the requirements for early decision should submit their applications for admission and credentials after October 1 of the senior year. Notifications of acceptance are sent on a continuing basis. Acceptance to the University is conditional until students have satisfactorily completed the senior year and graduated from high school.

Freshman Admission

To be admitted to Texas A&M University at Galveston the applicant must be graduated from a properly accredited secondary school. In addition, the applicant must have satisfactorily completed certain high school subjects and must have made an acceptable score on the Scholastic Aptitude Test (SAT) or on the American College Test (ACT). Those students who qualify for admission in all respects with the exception of having achieved the minimum score on the SAT or ACT may qualify for Provisional Admission.

Required High School Credits

The unit requirements for admission to the University are designed to insure adequate preparation for the various curricula offered by the University.

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

Subject	Units	Remarks
English	4	These units must include English I, II, III, and IV. Two units in a single foreign language may be substituted for one unit.
Social Science	2 1/2	
Mathematics	3 1/2	Algebra I, algebra II and geometry. One-half unit of trigonometry, precalculus, calculus, probability and statistics, number theory or linear algebra is required.
Science	2	Two units must be selected from biology, chemistry or physics.
Electives	4 1/2	Recommended from the following subject areas: foreign languages, mathematics, science, social studies, speech. Not more than three units in vocational subjects may by submitted as electives. Applicants for admission to engineering or science are strongly advised to include advanced mathematics.
	Total 16 1/2	

Tests Required of New Students

Texas A&M University at Galveston requires the Scholastic Aptitude Test (SAT) or American College Testing Program (ACT) test as a part of its admission procedures for those applicants seeking admission to their first semester of college or university work. The English Composition Achievement Test and Mathematics Achievement Test (Level I or II) are also recommended but not required. When registering for these tests, students should designate that the results be sent to Texas A&M University at Galveston (Code 6835 for SAT and Code 6592 for ACT). Test scores will not be accepted unless furnished directly to Texas A&M University at Galveston or Texas A&M University in College Station by the College Board or the American College Testing Program.

The University will accept scores on either Mathematics Test: Level I or Level II. However, most students are 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 Board Publication, *Achievement Tests*, and a conference with a high school counselor or mathematics teacher.

The test scores listed below are the minimum requirements for admission for applicants who have never attended another college or university and are stated in terms of a total score on the Scholastic Aptitude Test and the American College Test.

Standing in High School Graduating Class	*Minimum Total Score Acceptable for Admission*
SAT	ACT
Top 10% No minimum	No minimum
Highest Quarter 800	20
Second Quarter 800	20
Third Quarter 900	22
Fourth Quarter 1000	25

Texas Academic Skills Program (TASP)

All students with no previous college credit entering public colleges and universities in Texas in Fall 1989 or thereafter must demonstrate competency in reading, writing and mathematics by passing standardized TASP examinations.

Students with failing scores will be required to complete remedial work prior to being allowed to enroll in designated university courses. New students reporting to the University without TASP scores must successfully complete the examinations on September, 21, 1991 and/or November 16, 1991 at a test site to be announced. Failure to complete the examinations will preclude a student's eligibility to enroll for the Spring 1991 semester if enrolling will take the student beyond fifteen credit hours. Once a student has accumulated sixty semester credit hours or the equivalent, the student cannot enroll in upper-division courses until all three sections of the test have been passed. Students who have accumulated fewer than sixty semester credit hours may enroll in upper-division courses upon the advice of their college even though they may not have passed the TASP tests yet. There will be an examination fee of at least $26.00 for the TASP. Note, any student who has earned a minimum of 3 credit hours from Texas A&M University at Galveston or 3 credit hours accepted as transfer credit at Texas A&M University at Galveston prior to September 1, 1989 will be exempted from the TASP requirements.

Early Admission

Students who have a superior high school record and wish to enter the University before graduating from high school may apply for early admission.

Students who wish to enroll in Texas A&M University at Galveston as full time students at the end of their junior year must have a superior academic record, complete the prescribed 16 credits required of entering freshmen, rank in the top quarter of their class and score at least 1200 on the SAT, with at least 600 on the verbal section of the SAT. Students who submit the ACT must achieve at least a 30 composite score and a 28 score on the English portion. In addition, they must be recommended by their high school principal and counselor and have their parent's approval if under 18 years of age. Students must submit the results of the English composition and mathematics achievement tests. A personal interview is also required. Further information may be obtained from the Office of Admissions and Records.

Provisional Admission Program

This program is for those high school graduates who have never attended college and who meet all admissions criteria except the minimum score on the SAT or ACT. The program is available only during the summer immediately following graduation from high school or during the fall semester if the student has not attended another college since graduation from high school. The student will be required to complete a minimum of 12 semester credit hours of coursework during a fall semester or a minimum of 9 semester credit hours of coursework during two consecutive summer sessions and are required to achieve at least a "C" average (2.00 grade point ratio) on all courses attempted in order to be allowed to continue to be enrolled in subsequent semesters. Students who attempt the program and fail to earn the required "C" average or better are not permitted to reenter under another provisional arrangement.

Transfer Admission

Admission may be granted to undergraduate students who have begun their work at other colleges or universities and who have satisfied the requirements as set forth below. A transfer student is defined as one who has registered at another college or university. An applicant may not disregard the academic record of any previous education received at another institution.

An applicant must be eligible to return to the institution from which the transfer is sought. Applicants seeking admission to the license option curricula who have attended another maritime academy or college must provide a letter to the Office of Student Services from the superintendent of the other academy or college verifying that the student is eligible to return to that institution. Applicants must also submit a formal application for admission as well as two official transcripts of their record at each college or university previously attended as early as possible. This material should be sent to the Office of Admissions and Records, Texas A&M University at Galveston, P.O. Box 1675, Galveston, Texas 77553-1675. The applicant must have achieved an overall grade point ratio of 2.00 (C average) or better on the work attempted and must meet or surpass this same standard for each of the last two semesters of attendance, if in attendance two or more semesters. A ten-week summer session with a normal load of course work will be considered a full semester.

A student who has fewer than 18 semester hours of transferable credit must meet the admission requirements for entering freshman as well as the 2.00 standard indicated above. The high school record, college record, and test results will be used to determine admission status. The results of either the Scholastic Aptitude Test or the American College Testing Program will be accepted in determining eligibility for admission of a transfer student.

On the basis of the credentials submitted, credit will be given for work completed satisfactorily at another properly accredited college or university as long as the work is equivalent in character and extent to similar work at Texas A&M University at Galveston or Texas A&M University. Credits given by transfer are provisional and may be cancelled at any time if the student's work at the University is unsatisfactory. See the section entitled "Transfer of Credits" for additional information.

Transfer students should read carefully the section of this catalog entitled "Requirements for a Baccalaureate Degree," particularly the portion which explains residency requirements.

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 ADMISSION

If space is available, international students (non-U.S. citizens) with superior academic records will be considered for admission to Texas A&M University at Galveston through the International Admissions Office of Texas A&M University (College Station). For information about application deadlines, admissions criteria, expenses and English language proficiency, international students should request an application and a copy of the brochure "Information for Prospective International Students," from the Office of Admissions, Texas A&M University, College Station, Texas 77843-0100, U.S.A.

The deadlines for admission are February 1 for the fall semester and the summer session and September 1 for the spring semester.

Steps in Applying for International Admission to Texas A&M University at Galveston

1. Application for Admission: Write to the Office of Admissions, Texas A&M University, College Station, Texas 77843-0100, USA, to obtain an international student application and information brochure.

2. Testing: All international students must take the Test of English as Foreign Language (TOEFL). Information about the test may be obtained by writing to TOEFL, Box 899, Princeton, New Jersey 08540, USA. International applicants are encouraged to take the Scholastic Aptitude Test or the American College Test (required for graduates of U.S. high schools). Test results must be sent directly to TAMUG or TAMU by the testing agency (SAT and TOEFL code is 6835, ACT code is 6592).

All students whose native language is not English are also required to take a rigorous oral and written examination prior to the semester of entry. These examinations are given at Texas A&M University, College Station. On the basis of this examination and other English proficiency information, students will be assigned:

a. to a full-time University program, OR

b. to a part-time University program AND a part-time English program in the English Language Institute (ELI), OR

c. to a full-time English program in the English Language Institute.

Students who are required to attend courses in the English Language Institute on the College Station campus will take additional time to complete a degree.

3. Transcripts: Submit official academic records along with the certified English translations if the original documents are not in English. Secondary school records must show completion of a college preparatory curriculum. Applicants who have attended another college or university must submit these records in addition to secondary school records. All applicants must have a B average or better to be considered for admission.

4. Finances: Texas A&M University at Galveston does not have scholarship funds available for international students. The U.S. Immigration and Naturalization Service requires international students to furnish proof of sufficient financial resources in U.S. dollars. If accepted for admission, international students are required to make an advance deposit toward their first semester expenses.

READMISSION OF STUDENTS

Any former student who has resigned, been dropped from the rolls, or has not attended Texas A&M University at Galveston or Texas A&M University for at least one full semester must complete an Application for Readmission and submit it to the Office of Admissions and Records at Galveston as early as possible. If the student has attended any other institutions since last enrolled at Texas A&M University at Galveston or Texas A&M University, then two official transcripts from each institution attended should be submitted at the time of reapplication.

Applicants must have achieved an overall GPA of 2.0 (C average) or better on the work attempted and must have at least a 2.0 GPA for each of the two most recent semesters in attendance, if in attendance two or more semesters.

Readmission to the University does not constitute readmission to the U.S. Maritime Service License Option Program. Students returning to the University who wish to enter or reenter the Corps of Cadets as a license option student must apply for admission to the Corps of Cadets through the University's Student Services Office.

ADMISSION OF STUDENTS NOT DECLARING A MAJOR

Freshmen and transfer students who are not yet ready to choose a major field of study, or students who have decided to discontinue pursuit of a previously declared curriculum are temporarily assigned to the department of General Academics. Advisors in the department of General Academics help such students devise schedules that permit sampling of courses in several subjects to help them choose the most appropriate major field of study. At the same time, students satisfy common basic requirements in as many curricula as possible within the scope of their general interest.

Most students declare a major within one academic year after assignment to the department of General Academics. All students enrolled in General Academics must identify their major by the time they have completed 60 semester hours of courses.

A sample first semester course schedule for a General Academics freshman student follows:

ENGL 103 Composition and Rhetoric (3-0)	3
HIST 105 History of the U.S. (3-0) and/or POLS 206 American National Government (3-0)	3-6
Mathematics*	3-4
Physical or Biological Science*	3-4
Elective*	3-4
MARS 101* Intro. to Marine Science	1
	15-19 hours**

*To be selected in consultation with faculty advisor on the basis of the student's background, interests, and goals.

**The total number of credit hours may vary from 15 to 19 depending on the student's choice of courses after consulting with an advisor.

AUDITING OF CLASSES

Persons who are currently registered or who have earned 30 or more hours of college credit, and who desire to attend classes on an "auditing" basis, may do so by obtaining an audit request form during the late registration period of each semester. The Admissions and Records Officer will certify on that form that the eligibility criteria have been met. The prospective auditing student must then present the form to the Head of the academic department offering the course for approval. The Department Head will ensure that 1) the nature of the course is amenable to auditing (lecture only, not practice or laboratories), 2) that there is adequate room in the classroom and 3) that the course instructor is willing accommodate the auditing student.

Once the Department Head has approved the request by signing the form, the form is presented to the Fiscal Office for final approval, where an auditing fee will be collected as follows:

For students currently enrolled for formal courses: $5

For students not currently enrolled: $25

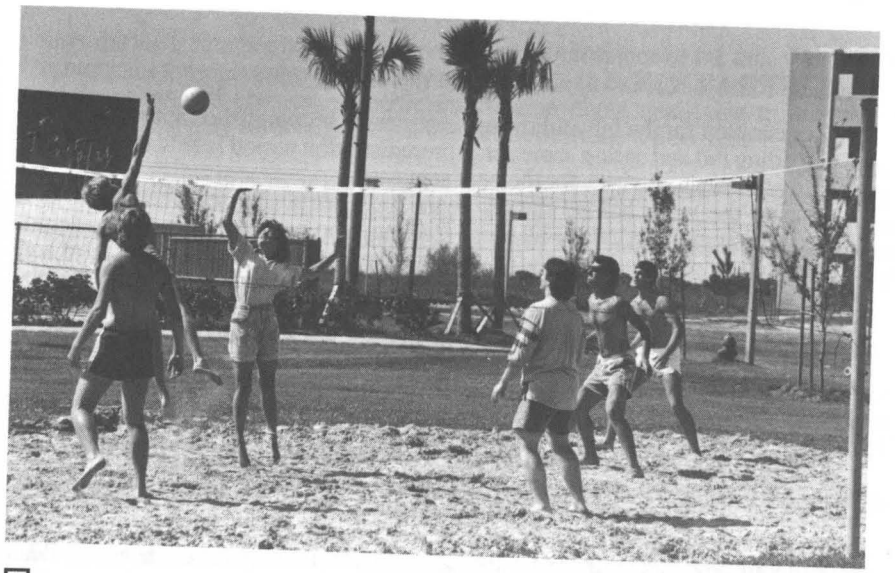
For persons over 65 years of age: no charge

Persons desiring to audit two or more courses must complete the entire process above for each course.

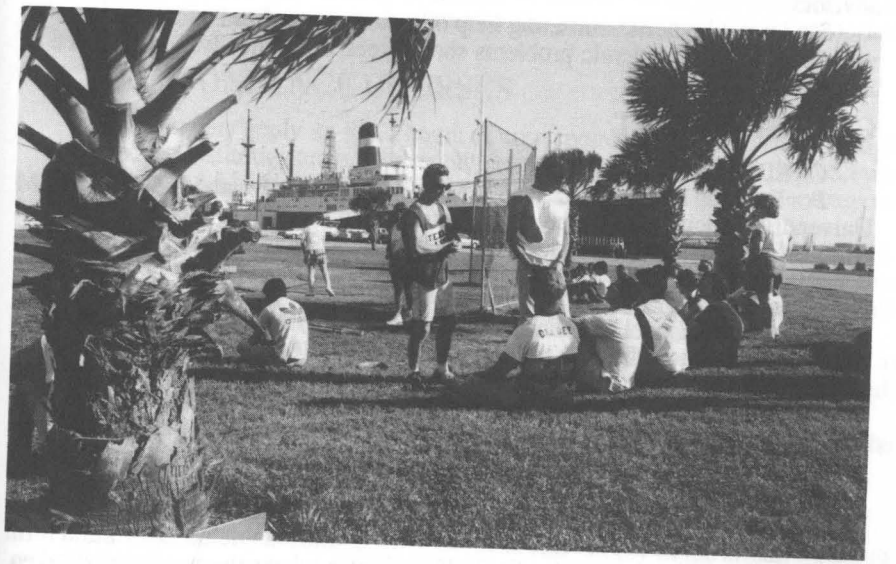
The auditing of courses involves listening and observing only. Auditing students are not entitled to participate in discussions or examinations and receive no course credit.

Auditing students are subject to the standards of student conduct specified in the current edition of University Regulations TAMUG, and violation thereof may constitute grounds for immediate cancellation of the auditing privilege by the course instructor without refund of fees.

Currently enrolled students who audit a course are not subsequently permitted to earn credit by examination for the course. To earn credit, the student must register in and successfully complete the course.



☐ Intramural sports include volleyball, football, softball, basketball, table tennis and tennis. TAMUG also has softball, volleyball, rugby and soccer teams which compete in local leagues.



REGISTRATION

Registration for the fall and spring semesters is accomplished at two times. In the preceding fall and spring semester, a preregistration period is held for currently enrolled students to register for the next semester.

During the week before classes begin for a particular semester, there is a delayed registration period for all those students who have not already registered. Summer school registration is the day before classes begin each summer term and the 10-week semester. Further information concerning registration may be obtained from the academic calendar published in this catalog or from the Office of Admissions and Records. Schedules of classes are available at the Office of Admissions and Records shortly before registration periods.

ORIENTATION CONFERENCES

Within each college of the University, academic advising is coordinated and supervised by the department heads. Students majoring in curricula offered by the department can ordinarily obtain counseling concerning academic program planning and curriculum-related matters from department faculty members who serve as academic advisors. If there are special problems, the department head, the dean or the Vice President for Academic Affairs may be consulted.

Within the degree programs of the two colleges, students may pursue individual career interests through selection of courses with the assistance of departmental advisors.

Students who need counseling help of a more specialized nature concerning vocational or non-academic problems should seek assistance from the Office of Student Services.

COURSE CREDIT

CREDIT BY EXAMINATION

For Entering Freshman-Texas A&M University at Galveston and Texas A&M University participate in the credit by examination services of the College Board (CB). In addition, the University offers its own credit by examination using certain departmental examinations. Credit hours are awarded in appropriate courses without a letter grade.

The College-Level Examination Program (CLEP) is designed for the purpose of evaluating non-traditional college-level education such as independent study, correspondence work, etc. No credit is offered at Texas A&M University at Galveston for General Examinations, but certain Subject Examinations are acceptable in basic courses in biology, chemistry, economics, English, history, management, mathematics and sociology. Students who are interested in these exams may secure registration forms from a nearby community college or university or by writing Southwestern Regional Office, College Board, Suite 922, Southwest Tower Building, 211 East 7th St., Austin, Texas, 78701. The completed registration form and fees should be sent to the CLEP Test Center where the test is to be taken. Specific information about applicable tests and scores may be obtained from the Office of Student Services at TAMUG. A fee is charged for these examinations.

Texas A&M University at Galveston also offers its own credit by examination program utilizing certain departmental and national tests. Students who have made superior scores on their entrance examinations may schedule credit by examination

tests during a summer conference preceding their entrance in the fall. No charge is made for these examinations. They are available in biology, chemistry, English, mathematics and physics. Specific information about qualifying to take these examinations may be obtained from the Office of Student Services.

For Enrolled Students-Undergraduate students enrolled at Texas A&M University at Galveston may participate in the University's credit by examination program. Credit will be awarded for satisfactory performance either on the appropriate Subject Examination of the College Level Examination Program or on a departmental examination. Information concerning these tests can be obtained from the Office of Student Services.

Transfer of Credits

As a general policy, credit will be given for transfer work completed satisfactorily with a passing grade at another properly accredited institution. Credits given by transfer are provisional and may be cancelled at any time if the student's work in the University is unsatisfactory.

Students should read carefully the section entitled Requirements for a Baccalaureate Degree, particularly the portion on residency requirements.

CONCURRENT ENROLLMENT AT TAMUG AND OTHER COLLEGES & UNIVERSITIES

A student enrolled at Texas A&M University at Galveston who wishes to take a course or courses concurrently at another institution for degree credit at Texas A&M University at Galveston must receive the prior approval of the appropriate department head.

CORRESPONDENCE COURSES

Students may apply up to 12 hours of correspondence credit earned through an accredited institution toward the requirements for an undergraduate degree, even though Texas A&M University at Galveston does not offer courses by correspondence.

Correspondence courses taken through the Defense Activity for Non-Traditional Education Support (DANTES) may be accepted and included in the 12 hours allowed. Students may apply a maximum total of 30 semester hours of approved extension class work and correspondence study toward a degree.

In order for a student in residence at Texas A&M University at Galveston to receive credit for correspondence work toward a bachelor's degree, he/she should:

1.Obtain advance written permission from the dean of his or her college.

2. Present appropriate evidence (official transcript) of having completed the course.

ACADEMIC CREDIT FOR MILITARY SERVICE

Students who have completed one year of active duty in the armed forces of the United States may be given academic credit of four semester hours of Military Science.

Students who have served at least one year in the armed forces of the United States on active duty as commissioned officers may be given academic credit of 16 semester hours of Military Science.

A student wishing to receive such credit should file a certified copy of his or her DD214 with the Office of Admissions and Records, so that credit may be allowed. This credit will not exempt a student from TASP.

ACADEMIC RULES AND REGULATIONS

Two handbooks entitled University Academic Regulations and University Student Life Regulations are prepared for the benefit of the student body. These books are the official statement of the rules and regulations which govern student conduct and student activities at Texas A&M University at Galveston and contain regulations in addition to those listed here. It is the responsibility of each individual student to read these handbooks carefully and to use them as ready references. Student Life Regulations are available through most departments and the Office of Student Services.

GRADING SYSTEM

Since students attend a college or university to extend their education, grades are usually taken as an indication of the proficiency of their endeavors. The student's semester grade in a course is based upon performance in class, written exercises and tests, laboratory work and the final examination. The proportionate weight assigned to each of the factors shall be determined by the department administering the course.

The basis upon which the final grade will be determined shall be announced to the class during the first week of the semester or term.

There are four passing grades signifying various degrees of achievement, and grade points are awarded on the basis of these grades.

The lowest grade point is 60. There is one failing grade, F, below 60, indicating work of unsatisfactory quality. Credit for a course failed may be obtained only by satisfactorily repeating the course in class. In a course including both theory and practice, the head of the department may excuse a student from repeating the practice if the grade in the practice is B or better, and if in the judgement of the head of the department, the repetition is not necessary. The student must register for both theory and practice, however.

	Range		Grade Points per hour
A	Excellent	90-100	4
B	Good	80-89	3
C	Satisfactory	70-79	2
D	Passing	60-69	1
F	Failing	Below 60	0
I	Incomplete	-	-
Q	Dropped course - no penalty	-	
S	Satisfactory	70-100	-
U	Unsatisfactory	Below 70	0
X	Grade not reported		-
WP	Withdrew passing	60-100	-
WF	Withdrew failing	Below 60	0
NG	No grade	-	-

Incomplete

The temporary grade I (Incomplete) at the end of a semester or summer term indicates that the student has satisfactorily completed the course with the exception of a major quiz, final examination or other work. This grade is given only when the deficiency is due to authorized absence or other cause beyond the control of the student and when the work already done has been of quality acceptable for the satisfactory completion of the course. Incomplete work must be completed before the end of the next fall or spring semester in the University unless the student's dean grants an extension of time for good reason. If the incomplete work is not completed within this time or if the student registers for the same course again, the I will be changed to an F by the registrar, and the student must repeat the course to receive credit for it.

Drop/Add

A student may drop courses during the first 12 class days of a fall or spring semester and during the first four class days of a summer term or a 10-week summer semester. A student may add courses during the first five class days of a fall or spring semester and during the first three class days of a summer term or a 10-week summer semester.

Full refunds or supplemental billings will be made for courses dropped or added during these times. Notices of refunds due or amounts owed will be mailed to the student's local address.

Q-Drop

After the 12th class day of a fall or spring semester or the 4th class day of a summer term or 10-week summer semester, with the approval of the dean of the student's college, a student may drop a course through the 25th class day of a fall or spring semester, the 9th class day of a summer term, or the 18th day of a 10-week summer semester. The symbol Q shall be given to indicate a drop without penalty. A student who drops a course after the Q-drop deadline will receive a grade of F unless unusual circumstances exist as determined by his or her dean. Students who withdraw from the University after the 12th class day through the 25th class day receive grades of Q in all courses.

Satisfactory/Unsatisfactory

Undergraduate students classified as juniors or seniors with minimum overall grade point ratio of 2.5, based on at least 30 hours of credit at Texas A&M University at Galveston, may be permitted to take a total of 12 credit hours of electives during their academic careers at Texas A&M University at Galveston on a satisfactory/unsatisfactory basis as a part of the hours required for their degrees. Only undirected electives may be taken on an S/U basis. Students wanting to take a course on satisfactory/unsatisfactory basis must register on this basis during the official registration period. Students shall not be permitted to change the basis on which their grades will be recorded on their official records.

The hours for which a student receives a grade of Satisfactory (C or above) shall not be included in the computation of the student's semester or cumulative grade point ratio; a grade of Unsatisfactory (D or F)shall be included in the computation of the student's grade point ratio at 0.0 grade points per credit hour.

The hours taken on a satisfactory/unsatisfactory basis will not be included in the 15 hours required for the designation of Distinguished Student.

Students who transfer to Texas A&M University at Galveston must have earned at least 12 hours of credit at Texas A&M University at Galveston before taking a course on a satisfactory/unsatisfactory basis.

A student must have the written approval of his or her academic advisor or department head in order to take a course on a satisfactory/unsatisfactory basis.

Colleges may refuse to accept work taken on a satisfactory/unsatisfactory basis for courses requiring a prior in-depth knowledge of the subject matter.

Withdrawal From The University

Students desiring to withdraw from the University before the end of a semester or summer term are required to complete the official withdrawal form. Assistance in obtaining such clearance is provided by the Admissions and Records Office. Students who withdraw during the first twelve days receive no record on their permanent record. Students who withdraw from the University after the 12th class day through the 25th class day receive grades of Q in all courses. After the 25th class day, students who withdraw from the University receive grades of WP in courses they are passing and WF in courses they are failing. Students may not withdraw during final exam periods.

Repetition of a Course to Improve Grade

Any students who wish to repeat a course to improve the grade in that course must do so before completion of a more advanced course in the same subject matter field. The original grade will remain on the student's record, and both grades will be used in computing the GPR. An F previously made is not removed once the course is passed. Credit for a repeated course may only be used once toward degree requirements.

Semester Credit Hour

A lecture course which meets one hour per week or 15 hours per semester or summer term is assigned a value of one semester credit hour. Thus, a course worth three semester credit hours, meets for three hours per week or 45 hours per semester or summer term. Credit hours for laboratory courses are determined to be some fraction of the number of hours spent in class, usually one third.

Grade Point Ratio

Only the record made in course work for which the student was registered in this institution or TAMU shall be used in determining grade point ratio. A student's grade point ratio for any given period is computed by dividing the total number of semester hours for which grades were received into the total number of grade points earned in that period. Grades of WF, U and F are included, but grades of WP, S, Q, X, and I are excluded.

Grade Reports

Preliminary Report: Preliminary reports of the student's current progress are available to students in the Admissions and Records Office near the middle of each semester. The preliminary report does not become a part of the student's permanent record.

Semester Report: An official report will be available to students at the close of each semester.

Scholastic Probation

Whenever a student's cumulative record indicates that he or she is failing to make satisfactory progress, the student is considered scholastically deficient. The cause of the deficiency will be investigated by the dean of the college, and the student may be placed on scholastic probation for such terms as the dean shall designate, or the student may be required to withdraw from the University if the deficiency so warrants.

Scholastic probation is a conditional permission for a student to continue in the University after he or she has become scholastically deficient. This permission is granted by the dean of the student's college when an analysis of the deficiency indicates that a continuation is in the best interest of the student and the University. The Vice President for Academic Affairs also reviews the records of all students on scholastic probation.

Distinguished Student and Dean's Honor Roll

A student who completes a semester schedule of at least 15 hours or a summer session schedule of at least 12 hours with no grade lower than C and with a grade point ratio of at least 3.25 for the semester or a summer session shall be designated as a Distinguished Student. A student who under the same circumstances, achieves a grade point ratio of 3.75 or higher will, in addition, be designated as a member of the Dean's Honor Roll. Official notifications of the designations are issued to the student by the dean of the student's college.

Classification

A student is classified by the number of semester hours posted to the official transcript.

Freshman	1-30 semester hours
Sophomore	31-60 semester hours
Junior	61-95 semester hours
Senior	96+

Full-time Student

A full-time undergraduate student is defined as one who is registered for 12 or more semester hours during a fall or spring semester, 6 hours or more in a summer term, and 12 hours in a 10-week summer semester.

Maximum Schedule

A student with an overall grade point ratio of 3.0 or better may register for a course load in excess of 19 hours in a fall or spring semester or six hours (seven if part is laboratory) in a summer term with the approval of their advisor. A student with an overall grade point ratio of less than 3.0 must obtain approval of their dean before registering for a course load in excess of 19 hours in a fall or spring semester or six hours (seven if part is laboratory) in a summer term.

Transcripts

Individuals who have attended the University may obtain an official transcript of their completed work, provided they have no financial obligations to the University. A fee, which according to state law must be paid in advance, will be charged for each copy. Transcripts will not be prepared during the final examination period for students currently enrolled. Students and former students who order transcripts must do so in writing, and each request must be accompanied by the individual's signature. All transcripts are prepared at TAMU College Station for students at both campuses. No transcripts are issued at TAMU Galveston.

DEGREE INFORMATION

Texas A&M University at Galveston reserves the right to modify the curricula or withdraw any courses therefrom when it appears appropriate to do so. The policies and procedures in this catalog are currently in effect; however, the University reserves the right to make changes or modifications for good cause. The University has the right to rescind a previously granted degree (in cooperation with Texas A&M University) if it becomes aware of information indicating that the degree never should have been granted.

Which catalog to follow: In meeting the requirements for a baccalaureate degree, a student is normally expected to complete the course and hour requirements as outlined in the catalog in effect at the time of his or her entrance. For the student who transfers to Texas A&M University at Galveston or who changes his or her degree objectives during his or her course of study, the degree requirements in the catalog specified by the student's dean at the time the student makes the transfer or change will be applicable.

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

MOODY COLLEGE OF MARINE TECHNOLOGY
Bachelor of Science with a major in Marine Biology
Bachelor of Science with a major in Marine Fisheries
Bachelor of Science with a major in Marine Sciences

TEXAS MARITIME COLLEGE
Bachelor of Science with a major in Marine Engineering
Bachelor of Science with a major in Marine Transportation
Bachelor of Science with a major in Maritime Administration
Bachelor of Science with a major in Maritime Systems Engineering

REQUIREMENTS FOR A BACCALAUREATE DEGREE

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

1. The student must complete, with at least a C average (2.00 GPR), one of the regular curricula of study leading to a degree.
2. A curriculum leading to a baccalaureate degree shall contain a minimum of 128 credit hours.

3. The total number of grade points earned at this institution in courses must be at least twice the number of hours which the student carried in courses at this institution. Grades of F or WF shall be included, except those grades and grades of D made in the freshman year or summer session preceding that year which are subsequently repeated at this University with a grade of C or better during the student's first four semesters. Such grades made in repeated courses do not replace the F, WF or D, but the original F, WF or D may be waived for the purpose of graduation only. Grades of WP and Q shall be excluded.

Grades in courses not applying to the degree may be waived by petition if approved by the student's dean and submitted to the registrar. The waiver of grades in courses as indicated above will not affect a student's grade point ratio or entitlement to graduation with honors.

4. The total number of grade points earned at Texas A&M University at Galveston in courses in the major department must be at least twice the number of hours which were carried at the institution in the major department. Grades in courses not applying to the degree may be waived by petition if approved by the academic dean and submitted to the registrar.
5. Grades made in courses elected in excess of a student's degree requirements shall be counted, but if failing, such courses need not be repeated.
6. The student must be formally recommended for graduation by the Academic Council after consideration of his or her completed record.
7. The student must have settled all financial obligations to the University.
8. Transfer courses taken during a student's final semester must be completed with an official transcript in the Admissions and Records Office by the stated deadline or the student will not graduate that semester.
9. The student must have all grades on record in the Admissions and Records Office not later than 12 p.m. on the Thursday preceding commencement for the fall and spring semesters and 5 p.m. on the Thursday preceding commencement during the summer.

These requirements must be completed and all grades must be recorded in the Registrar's Office of Texas A&M University not later than 5 p.m. on Thursday preceding Commencement Day. This includes all grades pertaining to graduation with honors.

RESIDENCE REQUIREMENT

Candidates for degrees at Texas A&M University at Galveston will observe these guidelines: For non-license option curricula, 30 of the last 36 hours must be completed at Texas A&M University at Galveston; and for license option curricula, the last two years of the minimum three-year training requirement must be completed at Texas A&M University at Galveston in the Corps of Cadets.

For students enrolled in a license option curriculum, participation in the Corps of Cadets is required every semester they are registered. In most cases, this will be eight regular semesters and three summer cruises.

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

Requirement in Political Science (Government) and History

In order to meet the legal requirements for a baccalaureate degree, all students must have at least six credit hours in Political Science (Government) and at least six credit hours in American History as described in detail in the following paragraphs.

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

Three of the six semester hour requirement may be satisfied if the student meets the requirements to receive credit by examination on the basis of acceptable performance on an advance placement examination or a comprehensive examination.

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

No more than three hours of the six semester hour requirement may be satisfied on the basis of acceptable performance on an advanced placement examination or a comprehensive examination.

APPLICATION FOR A DEGREE

Formal application for degrees must be submitted to the Admissions and Records Office, on forms provided for that purpose, not later than 90 days prior to the end of the semester, or 30 days prior to the end of the summer term in which the student expects to complete requirements for graduation. To obtain the

necessary forms, the student must pay a diploma fee in the Fiscal Office and present the fee receipt to the Admissions and Records Office.

In order to be a candidate for a degree at the end of a semester or summer term, a student at the beginning of that semester or term must be registered for the courses necessary to complete the requirements of the curriculum.

DOUBLE MAJOR

Students may elect to double major, that is, pursue two major fields of study, if both lead to the same baccalaureate degree. The two majors may be in the same or different Colleges within the University. The following requirements must be met:

1) the student must receive approval of the dean(s) of the college(s);

2) all University and college(s) requirements must be satisfied;

3) all required courses in each major must be completed; and

4) satisfy whatever conditions are set by the department(s) in which the majors are offered.

TWO DEGREES

A candidate for a second baccalaureate degree must have completed all the essential work of the second curriculum not covered in the first. In all such cases the total semester hours required must be at least 30 semester hours additional to the greater number required for either degree. A student is required to obtain a letter from his or her dean stating the courses required for the second degree.

GRADUATION WITH HONORS

Categories for honors shall be designated as follows:

1. Summa Cum Laude: A student may be graduated "Summa Cum Laude" with a grade point ratio of 3.900 or above.

2. Magna Cum Laude: A student may be graduated "Magna Cum Laude" with a grade point ratio of 3.700 through 3.899.

3. Cum Laude: A student may be graduate "Cum Laude" with a grade point ratio of 3.500 through 3.699.

To be eligible for graduation with honors, a student seeking a baccalaureate degree must enroll in and complete a minimum of 75 semester hours preceding graduation at this institution. Course credit received by examination is not included in this total. The grade point ratio of all college hours attempted, excluding transfer hours, must equal that required at Texas A&M for the appropriate category of honors.

FINANCIAL INFORMATION

EXPENSES

The expenses for a regular session of nine months will vary with the individual concerned and with the course of study pursued. In the case of new students, the total cost should range between $4,000 and $5,000. In general these amounts include three types of expenditures: fees payable to the Controller's Office, textbooks and supplies, and incidental expenses which are estimated in the range of $600 to $1500, depending on the individual concerned. Non-resident students, other than those pursuing a license-option curriculum, should increase these estimated expenses by $3,000 to cover non-resident tuition fees.

Incoming students from out-of-town or out-of-state may wish to open a local bank account with a cashier's check or traveler's check instead of a personal check. The local banks have a policy that a personal check has to clear before a check can be written on the new account. This procedure may take a week to two weeks before a check may be written.

PAYMENTS

Payments to the Controller's Office may be in the form of cash, cashier's check, personal check or money order payable to Texas A&M University at Galveston. All checks and money orders are accepted subject to final payment.

FEES

The fees set out herein for 1991-92 are approximations and are subject to change because of economic conditions and/or legislative requirements.

The fees listed below are for all Texas resident students except those in license-option curricula. The fees are based on a student registered for fifteen semester credit hours during the fall and spring semesters and six credit hours during a term of the summer session.

	Fall Semester	Spring Semester	Summer Session (5 weeks)
Tuition (see explanation of fees)	$300.00	$300.00	$120.00
Student Services	90.00	90.00	45.00
Room and Board (7-Day Plan)	1561.19	1561.19	558.60
Room Deposit	200.00		
General Property Deposit	10.00		
Identification Card	5.00		**3.00
Building Use Fee	90.00	90.00	36.00
Computer Use Fee	10.00	10.00	3.00
Student Center Complex Fee	10.00	10.00	5.00
Health Center Fee	25.00	25.00	12.50
Total	$2,301.19	$2,086.19	$ 783.10

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

	Fall Semester	Spring Semester	Summer Cruise
Tuition (see explanation of fees)	$375.00	$375.00	$125.00
Student Services	90.00	90.00	45.00
Room	780.00	780.00	350.00
Board (7-Day Plan)*	781.19	781.19	692.00
Room Deposit	200.00		
General Property Deposit	10.00		
Identification Card	5.00		**3.00
Cruise Fee			490.00
Computer Use Fee	10.00	10.00	
Building Use Fee	90.00	90.00	24.00
Student Center Complex Fee	10.00	10.00	5.00
Health Center Fee	25.00	25.00	25.00
Total	$2,376.19	$2,161.19	$1,759.00

*Includes state and city tax of 7.75%. **Applies only to summer students not enrolled during the fall and spring semesters.

DROP/ADD REFUNDS

A student may drop courses during the first 12 class days of a fall or spring semester and during the first 4 class days of a summer term or a 10-week summer semester. A student may add courses during the first 5 class days of a fall or spring semester and during the first 3 class days of a summer term or a 10-week summer semester. Full refunds or supplemental billings will be made for courses dropped or added during these times. Notices of amounts owed will be mailed to the student's local address. Refunds will be processed by the 12th class day of a fall or spring semester and the 4th class day of a summer term or a 10-week summer semester. (Note: Except those refunds associated with receipt of financial aid which is contingent upon the number of semester credit hours taken during a semester. These refunds will be issued shortly after these times.)

WITHDRAWAL FROM THE UNIVERSITY

Once a fee payment has been accepted by the University, a student is considered officially enrolled. Stopping payment on a check for fees or allowing the check to be returned unpaid by the bank for any reason does not constitute official withdrawal. Students wishing to withdraw should contact the Admissions and Records Office. Failure to follow procedures for withdrawing from the University may result in financial penalties and difficulty with future enrollment in the University.

EXPLANATION OF FEES

Tuition

Texas resident students pay twenty dollars ($20.00) per semester credit hour, but the total of such charges shall not be less than one hundred dollars ($100) per semester or fifty dollars ($50) per summer term.

Non-resident and international students pay one hundred twenty-eight dollars ($128) per semester credit hour.

Students enrolled in license option curricula, whether resident or non-resident, pay twenty-five dollars ($25.00) per semester credit hour, but the total of such charges shall not be less than one hundred twenty-five dollars ($125) per semester and one hundred twenty-five dollars ($125) for the summer cruise.

Students who are dismissed or withdraw from a license option curriculum after the semester begins will have fees adjusted to the appropriate resident or non-resident rate retroactive to the beginning of the semester.

License option students who enroll in summer shoreside classes will pay resident or non-resident fees as appropriate except for those students enrolled in the required summer ashore as listed in their degree program.

License option students who are granted a leave of absence for the summer and who enroll in the onshore summer program at the Mitchell Campus instead of the summer training cruise will pay resident or non-resident fees as appropriate for that period.

Under special circumstances, non-license option students may be granted permission to participate in the Corps of Cadets. Non-license students in the Corps of Cadets are not eligible for the special license option tuition and will pay normal resident or non-resident fees as applicable.

Students who in any semester register (including payment of fees) after the beginning of classes pay an additional ten dollar ($10) fee.

Student Services Fee

The student service fee is required of all students at the rate of $7.50 per semester credit hour not to exceed $90 per semester or $45.00 per summer term. Student service fees finance recreational activities, student government, student publications, student organizations, campus movies, intramural athletic programs and social activities.

Student Center Complex Fee

The student center complex fee is required for all students at the rate of $10 per semester ($5 per summer term or cruise). This fee will be used for the operation, maintenance, improvement and purchase of equipment for the student center complex and for the acquisition or construction of additions to the complex.

Health Center Fee

This fee is required of students enrolled for six semester credit hours or more at the rate of $25 for each regular semester, $25 for the summer training cruise if enrolled in four credit hours or more, and $12.50 per summer term if enrolled in three credit hours or more. This fee will finance health services provided by a local clinic and a physician and two medical assistants on the summer training cruise.

Orientation Conference Fee

The orientation conference fee is required of all new freshmen and transfer students enrolling in fall or spring semesters and selected summer terms at the rate

of $15 per student. This fee will be used to support the conduct of professional orientations and state mandated diagnostic testing.

Computer Use Fee

The computer use fee is charged at the rate of $1 per regular semester credit hour not to exceed $10 and $.50 per summer semester credit hour not to exceed $3. This fee will be used to compensate for services provided by various microcomputer facilities on campus.

Room, Rent, Board

All undergraduate students enrolled in more than six credit hours are required to reside in campus housing if available and purchase the board plan. The limited exceptions to this requirement are detailed in the Housing section of this catalog. Any student living off campus at the beginning of the semester who adds enough hours to require living on campus must pay for room and board for the entire semester. Two meal plans are offered through the board plan.

Fall and Spring	
5-Day Plan	3 meals each day, Monday-Friday, $665.00 + $51.54 tax
7-Day Plan	3 meals each day, $725.00 + $56.19 tax
Summer	
5-Day Plan	3 meals each day, Monday-Friday, $220.00 + $17.05 tax
7-Day Plan	3 meals each day, $240.00 + $18.60 tax

A deposit of $200 is required to apply for a room in a residence hall. This fee will be retained as a deposit against damage or late cancellation, or to keep the application on active file. Upon withdrawal from the University, any debts owed the University by the student may be withheld from the housing deposit. A reservation may be cancelled and the deposit refunded upon written request prior to July 1 for the fall semester, December 15 for the spring semester, May 10 for the first summer session and June 20 for the second summer session. Any cancellation after the above dates will result in forfeiture of the deposit. A refund may be made in accordance with the University policy for a student graduating or withdrawing from school, upon request, after clearance by the Student Services Office. The balance of the refund due will be issued through the Controller's Office after deducting all debts owed by the student to the University. Seniority in campus housing and on the residence hall waiting list will be based upon the date of receipt of the room deposit; however, the deposit does not guarantee assignment to on-campus housing.

Building Use Fee

This fee of $6 per semester credit hour is assessed to compensate for occupancy, services, use and/or availability of all or any of the property, buildings, structures, activities, operations and other facilities of the University.

Identification Card

All students must have an identification card. This card is used in registration procedures, collection of fees, cashing of checks, for dining hall privileges, etc. Replacement cards will be issued upon payment of an $8 fee.

Laboratory Fees

A laboratory fee ranging from $8 to $30 is charged for each laboratory course each semester.

Parking Permit

All students parking an automobile or motorcycle on the campus must pay a fee of $15.00 per regular semester and summer term. Boat permits will be issued for a fee of $5.00 per regular semester and summer term.

10-Week Summer Semester

Students may register for 10-week summer semester courses during the first summer term registration. They will be charged the minimum tuition of $100. All other mandatory and/or optional fees will be based on the number of hours taken.

Installment Plan

Certain students have the option of paying tuition and required fees in three installments. Eligibility requirements can be obtained through the Controller's Office.

OTHER EXPENSES

Textbook and Supplies: The cost of textbooks and supplies will vary with the quality of items purchased and with the course of study pursued. Students can expect to pay an amount ranging between $350 and $400. These amounts are estimates for the combined fall and spring semesters. Expenses for the summer term should amount to approximately one-half of the above estimates.

Uniforms: License option students must purchase uniforms with initial outfitting estimated at $850.

Mail Service Fee: The university operates a mail service for students wishing to receive mail on campus. The fee is $10 per semester for each student and $10 per summer term.

Late Registration Fee: Students registering after the final registration period will be assessed a $10 fee.

Graduation Fee: There is a $20 fee for graduation. This should be paid within the first two weeks of the student's final semester.

Other Items: The University operates a store for the purpose of supplying necessary articles to students. The store carries textbooks, stationary, drawing instruments, toilet articles and other supplies. All merchandise is sold at the usual retail prices prevailing in the area. Major credit cards are accepted in the Bookstore.

EXEMPTIONS

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

Dependent children of disabled or killed-on-duty firemen are exempt from paying tuition and laboratory fees.

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

Certain veterans (and dependents of veterans who died in active service), who are not eligible for federal educational benefits, who are Texas citizens and who were honorably discharged, may be exempt from paying tuition and laboratory fees. Orphans of members of the Texas National Guard and Texas Air National Guard killed since January 1, 1946, while on active duty either in the service of their State or the United States may also be eligible under this provision.

Officers, enlisted persons, selectees, or draftees of the Army, Army Reserve, Army National Guard, Air National Guard, Air Force, Air Force Reserve, Marine Corps, Marine Corps Reserve, Coast Guard, or Coast Guard Reserve of the United States, who are assigned to duty in Texas and their spouses and children, are entitled to pay the tuition fee required of Texas residents.

Teachers or professors employed at least one-half time on a regular monthly salary basis by institutions of higher education in Texas, and their spouses and children, are entitled to pay the tuition fee required of Texas residents.

Students who hold selected competitive academic scholarships of at least $200 for the academic year or summer for which they are enrolled are entitled to pay the tuition fee required of Texas residents.

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

Full-time employees of the Texas A&M University System are exempt from paying all fees except tuition, laboratory fees and I.D. card.

Students registered only in courses which have been designated as "off campus" are exempt from paying all fees except tuition, a building use fee of $6 per semester credit hour, laboratory fees and I.D. card.

Students registering concurrently at two Texas public institutions of higher education are subject to the following tuition procedure:

1. A student must register at the institution with the lower minimum tuition and pay the full tuition charge.

2. Generally, only the hourly rate is paid at the second institution. However, if the minimum amount is less at the first institution, then the student must pay the difference in the two minimums to the second institution, but not less than the hourly rate.

REFUNDS

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

Tuition, Student Services Fee, Laboratory Fee and Residence Hall Fees:

Fall or Spring Semester	
Prior to the first class day	100 percent
During the first five class days	80 percent
During the second five class days	70 percent
During the third five class days	50 percent
During the fourth five class days	25 percent
After the fourth five class days	None
Five-week Summer Term	
Prior to the first class day	100 percent
During the first, second or third class day	80 percent
During the fourth, fifth or sixth class day	50 percent
Seventh day of class and thereafter	None

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

BOARD FEE REFUNDS: Board fees are refundable in full prior to the first day of classes. Refunds will be made only in case of official withdrawal at which time a pro-rata refund will be made, computed on a daily basis, less a withdrawal fee equaling ten percent of the semester rate.

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

DROP/ADD REFUNDS: Full refunds or supplemental billings will be made by the 12th class day for courses dropped or added during the first 12 class days of a fall or spring semester and during the first four class days of a summer term or a 10-week summer semester. (Exception: Refunds resulting from receipt of financial aid cannot be made until after 12th class day or 4th class day reports are available.) Notice of refunds due or amounts owed will be mailed to the student's local address. Consequently, students are obliged to ensure that their correct local address and telephone number are on file in the Office of Admissions and Records.

REDUCTIONS

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

UNPAID CHECK

If a check accepted by the Controller's Office is returned unpaid by the bank on which it is drawn, the person presenting it will be required to pay a penalty of $15 in the form of cash or money order and, if not redeemed, the student may be dropped from the rolls of the University. In addition, the check may be turned over to the District Attorney for prosecution. A student dropped from the rolls of the University for failure to redeem an unpaid check within the grace period is eligible for reinstatement after payment of penalties, a $50 reinstatement fee and redemption of the check.

STUDENT SERVICES

The Office of Student Services coordinates the student life programs and activities of Texas A&M University at Galveston. Information is available from this office concerning new student orientation, advanced placement testing, veterans' affairs, international students, counseling services, housing, financial aid, health services, student activities, graduate placement and the Corps of Cadets.

STUDENT FINANCIAL ASSISTANCE

Student financial assistance at Texas A&M University at Galveston includes: federal and state grants, College Work-Study and loans, as well as scholarships and University student employment. Generally, all federal and state programs are based on demonstrated financial need. Scholarships are usually awarded on the basis of academic performance and leadership.

The assessment of financial need is performed by the College Scholarship Service (CSS). Students and prospective students must file the Financial Aid Form (FAF) with the CSS. The FAF can be obtained from high school counselors or college or university financial aid offices. The need analysis report from CSS to TAMUG is the basic document from which all assistance, except TAMUG scholarships and student employment, is awarded. Applicants filing the FAF should complete all sections of the form to insure full consideration of their eligibility for assistance. Applications should be filed early in the calendar year (April 1) for the Fall Semester due to limited funds in selected programs. Financial Aid, which is based on need, is awarded first to students with the greatest need, then to those with less need.

Grant Programs: Grants are awarded on the basis of financial need. These funds do not have to be repaid. Grant programs include the federal Pell Grant and Supplemental Educational Opportunity Grant, Texas Public Education Grant, State Student Incentive Grant and Texas Tuition Scholarship.

Work-Study: Federal and state Work-Study programs are also awarded based on need. CWS students are paid on the University wage scale, are limited to twenty hours employment per week, and are not entitled to fringe benefits. Work-Study programs enable students to earn part of their assistance.

Student Part-Time Employment: The Personnel Office coordinates student part-time employment both off and on campus. Students seek employment through job leads posted by the Personnel Office or through their own initiative. Student employees of the University are paid on the University wage scale but are not entitled to fringe benefits. Students may not work for the University more than twenty hours per week. Students on conduct or scholastic probation are not eligible for employment with the University.

Loan Programs: The University participates in a variety of loan programs. Stafford Student Loans and Perkins Loans are made based on need. Parent Loans and Supplemental Loans are available for families who are ineligible for the need

based loans. The College Access Loan Program is limited to Texas residents and is not based on need. Loans require special applications and are submitted after eligibility for other forms of aid are determined. Short-term loans are available for unexpected emergency needs only and are repayable within the semester in which they are borrowed.

Satisfactory Academic Progress: Students receiving federal and state funded grants, loans, and employment must make satisfactory academic progress as defined by the Financial Aid Office. Standards of satisfactory progress for financial aid eligibility at Texas A&M University at Galveston are based on guidelines from the U. S. Department of Education and Texas Higher Education Coordinating Board. Students receiving federal and state funded financial assistance must maintain a 2.0 cumulative GPR and successfully complete 24 semester hours each academic year. Evaluation of academic progress occurs after each semester for which a student receives assistance. Students who do not meet standards of satisfactory progress are placed on a probationary status for the next semester and may continue to receive assistance. After one semester of probation, a student who has not met standards of progress will be suspended from eligibility. However, a student on probation who attains a 2.0 semester GPR but has not reached a 2.0 cumulative GPR may be continued on a second semester of probation. A detailed statement of Satisfactory Academic Progress Policy for financial aid is available from the Financial Aid Office.

Refund and Repayment Policy: Students who receive financial assistance and later withdraw from the University may have a portion of any fees refund returned to one or more of the programs from which financial assistance was received. Students who receive financial aid cash disbursements and then withdraw from the University may be required to repay a portion of the cash received back to the financial aid programs. Specific financial aid refund information is available from the Financial Aid Office.

Scholarships: Scholarships are generally based on outstanding academic achievement and leadership. Criteria may include ACT or SAT scores, class rank and participation in extracurricular activities. The Scholarship and Awards Committee of the University awards certain scholarships including Opportunity Awards for Freshmen and Academic Excellence Awards for continuing students. Scholarships are usually awarded for the nine month academic year.

Opportunity Awards are made to graduates of accredited high schools who have not attended another college or university. The deadline for application is February 15 preceding the Fall Semester of the student's Freshman year. Awards are valued at $500 per academic year. The number of awards each year is dependent on funding available. To be considered for an Opportunity Award, an applicant must satisfy the admission requirements of the University, plus:

- be a U.S. citizen or permanent resident;
- make formal application on a scholarship application provided by the University;
- have SAT or ACT scores made available to the University before February 15;
- submit a high school transcript showing grade records through the first semester of the senior year.

Academic Excellence Awards are for continuing students who are beyond the Freshman year and have established an academic record with Texas A&M University at Galveston. A grade point ratio of 3.25 or higher, full-time enrollment in a degree granting program and a satisfactory conduct record are required for eligibility. The value of each award is $500 per academic year. Applications are available from the Financial Aid Office and must be returned by March 1.

Valedictory Scholarships for freshman Texas residents are awarded to the highest ranking graduate from each accredited high school in Texas. The scholarship consists of a tuition exemption during the student's Freshman year. The student must be certified as a valedictorian through the Texas Education Agency. Certification must be presented to the Financial Aid Office at the beginning of the Fall Semester. The award is limited to the first two long semesters immediately following graduation from high school.

Students who are non-residents and are receiving a scholarship awarded by a committee of the University are eligible to pay resident tuition. The Texas Legislature has provided for a limited number of non-resident tuition exemptions for individuals who have received a scholarship for which they competed with Texas residents. The scholarship must have a minimum value of $200 for the academic year.

Prospective and current students are encouraged to seek scholarships from local sources in their hometowns or from national sources such as foundations and corporations. They should check with their high school counselors and in reference sections of their public libraries for information.

Veterans and War Orphans: The Financial Aid Office certifies enrollment in the University for students eligible for benefits from the Veterans Administration. Students must submit an official copy of their Degree Plan and a copy of their class schedule. Other documents may be required depending on the program. Enrollment will be certified on a semester by semester basis and students are responsible for registering early and submitting class schedules to insure timely submission of the enrollment data. All courses taken must be on the Degree Plan or they will not be counted toward enrollment status.

Students receiving Veterans Administration Education Benefits must maintain a 2.0 minimum cumulative grade point ratio. Students who fall below this minimum at the end of a semester may continue to receive benefits for the next semester on a probationary status. Probationary students who achieve a 2.0 GPR or higher during the probationary semester but whose cumulative GPR is still below the minimum may be allowed one additional probation semester.

Disposition of Student Aid Funds: Students awarded financial assistance, except for employment and veterans benefits, will have funds from the various programs applied toward their tuition, fees, room and board charges as assessed by the Fiscal Office and listed on the student's fee statement. Funds earned from student employment are paid as wages in a check directly to the student.

Students should come to campus prepared to pay for the initial costs of books, supplies and, for members of the Corps of Cadets, uniforms. These items are not included on the fee statement, therefore, financial aid is not applied toward the costs. Average costs for these items are included in determining the overall cost of education when calculating financial need. The following components make up the student costs of education: tuition, fees, books/supplies, room/board, transportation, personal and miscellaneous.

Individuals interested in additional information about student financial assistance should contact the Financial Aid Office, Texas A&M University at Galveston, P. O. Box 1675, Galveston, Texas 77553-1675.

COUNSELING

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

HEALTH SERVICES

Medical Clinic: Texas A&M University at Galveston contracts with a local community clinic for health services for enrolled students. Terms of the contract may vary from year to year, but generally office visits to the doctor are free of charge. Medications, inoculations, x-rays, physicals and other services provided at the clinic are generally available at a reduced cost. Hospitalization and emergency room visits are full-charge at the student's expense. Educational pamphlets concerning HIV/AIDS are available to students from the Counseling Office.

Group Insurance: Since there are numerous health needs and costs which are not provided or paid for by the University's Health Service, students are encouraged to purchase medical insurance. A group plan is available to all students in The Texas A&M University System. Applications for this program will be distributed during new student orientation and are available from the Office of Student Services. Students and parents should give careful consideration prior to dropping any current health insurance.

Summer Cruises: When the T/S TEXAS CLIPPER departs each year for the annual summer training cruise, a physician and two medical assistants operate an on-board dispensary. All services provided on board are free of charge. Should a student require hospitalization ashore or evacuation, the student will be responsible for all costs incurred because of such hospitalization or evacuation.

HOUSING

Texas A&M University at Galveston has on-campus housing in modern student residence halls. Rooms are double occupancy and furnished with beds, desks, chairs, wardrobes or closets and dressers. Students are expected to furnish pillows, blankets, shower curtains, linens, and cleaning supplies.. All Texas A&M University at Galveston students pursuing a license-option (LO) curriculum are required to live in campus housing and participate in the board plan. The same requirement also applies to all non-license option (NLO) students who are unmarried and not residing with parents in Galveston County, if campus housing is available. LO students are housed separately from NLO students.

An application for campus housing, which is separate from the application for admission to the University, is available from the Office of Student Services. This application, along with the $200 required housing deposit, should be returned to the Texas A&M University at Galveston Controller's Office. Rooms are assigned in accordance with the date on which the housing application and room deposit are received in the Controller's Office.

Housing applications may be forwarded prior to acceptance to the University but housing assignments will be contingent upon admission to the University. It is recommended that housing applications be submitted early. In the event that on-campus housing is not available, information concerning off-campus housing will be provided upon request.

Since license option students are required to live on campus, students will be able to pursue a license option only if campus housing is available for them. A failure to receive campus housing does not preclude students from enrolling in the degree program of their choice but simply restricts participation in license option programs until campus housing is available.

STUDENT ACTIVITIES

A wide variety of student activities is coordinated through the Office of Student Services in the Northen Student Center. The Northen Student Center contains dining facilities, a book store, a game room, financial aid and counselor's offices and other facilities. Adjacent to the Northen Student Center are the swimming pool, tennis courts and other outdoor recreational facilities.

Clubs: Clubs on campus include the American Society of Mechanical Engineers, Sail Club, the Dive Club, the Propeller Club, Student Life Organization, Student Association of Maritime Administrators, Society of Naval Architects and Mechanical Engineers, Surf Club, the Society of Art Patrons, the Endangered Sea Species Club, and the Marine Biology Club.

Student Government: The student government of Texas A&M University at Galveston is the Student Senate. This Senate serves as a direct link to the administration regarding student life. Members are elected each year.

Student Publications: Students publish a weekly newsletter, Nautilus; a literary publication, Seaspray; and a yearbook, Voyager.

Athletics: The Recreational Sports Program attempts to provide each student with the opportunity to participate in regularly organized activities. Co-rec teams are organized in flag football, basketball, softball, table tennis, volleyball and tennis. Texas A&M University at Galveston also has softball, volleyball, rugby and soccer teams which compete in local leagues. The University Sail Team and the Crew Team compete in intercollegiate competition.

MULTICULTURAL SERVICES

The Department of Multicultural Services works with other programs on campus to support the cultural, educational, social, and personal development of ethnic minority students. The purpose is to coordinate and disseminate information about services available to ethnic minorities. The primary mission is to facilitate full participation of African American, Hispanic, Asian American and Native American students in the mainstream of university life. For information, please call (409) 740-4427.

HAZING

Anyone who participates in hazing is in violation of University rules as well as State law. Violators may be subject to University disciplinary action in addition to state criminal penalties. Hazing means any intentional, knowing, or reckless act occurring on or off the campus by one person, alone or acting with others, directed

against a student that endangers the mental or physical health or safety of a student for the purpose of pledging, being initiated into, affiliating with, holding office in, or maintaining membership in any organization whose members are (or include) students at the University. A complete definition of hazing is available in the Student Services Office.

CORPS OF CADETS

Students pursuing a University degree program leading to a United States Coast Guard License as a merchant marine officer are required to join the University's Corps of Cadets. The Corps of Cadets Program provides a learning laboratory for the development of leadership and management skills and the self-discipline demanded of merchant marine officers. Cadet Corps policies provide for the organization of the cadets into a paramilitary unit, with muster, watch standing and shoreside training requirements, room and ship maintenance responsibilities and special cadet discipline procedures. Cadets must also complete training in firefighting, first aid and cardiopulmonary resuscitation techniques. Cadets are required to apply for, and accept if tendered, midshipman status in the U.S. Naval Reserve. Cadets wear prescribed uniforms during regular school semesters and during required summer training cruises. Questions concerning Corps life should be addressed to the Commandant, the Office of Student Services, who functions as the principal administrator and advisor to the Cadet Corps.

With special permission, it is possible for students who are foreign nationals to participate in the Corps of Cadets. However, due to federal regulations, such students are not eligible to be examined for a license as an officer in the U.S. Merchant Marine, and are thus not eligible for special license option tuition fees.

ADMISSION TO A LICENSE OPTION CURRICULUM

Students who meet the admission criteria established by the United States Maritime Administration and the University may participate in the Corps of Cadets and a license option curriculum. Such participation is a privilege and not a right. Serious or excessive violation of Corps rules and regulations may be considered as evidence of inaptitude for the demanding career of a merchant marine officer and warrant dismissal from the Corps and the license option curriculum. Notification of acceptance to the University is not final approval for appointment to a license-option program or acceptance into the Corps of Cadets. The application form for acceptance into the Corps of Cadets is available from the Student Services Office. Final review of a student's credentials cannot be completed until after enrollment and prospective cadets will not be sworn into the program until this review is completed. Enrollment in the program requires the cadet to accept midshipman status if offered and acceptance of a commission in a reserve component in the Armed Services if offered at graduation. The initial enrollment of students in a license option curriculum must be at the beginning of a fall or spring semester. Students may not enter the program after the twelfth class day of the semester.

License Option students are subject to drug screening for admission to and participation in the program.

Among the criteria evaluated are:

1. Age. The U.S. Maritime Administration restricts student incentive payments to USMS cadets who are at least seventeen but who have not passed their twenty-fifth birthday on the first day of enrollment in a license option curriculum. Special admission may be granted to students older than twenty-five but not past their thirty-second birthday. Cadets selected for special admissions are not eligible for any of the student incentive payments offered. These cadets, however, will participate fully in every other aspect of the license option program. They will be subject to the same requirements, privileges, considerations and obligations as cadets meeting the federal age requirements.

2. Physical requirements. Strict physical requirements are specified for licensing as a merchant marine officer. Prior to entering a license program, prior to certification for licensing, and at any other time deemed appropriate by the University, students are required to furnish verification from a physician that they meet the specified physical requirements. These are summarized as follows:

Deck Cadet -Minimum vision 20/200 in each eye correctable to 20/40 in each eye. Pass the PIP or Williams Lantern color vision test.

Engineer Cadet - Minimum vision of 20/200 in each eye correctible to 20/50 in each eye. Distinguish between red, blue, green and yellow.

All Cadets - Epilepsy, insanity and badly impaired hearing are disqualifying conditions.

Specific details of the required physical examinations are contained in the Title 46 U.S. Code of Federal Regulations part 10. Waivers cannot be granted by the University.

3. Background Investigation. All applicants for admission to license option curricula and enrollment in the Corps of Cadets are subject to a federal background investigation. Adverse information revealed by the investigation may result in denial of license by the U.S. Coast Guard. The University will not accept a candidate into a license option curriculum nor allow continued participation in the program when conduct infractions preclude license qualification.

4. Citizenship. Only United States citizens are eligible for officers' licenses in the U.S. Merchant Marine.

5. Drug Screening. All License option cadets must participate in a drug testing program. All entering cadets will be required to pay for and take a drug screen test prior to the first cruise. There may be periodic tests required and any serious marine incident will require drug testing. These tests/screenings will be performed at an Approved DHHS Laboratory, in accordance with CFR 46.16.340. A positive test during initial screening may result in the student not being accepted into the LO program. A positive test during a periodic or other test may result in dismissal from the Corps of Cadets and LO programs.

U. S. COAST GUARD LICENSE AS A MERCHANT MARINE OFFICER

To qualify at graduation for certification by the University and for eligibility to take the Coast Guard examinations for Third Mate or Third Assistant Engineer, students must complete all academic degree requirements and successfully complete three summer training cruises. Apply for and accept, if tendered, a commission in the Merchant Marine Reserve/United States Naval Reserve (MMR/USNR); meet physical qualifications at the time of graduation; and participate in the Corps of Cadets in a satisfactory manner every semester while enrolled in a license option which will normally require eight long semesters and three summers. Participation in the Corps of Cadets will include the requirement to successfully complete

mandatory non-credit training courses such as fire fighting, first aid, CPR and radar certification. Fees for these courses may be charged over and above fees specified in the University Catalog. Students pursuing a license option will not be granted leaves of absence from the Corps of Cadets for any fall or spring semesters in which they are enrolled in the University prior to completion of eight fall and/or spring semesters in the Corps of Cadets and three summer training cruises. Students who are dropped from the Corps of Cadets for academic or disciplinary reasons, but are allowed to remain in the University, will normally be disenrolled from the license option program and will not be reenrolled in a license option except under very special circumstances and after a careful review by the professional staff of the University. Under exceptional circumstances highly qualified students may accelerate the program, but in no case will the program be completed in less than six long semesters.

THE NAVAL RESERVE OFFICERS TRAINING CORPS (NROTC) PROGRAM

The Naval Reserve Officers Training Corps (NROTC) Program offers men and women an opportunity to qualify for a commission in the Navy while attending TAMUG. NROTC students are required to participate in the U.S. Maritime Service Corps of Cadets.

To become eligible for a commission, NROTC cadets must complete all requirements for a bachelor's degree as well as certain courses specified by the Navy. They wear uniforms furnished by the Navy and participate in three summer training periods of four to six weeks on board Navy ships.

Students join the NROTC program as National Scholarship winners or as non-subsidized college program students. Applications for the National Scholarships can be obtained through a Navy recruiting office prior to the submission deadline of 30 January of the year for which they are applying.

The Navy also has a two-year NROTC scholarship program which is open to college students who will complete their sophomore or third year in a five-year curriculum. College program cadets are encouraged to compete for a three-year NROTC scholarship.

All NROTC scholarships pay for full tuition, books, fees and necessary supplies. All scholarship cadets and junior and senior level College Program cadets receive an allowance of $100 per month and are paid during summer training periods.

Upon graduation, qualified NROTC cadets are commissioned as Ensigns in the Unrestricted Line, U.S. Navy. Scholarship cadets receive Regular commissions and serve a minimum of four years of active duty. College program cadets receive Reserve commissions with an active duty commitment of three years.

The Naval Science staff advise and counsel cadets on academic, personal and naval career matters. Primary emphasis is placed on educational excellence to produce the highest quality Naval officers. Students wishing to discuss the NROTC program schould contact the Naval Science Department at (409) 740-4594.

THE NAVAL RESERVE COMMISSION

The maritime industry is considered a vital part of our national defense. The U.S. Navy provides active duty commissioned officers and Chief Petty Officers

who are well trained in naval procedures to provide instruction in naval operations, sea power, and how merchant vessels are capable of operating with the Navy during peacetime, national emergency and war. This instruction is provided through two courses, Naval Science (NVSC) 200 and 300 which are required for all license option cadets.

In addition, the Department of Naval Science prepares eligible cadets for eventual commissioning in the Merchant Marine Reserve/United States Naval Reserve (MMR/USNR). Cadets under this program who pass a Navy physical examination become Merchant Marine Midshipmen. Upon completion of the Naval Science courses, graduation from TAMUG, and successful completion of the U.S. Coast Guard licensing exam, the Midshipman will be commissioned as a restricted line officer with the rank of Ensign in the MMR/USNR.

Individuals commissioned in the MMR/USNR must fulfill these obligations:

1. Maintain the commission for eight years.
2. Sail on their applicable license at sea for four months each consecutive two-year period for eight years.
3. Complete two weeks of active duty training in the Navy every year for six years.
4. Submit an annual report to the administrator of the MMR/USNR Program.

Active duty service may be requested by the midshipman under this program. Midshipmen also have the option of applying for active duty commissions in the Coast Guard, or commissions in the Army, Air Force, Marine Corps, U.S. Health Service or National Oceanographic and Atmospheric Administration (NOAA).

This program provides Merchant Marine Officers who are familiar with Naval procedures to the merchant marine industry. It also provides the individual MMR/USNR officers, when on active duty, the benefits and pay normally provided U.S. Navy officers.

THE U.S. COAST GUARD COMMISSION

The U.S Coast Guard MARGRAD program offers licensed graduates the opportunity to apply for direct reserve commissions involving extended active duty in the U.S. Coast Guard. Applications may be initiated during a cadet's final year prior to graduation in accordance with U.S. Coast Guard directives.

STUDENT INCENTIVE PAYMENTS

Students who enroll in a license option program for the first time during a fall semester may be eligible for Student Incentive Payments of $100 per month provided through the Maritime Administration. They are awarded to students based on competitive criteria that evaluate the student's potential for completing the degree program and license requirements and for a subsequent successful maritime career. If a SIP recipient is disenrolled from TAMUG, or found to be non-physically qualified, or found to not have an aptitude for naval service, the student will automatically be terminated from the SIP program and all payments will stop.

Curriculum in

MARINE BIOLOGY (MARB)

The Marine Biology program provides an excellent education in the biological sciences through studies undertaken in a unique coastal environment. Curriculum offerings are designed to provide broad training in general biology, and the ecology, systematics and zoogeography of flora and fauna in estuaries and the marine environment. Students receive not only strong formal academic instruction but also considerable hands-on field and collection experience.

Graduates find employment with state and federal agencies, ecological consulting firms, industry, medical laboratories and educational institutions. Marine Biology degree recipients have undertaken postgraduate studies in botany, fisheries biology, systematics, mariculture, ecosystem modeling, veterinary and human medicine and environmental law.

MATH 130 is a prerequisite for MATH 131. This prerequisite may be satisfied by taking an advanced placement test or successful completion of the course. This prerequisite will not count in satisfying degree program requirements.

FRESHMAN YEAR

Fall Semester	*(Th-Pr)*	*Cr*
BIOL 113 Introductory Biology	(3-0)	3
BIOL 123 Introductory Biology Lab	(0-3)	1
CHEM 101 Fundamentals of Chemistry I	(3-0)	3
CHEM 111 Fundamental of Chemistry Lab I	(0-3)	1
HIST 105 History of the U.S.*	(3-0)	3
MATH 131 Calculus**	(3-0)	3
POLS 206 American National Government	(3-0)	3
		Total 17

Spring Semester	*(Th-P)*	*Cr*
BIOL 114 Introductory Biology	(3-0)	3
BIOL 124 Introductory Biology Lab	(0-3)	1
CHEM 102 Fundamentals of Chemistry II	(3-0)	3
CHEM 112 Fundamentals of Chemistry Lab II	(0-3)	1
ENGL 104 Composition and Rhetoric	(3-0)	3
MATH 166 Topics in Contemporary Math***	(3-0)	3
HIST 106 History of the U.S.*	(3-0)	3
		Total 17

SOPHOMORE YEAR

Fall Semester	*(Th-Pr)*	*Cr*
CHEM 227 Organic Chemistry I	(3-0)	3
CHEM 237 Organic Chemistry Lab I	(0-3)	1
GEOL 104 Physical Geology	(3-3)	4
MARB 200 Scientific Methods	(0-4)	2
PHYS 201 College Physics	(3-3)	4
Elective in Computer Science		3
		Total 17

Spring Semester	*(Th-Pr)*	*Cr*
CHEM 228 Organic Chemistry II	(3-0)	3
CHEM 238 Organic Chemistry Lab II	(0-3)	1
MARB 311 Ichthyology	(3-3)	4
MARB 315 Vertebrate Zoology	(3-3)	4
PHYS 202 College Physics	(3-3)	4
		Total 16

JUNIOR YEAR

Fall Semester	*(Th-Pr)*	*Cr*
ENGL 301 Technical Writing	(3-0)	3
MARB 303 Biostatistics	(3-0)	3
BIOL 351 Fundamentals of Microbiology	(3-3)	4
MARB 408 Marine Botany	(3-3)	4
MARB 430 Coastal Plant Ecology	(3-3)	4
		Total 18

Spring Semester	*(Th-Pr)*	*Cr*
MARS 360 Biochemistry	(3-0)	3
MARB 435 Invertebrate Zoology	(3-3)	4
POLS 207 State and Local Government	(3-0)	3
Elective		3
Elective in Humanities		3
		Total 16

SENIOR YEAR

Fall Semester	*(Th-Pr)*	*Cr*
MARB 301 Genetics		4
MARB 310 Introduction to Cell Biology	(3-3)	4
MARB 450 Developmental Biology	(3-3)	4
MARB 481 Seminar in Marine Biology	(1-0)	1
Elective in Humanities		3
		Total 16

Spring Semester	*(Th-Pr)*	*Cr*
~~ECON~~ 203 Principles of Economics	(3-0)	3
MARB 420 Comparative Physiology	(3-3)	4
MARB 425 Marine Ecology	(3-3)	4
MARB 481 Seminar in Marine Biology	(1-0)	1
Elective in Biology		2
Elective in Social Science		3
		Total 17

Total Hours - 134

NOTE: ALL ELECTIVES must be chosen in consultation with, and approved by, the student's academic advisor.

* - The American history requirement may also be fulfilled by other American history courses offered at TAMUG, including HIST 370, 442, or 444. Students should consult their academic advisor.

** - Students with a strong math background are advised to take MATH 151.

*** - To be chosen from MATH 166, or other calculus, or PHIL 240, 341, or 342.

HUMANITIES is to be chosen from fine arts, theater arts, humanities, foreign language, history, literature, philosophy, archaeology, and geography. SOCIAL SCIENCE is to be chosen from cultural anthropology, geography, political science, psychology, sociology, applied ethics and economics.

Curriculum in

MARINE BIOLOGY WITH A LICENSE OPTION

The program allows the marine biology student to prepare for a career as an officer aboard a seagoing vessel by participating in the U.S. Maritime Service Corps of Cadets. The Marine Biology License Option curriculum provides the basics of marine biology in the coastal and marine environment as well as courses leading toward licensing as a Third Mate of any gross tonnage upon oceans, steam or motor vessels, in the U.S. Merchant Marine.

The curriculum is an abbreviated version of the Marine Biology curriculum and is oriented toward field activities consistent with service aboard research vessels. Students who wish to attend a biologically oriented graduate program are advised to take addition coursework in developmental biology, genetics, biochemistry and physiology.

MATH 130 is a prerequisite for MATH 131. This prerequisite may be satisfied by taking an advanced placement test or successful completion of the course. This prerequisite will not count in satisfying degree program requirements.

FRESHMAN YEAR

Fall Semester	(Th-Pr)	Cr
BIOL 113 Introductory Biology	(3-0)	3
BIOL 123 Introductory Biology Lab	(0-3)	1
CHEM 101 Fundamentals of Chemistry I	(3-0)	3
CHEM 111 Fundamentals of Chemistry Lab I	(0-3)	1
HIST 105 History of the U.S.*	(3-0)	3
MATH 131 Calculus**	(3-0)	3
NAUT 103 Maritime Orientation and Life Saving	(3-0)	3
		Total 17

Spring Semester	(Th-Pr)	Cr
BIOL 114 Introductory Biology	(3-0)	3
BIOL 124 Introductory Biol Lab	(0-3)	1
CHEM 102 Fundamentals of Chemistry II	(3-0)	3
CHEM 112 Fundamentals of Chemistry Lab II	(0-3)	1
MATH 166 Topics in Contemporary Math***	(3-0)	3
NAUT 203 Seamanship I	(3-0)	3
NAUT 204 Terrestrial Navigation	(3-0)	3
		Total 17

SUMMER SESSION - Ten weeks aboard the T/S TEXAS CLIPPER
NAUT 200 Basic Communications, Navigation and Seamanship, Credit 4

SOPHOMORE YEAR

Fall Semester	(Th-Pr)	Cr
CHEM 227 Organic Chemistry I	(3-0)	3
CHEM 237 Organic Chemistry Lab I	(0-3)	1
HIST 106 History of the U.S.*	(3-0)	3
MARB 200 Scientific Methods	(0-4)	2
NVSC 200 Merchant Marine Officer I	(3-0)	3
PHYS 201 College Physics	(3-3)	4
		Total 16

Spring Semester	(Th-Pr)	Cr
CHEM 228 Organic Chemistry II	(3-0)	3
CHEM 238 Organic Chemistry Lab II	(0-3)	1
ENGL 104 Composition and Rhetoric	(3-0)	3
NAUT 301 Seamanship II	(2-3)	3
NAUT 303 Celestial Navigation	(3-0)	3
PHYS 202 College Physics	(3-3)	4
		Total 17

SUMMER SESSION - Ten weeks aboard the T/S TEXAS CLIPPER
NAUT 300 Intermediate Communication, Navigation and Seamanship, Credit 4

JUNIOR YEAR

Fall Semester	(Th-Pr)	Cr
MARB 315 Vertebrate Zoology	(3-3)	4
MART 302 Marine Cargo Operations I	(3-3)	4
NAUT 201 Naval Architecture I	(3-2)	4
NVSC 300 Merchant Marine Officer II	(3-0)	3
Elective in Computer Science		3
		Total 18

Spring Semester	(Th-Pr)	Cr
MART 321 Maritime Law I	(2-0)	2
MART 406 Marine Cargo Operations II	(3-2)	4
METR 302 Weather Reports and Forecasting	(3-0)	3
NAUT 202 Naval Architecture II	(3-0)	3
NAUT 304 Electronic Navigation	(2-2)	3
Elective in Humanities		3
		Total 18

SHORESIDE SUMMER

ECON 203 Principles of Economics	(3-0)	3
ENGL 301 Technical Writing	(3-0)	3
MARB 311 Ichthyology	(3-3)	4
Elective in Humanities		3
		Total 13

SENIOR YEAR

Fall Semester	(Th-Pr)	Cr
MARB 303 Biostatistics	(3-0)	3
MARB 435 Invertebrate Zoology	(3-3)	4
NAUT 302 Seamanship III	(1-3)	2
NAUT 404 The Navigator	(2-3)	3
POLS 206 American National Government	(3-0)	3
Elective in Social Science		3
		Total 18

Spring Semester	(Th-Pr)	Cr
MARB 420 Comparative Physiology Zoology	(3-3)	4
MARB 425 Marine Ecology	(3-3)	4
OCNG 401 Introduction to Oceanography	(3-0)	3
POLS 207 State and Local Government	(3-0)	3
		Total 14

SUMMER SESSION - Ten weeks aboard T/S TEXAS CLIPPER
NAUT 400 Advanced Communications, Navigation and Seamanship, Credit 4
Total Hours - 160

NOTE: ALL ELECTIVES must be chosen in consultation with, and approved by, the student's academic advisor.

* - The American history requirement may also be fulfilled by utilizing other American history courses offered at TAMUG, including HIST 370, 442 or 444. Students should consult their academic advisor.

** - MATH 130 is a prerequisite for MATH 131. Students with a strong math background are advised to enroll in Math 151.

*** - Other calculus, or PHIL 240, 341 or 342, may be substituted with approval.

HUMANITIES to be chosen from fine arts, theater arts, humanities, foreign language, history, literature, philosophy, archaeology or geography. SOCIAL SCIENCE to be chosen from cultural anthropology, geography, political science, psychology, sociology, applied ethics, economics.

Curriculum in

MARINE ENGINEERING (MARE)

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

The Marine Engineering program is available in a design-oriented non-license option and in an applications-oriented license option. The license option is open only to U.S. Maritime Service Cadets. Successful completion of the license option program will qualify the student to sit for the U.S. Coast Guard license examination. Upon successful completion of the examination a person can serve as a Third Assistant Engineer on ocean-going steam and motor vessels of any gross tonnage.

Both options of the Marine Engineering program are accredited by the Accreditation Board for Engineering and Technology (ABET).

FRESHMAN YEAR

Fall Semester	(Th-Pr)	Cr
CHEM 101 Fundamentals of Chemistry I	(3-0)	3
CHEM 111 Fundamentals of Chemistry Lab I	(0-3)	1
ENDG 105 Engineering Graphics	(0-6)	2
ENGL 104 Composition and Rhetoric	(3-0)	3
HIST 105 History of the U.S.*	(3-0)	3
MARE 101 Engineering Analysis	(0-2)	1
MATH 151 Engineering Mathematics	(3-2)	4
		Total 17

Spring Semester	(Th-Pr)	Cr
CHEM 102 Fundamentals of Chemistry II	(3-0)	3
CHEM 112 Fundamentals of Chemistry Lab II	(0-3)	1
HIST 106 History of the U.S.*	(3-0)	3
MATH 161 Engineering Mathematics II	(3-0)	3
NAUT 103 Maritime Orientation and Lifesaving	2-3)	3
PHYS 218 Mechanics	(3-3)	4
		Total 17

SOPHOMORE YEAR

Fall Semester	(Th-Pr)	Cr
ENGL 203 Introduction to Literature	(3-0)	3
MARE 105 Engineering Mechanics I	(3-0)	3
MARE 303 Marine Thermodynamics I	(3-0)	3
MARE 310 Engineering Computation	(3-0)	3
MATH 251 Engineering Mathematics III	(3-0)	3
PHYS 219 Electricity	(3-3)	4
		Total 19

Spring Semester	(Th-Pr)	Cr
MARE 180 Basic Machine Shop Techniques	(0-3)	1
MARE 206 Engineering Mechanics II	(3-0)	3
MARE 207 Electricity and Magnetism	(3-2)	4
MARE 209 Mechanics of	(3-0)	3
MARE 280 Welding Techniques	(0-3)	1
MARE 304 Marine Thermodynamics II	(3-0)	3
MATH 308 Differential Equations	(3-0)	3
		Total 18

JUNIOR YEAR

Fall Semester	(Th-Pr)	Cr
CVEN 311 Fluid Dynamics	(3-0)	3
MARE 301 Heat Transfer	(3-2)	4
MARE 307 Electrical Circuits	(3-2)	4
MARE 309 Marine Construction Materials	(3-2)	4
POLS 206 American National Government	(3-0)	3
		Total 18

Spring Semester	(Th-Pr)	Cr
ENGL 301 Technical Writing	(3-0)	3
MARE 308 Electrical Machinery	(3-2)	4
MARE 319 Introduction to Design	(1-2)	2
MARE 410 Marine Power Plants	(2-2)	3
MARE 412 Principles of Naval Architecture	(3-0)	3
MARE 415 Economics of Marine Engineering	(3-0)	3
Systems Design		
		Total 18

SENIOR YEAR

Fall Semester	(Th-Pr)	Cr
MARE 411 Marine Machine Design	(3-0)	3
MARE 414 Ship Automation I	(3-2)	4
Elective in Humanities		3
Elective in Social Science		3
		Total 13

Spring Semester	(Th-Pr)	Cr
ECON 203 Principles of Economics	(3-0)	3
MARE 203 Diesel Engineering Technology	(2-2)	3
MARE 416 Engineering Laboratory II	(0-4)	1
MARE 419 Marine Engineering Design Projects	(2-6)	4
MARE 471 Ethics in Management and Engineering	(3-0)	3
POLS 207 State and Local Government	(3-0)	3
		Total 17

Total Hours - 137

NOTE: ALL ELECTIVES must be chosen in consultation with, and approved by, the student's academic advisor.

* - The American history requirement may also be fulfilled by utilizing other American history courses offered at TAMUG, including HIST 370, 442, or 444. Students should consult their academic advisor.

HUMANITIES to be chosen from fine arts, theater arts, humanities, foreign language, history, literature, philosophy, archaeology or geography.SOCIAL SCIENCE to be chosen from cultural anthropology, geography, political science, psychology, sociology, applied ethics, economics.

Curriculum in

MARINE ENGINEERING WITH A LICENSE OPTION

This program retains the basic marine engineering curricula outlined on the previous pages but leads as well toward a U.S. Coast Guard license. The program is designed to prepare the student for a career as an engineering officer aboard a seagoing vessel by participating in the U.S. Maritime Service Corps of Cadets.

Upon the successful completion of the program, the student will qualify to sit for licensing examinations to serve as a Third Assistant Engineer on ocean-going steam or motor vessels of any gross tonnage. Both options of the Marine Engineering program are accredited by the Accreditation Board for Engineering and Technology (ABET).

FRESHMAN YEAR

Fall Semester	(Th-Pr)	Cr
CHEM 101 Fundamentals of Chemistry I	(3-0)	3
CHEM 111 Fundamentals of Chemistry Lab I	(0-3)	1
ENDG 105 Engineering Graphics	(0-6)	2
ENGL 104 Composition and Rhetoric	(3-0)	3
MARE 101 Engineering Analysis	(0-2)	1
MATH 151 Engineering Mathematics I	(3-2)	4
HIST 105 History of the U.S.*	(3-0)	3
		Total 17

Spring Semester	(Th-Pr)	Cr
CHEM 102 Fundamentals of Chemistry II	(3-0)	3
CHEM 112 Fundamentals of Chemistry Lab II	(0-3)	1
MATH 161 Engineering Math II	(3-0)	3
NAUT 103 Maritime Orientation and Lifesaving	(2-3)	3
PHYS 218 Mechanics	(3-3)	4
POLS 207 State and Local Government	(3-0)	3
		Total 17

SUMMER SESSION - Ten weeks on the T/S TEXAS CLIPPER
MARE 200 Basic Operations, Credit 4

SOPHOMORE YEAR

Fall Semester	(Th-Pr)	Cr
ENGL 203 Introduction to Literature	(3-0)	3
MARE 105 Engineering Mechanics I	(3-0)	3
MARE 303 Marine Thermodynamics I	(3-0)	3
MARE 310 Engineering Computation	(3-0)	3
MATH 251 Engineering Mathematics III	(3-0)	3
PHYS 219 Electricity	(3-3)	4
		Total 19

Spring Semester	(Th-Pr)	Cr
MARE 180 Basic Machine Shop	(0-3)	1
MARE 206 Engineering Mechanics II	(3-0)	3
MARE 207 Electricity and Magnetism	(3-2)	4
MARE 209 Mechanics of Materials	(3-0)	3
MARE 280 Welding Techniques	(0-3)	1
MARE 304 Marine Thermodynamics II	(3-0)	3
MATH 308 Differential Equations	(3-0)	3
		Total 18

SUMMER SESSION - Ten weeks on the T/S TEXAS CLIPPER
MARE 300 Intermediate Operations, Credit 4

JUNIOR YEAR

Fall Semester	(Th-Pr)	Cr
CVEN 311 Fluid Dynamics	(3-0)	3
POLS 206 American National Government	(3-0)	3
MARE 301 Heat Transfer	(3-2)	4
MARE 307 Electrical Circuits	(3-2)	4
MARE 309 Marine Construction Materials	(3-2)	4
		Total 18

Spring Semester	(Th-Pr)	Cr
ENGL 301 Technical Writing	(3-0)	3
MARE 308 Electrical Machinery	(3-2)	4
MARE 319 Introduction to Design	(1-2)	2
MARE 410 Marine Power Plants	(2-2)	3
MARE 412 Principles of Naval Architecture	(3-0)	3
MARE 415 Economics of Marine Engineering	(3-0)	3
Systems Design		
		Total 18

SUMMER SESSION - Ten weeks on the T/S TEXAS CLIPPER
MARE 400 Advanced Operations, Credit 4

SENIOR YEAR

Fall Semester	(Th-Pr)	Cr
MARE 411 Marine Machine Design	(3-0)	3
MARE 414 Ship Automation I	(3-2)	4
NVSC 200 Merchant Marine Officer I	(3-0)	3
Elective in Humanities		3
		Total 13

Spring Semester	(Th-Pr)	Cr
ECON 203 Principles of Economics	(3-0)	3
MARE 203 Diesel Engineering Technology	(2-2)	3
MARE 416 Engineering Laboratory II	(0-4)	1
MARE 419 Marine Engineering Design Projects	(2-6)	4
MARE 471 Ethics in Management and Engineering	(3-0)	3
NVSC 300 Merchant Marine Officer II	(3-0)	3
		Total 17

SHORESIDE SUMMER		
HIST 106 History of the U.S.*	(3-0)	3
Elective in Social Science		3
		Total 6

Total Hours - 155

NOTE: ALL ELECTIVES must be chosen in consultation with, and approved by, the student's academic advisor.

* - The American history requirement may also be fulfilled by utilizing other American history courses offered at TAMUG, including HIST 370, 442 or 444. Students should consult their academic advisor.

HUMANITIES to be chosen from fine arts, theater arts, humanities, foreign language, history, literature, philosophy, archaeology or geography. SOCIAL SCIENCE to be chosen from cultural anthropology, geography, political science, psychology, sociology, applied ethics, economics.

Curriculum in

MARINE FISHERIES (MARF)

The curriculum in marine fisheries provides educational opportunities in the biological sciences, with emphasis on principles of marine fisheries management. Ecology, taxonomy, zoogeography, culture and general biology of commercial species are stressed. Course offerings are structured to provide not only a strong basis of formal academic instruction but also considerable hands-on field and collection experience by taking advantage of the coastal location of the University. A strong preparation in the sciences is recommended.

Marine Fisheries graduates are prepared to work as fishery managers or research biologists for state and federal agencies, ecological consulting firms, industry and educational institutions. Qualified degree recipients may undertake postgraduate studies in resource management, mariculture, systematics, seafood technology and fisheries economics.

MATH 130 is a prerequisite for MATH 131 This prerequisite may be satisfied by taking an advanced placement test or successful completion of the course. This prerequisite will not count in satisfying degree program requirements.

FRESHMAN YEAR

Fall Semester	(Th-Pr)	Cr
BIOL 113 Introductory Biology	(3-0)	3
BIOL 123 Introductory Biology Lab	(0-3)	1
CHEM 101 Fundamentals of Chemistry I	(3-0)	3
CHEM 111 Fundamentals of Chemistry Lab I	(0-3)	1
HIST 105 History of the U.S.*	(3-0)	3
MATH 131 Calculus**	(3-0)	3
POLS 206 American National Government	(3-0)	3
		Total 17

Spring Semester	(Th-Pr)	Cr
BIOL 114 Introductory Biology	(3-0)	3
BIOL 124 Introductory Biology Lab	(0-3)	1
CHEM 102 Fundamentals of Chemistry II	(3-0)	3
CHEM 112 Fundamentals of Chemistry Lab II	(0-3)	1
ENGL 104 Composition and Rhetoric	(3-0)	3
HIST 106 History of the U.S.*	(3-0)	3
MATH 166 Topics in Contemporary Math***	(3-0)	3
		Total 17

SOPHOMORE YEAR

Fall Semester	(Th-Pr)	Cr
CHEM 227 Organic Chemistry I	(3-0)	3
CHEM 237 Organic Chemistry Lab I	(0-3)	1
ECON 203 Principles of Economics	(3-0)	3
MARB 200 Scientific Methods	(0-4)	2
PHYS 201 College Physics	(3-3)	4
Elective in Computer Science		3
		Total 16

Spring Semester	(Th-Pr)	Cr
CHEM 228 Organic Chemistry II	(3-0)	3
CHEM 238 Organic Chemistry Lab II	(0-3)	1
MARB 311 Ichthyology	(3-3)	4
MARB 315 Vertebrate Zoology	(3-3)	4
MARB 303 Biostatistics	(3-0)	3
PHYS 202 College Physics	(3-3)	4
		Total 19

JUNIOR YEAR

Fall Semester	(Th-Pr)	Cr
BIOL 351 Fundamentals of Microbiology	(3-3)	4
ENGL 301 Technical Writing	(3-0)	3
GEOL 104 Physical Geology	(3-3)	4
MARB 312 Field Ichthyology	(3-3)	4
Elective in Humanities		3
		Total 18

Spring Semester	(Th-Pr)	Cr
MARB 301 Genetics	(3-3)	4
MARS 360 Biochemistry	(3-0)	3
POLS 207 State and Local Government	(3-0)	3
Elective in Botany		4
Elective in Humanities		3
		Total 17

SENIOR YEAR

Fall Semester	(Th-Pr)	Cr
MARB 435 Invertebrate Zoology	(3-3)	4
MARF/MARB 481 Seminar	(1-0)	1
MARF 423 Mariculture	(3-3)	4
Elective in Social Science		3
Elective		3
		Total 15

Spring Semester	(Th-Pr)	Cr
MARB 420 Comparative Physiology	(3-3)	4
MARB 450 Developmental Biology	(3-3)	4
MARB/MARF 481 Seminar	(1-0)	1
MARF 445 Marine Fisheries Management	(2-2)	3
Elective in MARB or MARF		3
		Total 15

Total Hours - 134

NOTE: ALL ELECTIVES must be chosen in consultation with, and approved by, the student's academic advisor.

* - The American history requirement may also be fulfilled by utilizing other American history courses offered at TAMUG, including HIST 370, 442 or 444. Students should consult their academic advisor.

** - Students with a strong math background are advised to take MATH 151.

*** - To be chosen from MATH 166, or other calculus, PHIL 240, 341, or 342.

HUMANITIES is to be chosen from fine arts, theater arts, humanities, foreign language, history, literature, philosophy, archaeology, and geography. SOCIAL SCIENCE is to be chosen from cultural anthropology, geography, political science, psychology, sociology, applied ethics and economics.

Curriculum in

MARINE SCIENCES (MARS)

This program takes advantage of the coastal location of the University to provide the student with extensive hands-on field experiences in addition to a solid base of formal academic instruction in the science of the coastal, estuarine, and marine environments. The curriculum emphasizes mathematics, life sciences, physical sciences and earth sciences. Elective flexibility in the junior and senior years allows students the option to specialize in Marine Geology, Marine Chemistry or Marine Physics.

FRESHMAN YEAR

Fall Semester	(Th-Pr)	Cr
BIOL 113 Introductory Biology	(3-0)	3
BIOL 123 Introductory Biology Lab	(0-3)	1
CHEM 101 Fundamentals of Chemistry I	(3-0)	3
CHEM 111 Fundamentals of Chemistry Lab I	(0-3)	1
MATH 151 Engineering Mathematics I	(3-2)	4
POLS 206 American National Government	(3-0)	3
Elective		1
		Total 16

Spring Semester	(Th-Pr)	Cr
BIOL 114 Introductory Biology	(3-0)	3
BIOL 124 Introductory Biology Lab	(0-3)	1
CHEM 102 Fundamentals of Chemistry II	(3-0)	3
CHEM 112 Fundamentals of Chemistry Lab II	(0-3)	1
ENGL 104 Composition and Rhetoric	(3-0)	3
MATH 161 Engineering Mathematics II	(3-0)	3
Elective		1
		Total 15

SOPHOMORE YEAR

Fall Semester	(Th-Pr)	Cr
CHEM 227 Organic Chemistry I	(3-0)	3
CHEM 237 Organic Chemistry Lab	(0-3)	1
GEOL 104 Physical Geology	(3-2)	4
MATH 251 Engineering Mathematics III	(3-0)	3
PHYS 218 Mechanics	(3-3)	4
Elective		1
		Total 16

Spring Semester	(Th-Pr)	Cr
CHEM 228 Organic Chemistry II	(3-0)	3
CHEM 238 Organic Chemistry Lab	(0-3)	1
CPSC 203 Introduction to Computing	(3-0)	3
OCNG 401 Introduction to Oceanography	(3-0)	3
PHYS 219 Electricity	(3-3)	4
POLS 207 State and Local Government	(3-0)	3
Elective		1
		Total 18

JUNIOR YEAR

Fall Semester	(Th-Pr)	Cr
ECON 203 Principles of Economics	(3-0)	3
ENGL 301 Technical Writing	(3-0)	3
GEOG 210 Marine Geography	(3-0)	3
HIST 105 History of the United States *	(3-0)	3
MARS 420 Introduction to Chemical Oceanography	(3-0)	3
Elective		3
		Total 18

Spring Semester	(Th-Pr)	Cr
HIST 106 History of the United States *	(3-0)	3
MARB 440 Marine Biology	(3-3)	4
MARS 310 Field Methods in Marine Sciences	(1-6)	3
MARS 430 Introduction to Geological Oceanography	(3-0)	3
Elective in Computer Science		3
		Total 16

SENIOR YEAR

Fall Semester	(Th-Pr)	Cr
MARS 481 Seminar	(1-0)	1
MARS 375 Science of Fluids	(3-0)	3
METR 302 Weather Reports and Forecasting	(3-0)	3
Elective in Social Science		3
Elective		6
		Total 16

Spring Semester	(Th-Pr)	Cr
MARS 450 Electrical and Physical Measurements	(2-3)	3
MARS 485 Problems	(3-0)	3
MARS 410 Introduction to Physical Oceanography	(3-0)	3
Elective in Humanities		3
Elective		3
		Total 15

Total Hours - 130

NOTE: ALL ELECTIVES must be chosen in consultation with, and approved by, the student's academic advisor.

* - The American history requirement may also be fulfilled by utilizing other American history courses offered at TAMUG, including HIST 370, 442 or 444. Students should consult their academic advisor.

HUMANITIES is to be chosen from fine arts, theater arts, humanities, foreign language, history, literature, philosophy, archaeology or geography. SOCIAL SCIENCE is to be chosen from cultural anthropology, geography, political science, psychology, sociology, applied ethics or economics.

Curriculum in

MARINE SCIENCES WITH A LICENSE OPTION

This program retains the basic physical science core of the Marine Sciences program but leads as well toward a U.S. Coast Guard license. This option is available to U.S. Maritime Service cadets in the Marine Sciences program. The student who successfully completes the license program will be qualified to sit for the U.S. Coast Guard examination as a Third Mate of any gross tonnage upon oceans, steam or motor vessels.

FRESHMAN YEAR

Fall Semester	(Th-Pr)	Cr
BIOL 113 Introductory Biology	(3-0)	3
BIOL 123 Introductory Biology Lab	(0-3)	1
HIST 105 History of the United States*	(3-0)	3
MATH 151 Engineering Mathematics I	(3-2)	4
NAUT 103 Maritime Orientation and Lifesaving	(2-3)	3
POLS 206 American National Government	(3-0)	3
		Total 17

Spring Semester	(Th-Pr)	Cr
BIOL 114 Introductory Biology	(3-0)	3
BIOL 124 Introductory Biology Lab	(0-3)	1
ENGL 104 Composition and Rhetoric	(3-0)	3
MATH 161 Engineering Mathematics II	(3-0)	3
NAUT 203 Seamanship I	(2-3)	3
NAUT 204 Terrestrial Navigation	(2-2)	3
		Total 16

SUMMER SESSION- Ten weeks on the T/S TEXAS CLIPPER
NAUT 200 Basic Communications, Navigation and Seamanship, Credit 4

SOPHOMORE YEAR

Fall Semester	(Th-Pr)	Cr
CHEM 101 Fundamentals of Chemistry I	(3-0)	3
CHEM 111 Fundamentals of Chemistry Lab I	(0-3)	1
NAUT 201 Naval Architecture I	(3-2)	4
NVSC 200 Merchant Marine Officer I	(3-0)	3
PHYS 218 Mechanics	(3-3)	4
POLS 207 American National Government	(3-0)	3
		Total 18

Spring Semester	(Th-Pr)	Cr
CHEM 102 Fundamentals of Chemistry II	(3-0)	3
CHEM 112 Fundamentals of Chemistry Lab II	(0-3)	1
NAUT 202 Naval Architecture II	(3-0)	3
NAUT 303 Celestial Navigation	(2-3)	3
PHYS 219 Electricity	(3-3)	4
CPSC 203 Introduction to Computing	(3-0)	3
		Total 17

SUMMER SESSION - Ten weeks at sea on the T/S TEXAS CLIPPER
NAUT 300 Intermediate Communications, Navigation and Seamanship, Credit 4

JUNIOR YEAR

Fall Semester	(Th-Pr)	Cr
ENGL 301 Technical Writing	(3-0)	3
GEOL 104 Physical Geology	(3-3)	4
MART 302 Marine Cargo Operations I	(3-3)	4
GEOG 210 Marine Geography	(3-0)	3
OCNG 401 Introduction to Oceanography	(3-0)	3
		Total 17

Spring Semester	(Th-Pr)	Cr
MART 321 Maritime Law I	(2-0)	2
MARS Option**		3
NAUT 301 Seamanship II	(2-3)	3
NAUT 304 Electronic Navigation	(2-2)	3
NVSC 300 Merchant Marine Officer II	(3-0)	3
Elective in Humanities		3
		Total 17

SUMMER SESSION - Ten weeks at sea on the T/S TEXAS CLIPPER
NAUT 400 Advanced Communications, Navigation and Seamanship, Credit 4

SENIOR YEAR

Fall Semester	(Th-Pr)	Cr
MARS 481 Seminar	(1-0)	1
MARS Option**		3
MART 406 Marine Cargo Operations II	(3-2)	4
NAUT 302 Seamanship III	(1-3)	2
NAUT 404 The Navigator	(2-3)	3
Elective in Social Science		3
		Total 16

Spring Semester	(Th-Pr)	Cr
HIST 106 History of the United States *	(3-0)	3
MARS 310 Field Methods in Marine Sciences	(1-6)	3
METR 302 Weather Reports and Forecasting	(3-0)	3
MARS Option**		3
Elective in Humanities		3
		Total 15

Total Hours - 145

NOTE: ALL ELECTIVES must be chosen in consultation with, and approved by, the student's academic advisor.

* - The American history requirement may also be fulfilled by utilizing other American history courses offered at TAMUG, including HIST 370, 442 or 444. Students should consult their academic advisor.

** - MARS option courses must be chosen from MARS 410, 420, 430, or 450.

HUMANITIES is to be chosen from fine arts, theater arts, humanities, foreign language, history, literature, philosophy, archaeology or geography. SOCIAL SCIENCE is to be chosen from cultural anthropology, geography, political science, psychology, sociology, applied ethics or economics.

Curriculum in

MARINE TRANSPORTATION (MART)

This program combines studies in the humanities and sciences with instruction and training in maritime disciplines to provide the U.S. Maritime Service cadet with a broad-based education. The student who successfully completes the license program will be qualified to sit for the U.S. Coast Guard license examination as a Third Mate of any gross tonnage upon oceans, steam or motor vessels. Students not seeking a license do not have to take the three summer cruises, therefore needing to complete 130 semester hours.

FRESHMAN YEAR

Fall Semester	(Th-Pr)	Cr
CHEM 101 Fundamentals of Chemistry I	(3-0)	3
CHEM 111 Fundamentals of Chemistry Lab I	(0-3)	1
ENDG 105 Engineering Graphics	(0-6)	2
HIST 105 History of the U.S.*	(3-0)	3
MATH 106 Plane and Spherical Trigonometry	(4-0)	4
NAUT 103 Orientation and Lifesaving	(2-3)	3
		Total 16

Spring Semester	(Th-Pr)	Cr
ENGL 104 Composition and Rhetoric	(3-0)	3
MATH 151 Engineering Mathematics I	(3-2)	4
MGMT 105 Introduction to Business	(3-0)	3
NAUT 203 Seamanship I	(2-3)	3
NAUT 204 Terrestrial Navigation	(2-2)	3
		Total 16

SUMMER SESSION - Ten weeks at sea on the T/S TEXAS CLIPPER
NAUT 200 Basic Communications, Navigation and Seamanship, Credit 4

SOPHOMORE YEAR

Fall Semester	(Th-Pr)	Cr
CPSC 203 Introduction to Computing	(3-0)	3
ECON 202 Principles of Economics	(3-0)	3
METR 302 Weather Reports and Forecasting	(3-0)	3
PHYS 201 College Physics	(3-3)	4
NVSC 200 Merchant Marine Officer I	(3-0)	3
		Total 16

Spring Semester	(Th-Pr)	Cr
ECON 203 Principles of Economics	(3-0)	3
HIST 106 History of the U.S.*	(3-0)	3
NAUT 301 Seamanship II	(2-3)	3
NAUT 303 Celestial Navigation	(2-3)	3
PHYS 202 College Physics	(3-3)	4
		Total 16

SUMMER SESSION - Ten weeks at sea on the T/S TEXAS CLIPPER
NAUT 300 Intermediate Communications, Navigation and Seamanship, Credit 4

JUNIOR YEAR

Fall Semester	(Th-Pr)	Cr
ECON 452 International Trade and Finance	(3-0)	3
MART 301 Ocean Transportation I	(4-0)	4
MART 302 Marine Cargo Operations I	(3-3)	4
NAUT 201 Naval Architecture I	(3-2)	4
POLS 206 American National Government	(3-0)	3
		Total 18

Spring Semester	(Th-Pr)	Cr
MART 321 Maritime Law I	(2-0)	2
MART 406 Marine Cargo Operations II	(3-2)	4
NAUT 202 Naval Architecture II	(3-0)	3
NAUT 304 Electronic Navigation	(2-2)	3
NVSC 300 Merchant Marine Officer II	(3-0)	3
POLS 207 State and Local Government	(3-0)	3
		Total 18

SUMMER SESSION - Ten weeks at sea on the T/S TEXAS CLIPPER
NAUT 400 Advanced Communications, Navigation and Seamanship, Credit 4

SENIOR YEAR

Fall Semester	(Th-Pr)	Cr
MART 421 Maritime Law II	(3-0)	3
NAUT 302 Seamanship III	(1-3)	2
NAUT 404 The Navigator	(2-3)	3
Elective in Humanities		3
Elective in Math/Logical Reasoning**		3
		Total 14

Spring Semester	(Th-Pr)	Cr
ENGL 301 Technical Writing	(3-0)	3
MART 416 Port Operations	(3-0)	3
MART 481 Seminar	(0-2)	1
OCNG 401 Introduction to Oceanography	(3-0)	3
Elective in Humanities		3
Elective		3
		Total 16

Total Hours - 142

NOTE: ALL ELECTIVES must be chosen in consultation with, and approved by, the student's academic advisor. Approved electives include but are not limited to MART 304, 489; MARA 301, 401, 402; MARS 350, 405.

* - The American history requirement may also be fulfilled by utilizing other American history courses offered at TAMUG, including HIST 370, 442 or 444. Students should consult their academic advisor.

** - To be chosen from MATH 166, any math course above the 151 level, or PHIL 240, 341 or 342. The student is advised to take MATH 161 if planning to attend graduate school.

HUMANITIES is to be chosen from fine arts, theater arts, humanities, foreign language, history, literature, philosophy, archaeology or geography. SOCIAL SCIENCE is to be chosen from cultural anthropology, geography, political science, psychology, applied ethics or economics.

Curriculum in

MARITIME ADMINISTRATION (MARA)

This curriculum is designed to prepare the graduate for administrative work in marine and maritime industries and/or governmental organizations involved in coastal, marine and maritime activities. The curriculum provides a strong foundation in management, finance, business analysis, accounting and economics. This business and administrative curriculum integrates courses that specialize in marine and maritime activities such as port operations, brokerage and chartering, maritime law and inland waterways.

FRESHMAN YEAR

Fall Semester	(Th-Cr)	Cr
HIST 105 History of the U.S.*	(3-0)	3
MATH 166 Topics in Contemporary Math	(3-0)	3
NAUT 103 Maritime Orientation and Lifesaving	(2-3)	3
POLS 206 American National Government	(3-0)	3
Elective in Science**		4
		Total 16

Spring Semester	(Th-Pr)	Cr
ENGL 104 Composition and Rhetoric	(3-0)	3
HIST 106 History of the U.S.*	(3-0)	3
MARS 301 COBOL	(3-0)	3
MATH 151 Engineering Mathematics I	(3-2)	4
Elective in Science**		4
		Total 17

SOPHOMORE YEAR

Fall Semester	(Th-Pr)	Cr
ACCT 229 Introduction to Accounting	(3-0)	3
ECON 202 Principles of Economics	(3-0)	3
ENGL 203 Introduction to Literature	(3-0)	3
MART 301 Ocean Transportation I	(4-0)	4
NAUT 201 Naval Architecture I	(3-2)	4
		Total 17

Spring Semester	(Th-Pr)	Cr
ACCT 230 Introduction to Accounting	(3-0)	3
ECON 203 Principles of Economics	(3-0)	3
MARA 212 Business Law	(3-0)	3
MART 304 Ocean Transportation II	(3-0)	3
POLS 207 State and Local Government	(3-0)	3
Elective in Humanities	3	
		Total 18

JUNIOR YEAR

Fall Semester	(Th-Pr)	Cr
ACCT 327 Intermediate Accounting	(3-0)	3
BANA 303 Statistical Methods	(3-0)	3
ECON 311 Money and Banking	(3-0)	3
MARA 363 The Management Process	(3-0)	3
MART 421 Maritime Law II	(3-0)	3
MKTG 321 Marketing	(3-0)	3
		Total 18

Spring Semester	(Th-Pr)	Cr
BANA 364 Operations Management	(3-0)	3
ENGL 301 Technical Writing	(3-0)	3
FINC 341 Business Finance	(3-0)	3
MARA 401 Brokerage and Chartering	(3-0)	3
POLS 340 Introduction to Public Administration	(3-0)	3
Elective in Humanities	(3-0)	3
		Total 18

SENIOR YEAR

Fall Semester	(Th-Pr)	Cr
BANA 459 Analytical Models for Business Decisions	(3-0)	3
ECON 452 International Trade and Finance	(3-0)	3
MARA 373 Personnel Management	(3-0)	3
MARA 402 Inland Waterways	(3-0)	3
MARA 460 Management Systems and Control	(3-0)	3
Elective		2
		Total 17

Spring Semester	(Th-Pr)	Cr
BANA 424 Economics of Transportation	(3-0)	3
ECON 412 Public Finance	(3-0)	3
MARA 435 Labor Law and Policy	(3-0)	3
MARA 466 Management Policy	(3-0)	3
MART 416 Port Operations, Administration and Economics	(3-0)	3
		Total 15

Total Hours - 136

NOTE: ALL ELECTIVES must be chosen in consultation with, and approved by, the student's academic advisor.

* - The American history requirement may also be fulfilled by utilizing other American history courses offered at TAMUG, including HIST 370, 442 or 444. Students should consult their academic advisor.

** - Four credit hours in introductory biology, chemistry, physics or geology, one credit hour of which must include a laboratory.

HUMANITIES to be chosen from fine arts, theater arts, humanities, foreign language, history, literature, philosophy, archaeology or geography. SOCIAL SCIENCE to be chosen from fine arts, theater arts, humanities, foreign language, history, literature, philosophy, archaeology or geography

Curriculum in

MARITIME SYSTEMS ENGINEERING (MASE)

The Maritime Systems Engineering program is designed to prepare students for work or further study in any marine-oriented engineering field such as Ocean Engineering, Naval Architecture and Coastal Structures. MASE graduates are also employed by energy companies, shipyards, consulting firms and research laboratories. The curriculum concentrates on fundamental engineering design in combination with humanities, sciences and various marine subjects. A general core of courses in humanities, sciences, and engineering during the freshman and sophomore years provides a foundation for specialization during the junior and senior years.

FRESHMAN YEAR

Fall Semester	(Th-Pr)	Cr
CHEM 101 Fundamentals of Chemistry I	(3-0)	3
CHEM 111 Fundamentals of Chemistry Lab I	(0-3)	1
ENDG 105 Engineering Graphics	(0-6)	2
MARE 101 Engineering Analysis	(1-1)	1
MASE 100 Introduction to Maritime Systems Engineering	(1-1)	1
MATH 151 Engineering Mathematics I	(3-2)	4
Elective in Social Science		3
		Total 15

Spring Semester	(Th-Pr)	Cr
CHEM 102 Fundamentals of Chemistry II	(3-0)	3
CHEM 112 Fundamentals of Chemistry Lab II	(0-3)	1
ENDG 106 Engineering Design Graphics	(0-6)	2
ENGL 104 Composition and Rhetoric	(3-0)	3
MATH 161 Engineering Mathematics II	(3-0)	3
PHYS 218 Mechanics	(3-3)	4
		Total 16

SOPHOMORE YEAR

Fall Semester	(Th-Pr)	Cr
ECON 203 Principles of Economics	(3-0)	3
HIST 105 History of the U.S.*	(3-0)	3
MARE 105 Engineering Mechanics I	(3-0)	3
MARE 303 Marine Thermodynamics I	(3-0)	3
MATH 251 Engineering Mathematics III	(3-0)	3
PHYS 219 Electricity	(3-3)	4
		Total 19

Spring Semester	(Th-Pr)	Cr
ENGL 203 Introduction to Literature	(3-0)	3
MARE 206 Engineering Mechanics II	(3-0)	3
MARE 209 Mechanics of Materials	(3-0)	3
MATH 308 Differential Equations	(3-0)	3
POLS 206 American National Government	(3-0)	3
Elective		2
		Total 17

JUNIOR YEAR

Fall Semester	(Th-Pr)	Cr
CVEN 311 Fluid Dynamics	(3-0)	3
CVEN 345 Theory of Structures	(3-0)	3
GEOL 320 Geology for Civil Engineers	(2-3)	3
MARE 309 Marine Construction Materials	(3-2)	4
MARE 310 Engineering Computations	(3-0)	3
Elective in Humanities		3
		Total 19

Spring Semester	(Th-Pr)	Cr
CVEN 336 Fluid Dynamics Lab	(0-2)	1
CVEN 344 Reinforced Concrete Structures	(2-3)	3
CVEN 346 Structural Steel Design	(2-3)	3
HIST 106 History of the U.S.*	(3-0)	3
OCEN 300 Dynamics of Waves and Structures I	(3-0)	3
OCEN 462 Hydromechanics	(3-0)	3
Elective		1
		Total 17

SENIOR YEAR

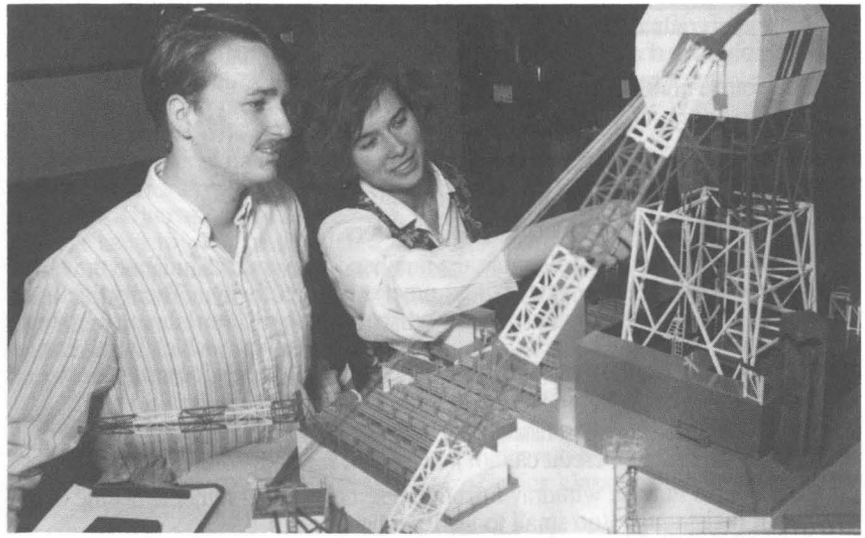
Fall Semester	(Th-Pr)	Cr
CVEN 483 Analysis and Design of Structures	(2-3)	3
ENGL 301 Technical Writing	(3-0)	3
MASE 411 Advanced Hydrodynamics I	(3-0)	3
MASE 415 Marine Structures Design	(3-0)	3
OCEN 400 Basic Coastal Engineering	(3-0)	3
		Total 15

Spring Semester	(Th-Pr)	Cr
MASE 301 Dynamics of Waves and Structures	(3-0)	3
MASE 401 Measurements in the Ocean	(3-0)	3
MASE 410 Measurements in the Ocean Lab	(0-3)	1
MASE 407 Design of Ocean Engineering Facilities	(1-6)	4
POLS 207 State and Local Government	(3-0)	3
Elective		1
		Total 15

Total Hours - 133

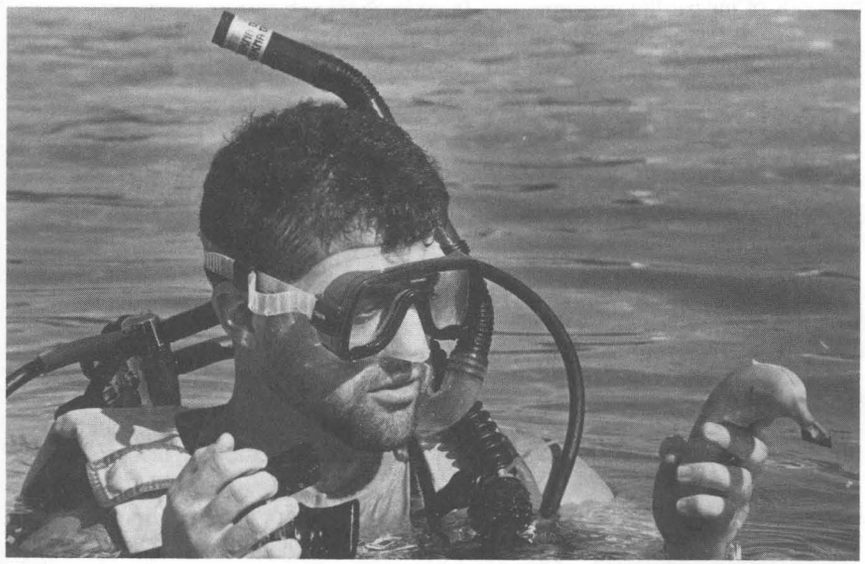
NOTE: ALL ELECTIVES must be chosen in consultation with, and approved by, the student's academic advisor.

* - The American history requirement may be fulfilled by utilizing other American history courses offered at TAMUG, including 370, 442, or 444. Students should consult with their academic advisor. HUMANITIES to be chosen from fine arts, theater arts, humanities, foreign language, history, literature, philosophy, archaeology or geography. SOCIAL SCIENCE to be chosen from cultural anthropology, geography, political science, psychology, sociology, applied ethics and economics.



☐ Engineering students refer to a model of an offshore structure in their studies of maritime systems.

☐ A Dive Club member contemplates how to consume a banana underwater during Spring Fest Week competition.



COURSE DESCRIPTIONS

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

The course numbering scheme is as follows:

100 to 199, courses primarily open to freshmen.

200 to 299, courses primarily open to sophomores.

300 to 399, courses primarily open to juniors.

400 to 499, courses primarily open to seniors.

Figures in parenthesis following the number of the courses indicate the clock hours per week devoted to theory and practice, respectively. Theory includes recitations and lectures; practice includes work done in the laboratory, shop, drawing room or field. The unit of credit is the semester hour, which involves one hour of theory, or from two to four hours of practice per week for one semester of 15 weeks.

When courses are cross-listed (e.g., offered as MARA 212 at TAMUG and MGMT 212 at TAMU), credit cannot be received for both courses.

Any course may be withdrawn from the semester or summer schedule if the number of registrants is too small to justify it being offered.

ACCOUNTING (ACCT)

229. Introductory Accounting. (3-0). Credit 3. Analysis, recording and reporting of business transactions; partnership and corporation accounting; analysis and use of financial statements.

230. Introductory Accounting. (3-0). Credit 3. Continuation of ACCT 229. Use of budgets; introduction to cost accounting; cost control techniques and methods of measuring performance. Prerequisite: ACCT 229.

327. Intermediate Accounting. (3-0). Credit 3. Application of generally accepted principles of accounting for business enterprises with emphasis on corporations. Prerequisite: ACCT 230.

BIOLOGY (BIOL)

113. Introductory Biology. (3-0). Credit 3. Survey of structures and functions common to living forms in general. 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; their special structures and functions which enable them to exist. Survey includes prokaryotes, fungi, lower and higher plants, animals and humans. Laboratory (BIOL 124) is optional. Prerequisite: BIOL 113.

123. Introductory Biology Laboratory. (0-3). Credit 1. Laboratory supporting BIOL 113. Prerequisite: BIOL 113 or registration therein.

124. Introductory Biology Laboratory. (0-3). Credit 1. Laboratory supporting BIOL 114. Prerequisite: BIOL 113.

485. Biological Problems. Credit 1-6. Problems in various phases of plant, animal and bacteriological science. Prerequisites: Junior classification; approval of ranking professor in field chosen or MARB department head.

BUSINESS ANALYSIS (BANA)

217. Business Data Processing Concepts. (3-0). Credit 3. Introduction to the use of computers as a data processing and problem-solving tool for business. Fundamental concepts, technology and theory; opportunities to create programs and to use existing programs to solve various business oriented problems.

303. Statistical Methods. (3-0). Credit 3. Collection, tabulation and presentation of numerical data. Sampling, estimation of averages and variation, probability and error, hypothesis testing and correlation. Prerequisite: MATH 131.

364. Operations Management. (3-0). Credit 3. Concepts, issues and techniques used to plan, analyze and control systems of production. Operational problems in producing goods and services. Prerequisite: BANA 303.

424. Economics of Transportation. (3-0). Credit 3. Historical development, structure, function and regulation of highway, rail, water, pipeline and air transportation systems. Application of economic concepts and principles to transportation development and operations. Prerequisite: ECON 203.

459. Analytical Models for Business Decisions. (3-0). Credit 3. The application of quantitative decision-making techniques to management decision problems. Primary emphasis on the planning, analysis and control of operating systems in organizational settings. Prerequisite: Senior classification or approval of MARA department head.

485. Problems. Credit 1 to 3 each semester. Directed study of selected problems in an area of business analysis not covered in other courses. Prerequisite: Approval of MARA department head.

CHEMISTRY (CHEM)

101. Fundamentals of Chemistry I. (3-0). Credit 3. Introduction to modern theories of chemical bonding; chemical reactions; states of matter; solutions and colloids; stoichiometry and equilibrium. Prerequisite: CHEM 111 or registration therein.

102. Fundamentals of Chemistry II. (3-0). Credit 3. Theory and applications of oxidation-reduction systems; complex equilibria; descriptive inorganic and organic chemistry; introduction to chemical instrumentation; selected topics in biochemistry and nuclear chemistry. Prerequisites: CHEM 101, 111 and 112 or registration therein.

111. Fundamentals of Chemistry Laboratory I. (0-3). Credit 1. Introduction to methods and techniques of chemical experimentation; qualitative and semi-quantitative procedures applied to investigative situations. Prerequisite: CHEM 101 or registration therein.

112. Fundamentals of Chemistry Laboratory II. (0-3). Credit 1. Introduction to analytical and synthetic methods and to quantitative techniques to both inorganic and organic compounds with emphasis on an investigative approach. Prerequisites: CHEM 101, 111; CHEM 102 or registration therein.

227. Organic Chemistry I. (3-0). Credit 3. Introduction to chemistry of compounds of carbon. 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. Prerequisites: CHEM 112 or 114; CHEM 227 or registration therein.

238. Organic Chemistry Laboratory. (0-3). Credit 1. Continuation of CHEM 237. Prerequisites: CHEM 237; CHEM 228 or registration therein.

383. Chemistry of Environmental Pollution (3-0). Credit 3. Chemical pollutants in the air, in water and on land. Their generation, chemical reactivity, action on environment and disappearance through chemical mechanisms. Chemistry of existing pollution abatement. Prerequisite: CHEM 228 or equivalent.

485. Problems. Credit 1-4. Introduction to research, library and laboratory work. Prerequisites: Senior classification; approval of MARS department head.

CIVIL ENGINEERING (CVEN)

311. Fluid Dynamics. (3-0). Credit 3. Fluid properties; statics; kinematics; basic conservation principles of continuity, energy and momentum; similitude and hydraulic models; incompressible flow in pipes; fluid dynamic drag. Prerequisite: MARE 206 or equivalent.

336. Fluid Dynamics Laboratory. (0-2). Credit 1. Introduction to laboratory techniques, calibration principles, reports and fluid measurements. Determination of fluid properties. Visualization of types of flow. Experiments in closed conduit flow of air, water and oil. Fluid drag and turbomachinery tests. Open channel and gravity wave demonstrations. Prerequisite: CVEN 311 or registration therein.

344. Reinforced Concrete Structures. (2-3). Credit 3. Analysis and design of reinforced concrete beams, columns, slabs and footings using ultimate strength methods. Prerequisite: CVEN 345.

345. Theory of Structures. (3-0). Credit 3. Structural engineering - functions of structure, design loads, reactions and force systems. Analysis of statically determinate structures; including beams, trusses and arches. Methods of determining deflections of structures. Influence lines and criteria for moving loads. Analysis of indeterminate structures; including continuous beams and frames. Prerequisite: MARE 209 or equivalent.

346. Structural Steel Design. (2-3). Credit 3. Materials, types of members and typical arrangements. Design of tension members, compression members, beams and beam columns. Design of bolted connections and welded connections. Theory and practice as indicated in typical current specifications. Prerequisite: CVEN 345.

365. Introduction to Geotechnical Engineering. (2-2). Credit 3. Physical properties of soils, classification systems, soil exploration, permeability, consolidation, compaction and shear strength. Laboratory tests conducted to determine the physical and engineering soil properties needed for application in geotechnical engineering design.

435. Geotechnical Engineering Design. (2-3). Credit 3. A design course covering prediction of settlement, analysis of the stability of slopes, prediction of bearing capacity of shallow and deep foundations, and determination of earth pressures acting on retaining structures. A general course in geotechnical engineering design for undergraduates and for graduate students not primarily interested in the geotechnical field, but desiring additional study beyond the introductory undergraduate level. Prerequisite: CVEN 365.

483. Analysis and Design of Structures. (2-3). Credit 3. Overall procedure of analysis and design; including functions, loads, layouts of force systems; analysis, design drafting, specifications, cost comparisons and maintenance as

applied to typical simple bridge and building structures. Prerequisites: CVEN 344, 346, 365.

COMPUTER SCIENCE (CPSC)

203. Introduction to Computing. (2-2). Credit 3. Algorithms, programs and computers. Basic programming and program structure. Data representation. Computer solution of numerical and non-numerical problems using a high-level programming language, FORTRAN.

485. Problems. Credit 1 to 3. Permits work on special projects in computing science. Project must be approved by MARS department head. Prerequisite: Senior classification.

DEVELOPMENTAL STUDIES (DEVS)

001. Basic Mathematical Skills. Credit 1 to 3. Developmental instruction in mathematics; includes the integers and rational numbers and applications, exponents, polynomials, solution of equations, graphing, elementary geometry, and reasoning skills. Must be taken on a satisfactory/unsatisfactory basis. May not be used for credit toward a degree.

002. Basic Writing Skills. Credit 1 to 3. Individualized instruction in English composition based on an analysis of the student's proofreading, revision, and editing skills; a programmed sequence of study and practice designed for improvement of writing performance through mastery of basic skills at word, sentence, paragraph, and multiparagraph levels. Must be taken on a satisfactory/unsatisfactory basis. May not be used for credit toward a degree.

003. Basic Reading Skills. Credit 1 to 3. Individualized instruction in reading based on an analysis of the student's reading comprehension skills; study and practice of reading strategies designed to increase reading comprehension skills. Must be taken on satisfactory/unsatisfactory basis. May not be used for credit toward a degree.

ECONOMICS (ECON)

202. Principles of Economics. (3-0). Credit 3. Elementary principles of economics; the economic problem and the price system; theory demand, theory of production and the firm, theory of supply; the interaction of demand and supply. (Formerly ECON 204).

203. Principles of Economics. (3-0). Credit 3. Measurement and determination of national income, employment and price; introduction to monetary and fiscal policy analysis; the effects of government deficits and debt, exchange rates and trade balances. Prerequisite: ECON 202 or approval of advisor.

311. Money and Banking. (3-0). Credit 3. Fundamental principles of money, credit and banking and their exemplification in modern currency and banking history. Prerequisite: ECON 202.

412. Public Finance. (3-0). Credit 3. Economic role of governments; the choice of public sector output in a democracy and the effects of various taxes on resource allocation and income distribution. Prerequisite: ECON 202.

452. 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: Approval of MARA department head. Formerly ECON 321.

485. Problems. Credit 1 to 3. Research and design of specific problem areas approved on an individual basis with the intention of promoting independent study and to supplement existing course offerings. Results of study presented in writing. Prerequisite: Major or minor in MARA or Economics (TAMU) or approval of MARA department head.

ENGINEERING DESIGN GRAPHICS (ENDG)

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; product development and team dynamics using graphical methods and descriptive geometry. Spatial analysis of geometric elements, vectors, data analysis and graphical applications to a variety of engineering areas. Prerequisite: ENDG 105.

ENGINEERING (ENGR)

109. Engineering Problem Solving and Computing. (2-3). Credit 3. Professional ethics, registration and disciplines in engineering; engineering problem-solving environments (economic, political, technical, social), requirements and methodologies; FORTRAN programming on PCs, minis and mainframes. Prerequisites: Admission to engineering curriculum and background in trigonometry.

ENGLISH (ENGL)

104. Composition and Rhetoric. (3-0). Credit 3. Focus on referential and persuasive researched essays through the development of analytical reading ability, critical thinking, and library research skills.

203. Introduction to Literature. (3-0). Credit 3. Reading of literature: plays, stories, novels, and poems, chiefly modern; practice in literary analysis and interpretation. Prerequisite: Completion of freshman writing requirement.

212. Shakespeare. (3-0). Credit 3. Major plays of Shakespeare with lectures on his art, his language and his cultural environment. Prerequisite: ENGL 104.

228. American Literature: Civil War to Present. (3-0). Credit 3. Expressions of the American experience in realism, regionalism and naturalism; varieties of modernist and contemporary writing; the rise of ethnic literatures and experimental literary forms; includes such writers as Dickinson, Twain, James, Crane, Frost, Eliot, Fitzgerald, Hemingway, Faulkner, O'Neill, Baldwin and Rich. Prerequisite: ENGL 104.

251. The Language of Film. (2-2) Credit 3. Development of the language of film: major movements, representative works, theory and techniques, lecture/discussion following film screenings. Prerequisite: ENGL 104.

301. Technical Writing. (3-0). Credit 3. Advanced writing in technical, scientific and business fields; reports, proposals and other papers; correspondence. Prerequisite: ENGL 104; junior classification in the major department or approval of instructor.

334. Science Fiction Present and Past. (3-0). Credit 3. Prose fiction, poetry and drama; literary and scientific backgrounds, main themes, principal authors and works, literary evaluation and social significance. Prerequisite: ENGL 104.

335. Literature of the Sea. (3-0). Credit 3. Significance of the sea in fictional and factual accounts, such as novels, short stories, poems and narratives of sailors and seafaring life. Prerequisite: ENGL 104.

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

FINANCE (FINC)

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

FRENCH (FREN)

101. Beginning French I. (3-2). Credit 4. Elementary language study with oral, written, and reading practice. Preparation for conversation. Part of class preparation will be done in language laboratory.

102. Beginning French II. (3-2). Credit 4. Continuation of FREN 101. Part of class preparation will be done in language laboratory. Prerequisite: FREN 101.

GEOGRAPHY (GEOG)

201. Introduction to Human Geography. (3-0). Credit 3. A survey of the major systems of man-land relations of the world and their dissimilar developments. The processes of innovation, diffusion and adaptation stressed with regard to changing relationships between people and their environment.

203. Man's Physical Environment. (3-0). Credit 3. Physical aspects of the environment: maps, earth-sun relations, weather and climate, soils, vegetation and landforms; interrelationships, distributions and distributional controls.

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 used to analyze the human use and abuse of the sea.

213. Physical Geography Laboratory. (0-2). Credit 1. Exercises and maps to illustrate principles of physical geography.

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

GEOLOGY (GEOL)

104. Physical Geology. (3-3). Credit 4. Earth materials, structures, external and internal characteristics; physical processes at work upon or within the planet. A working knowledge of high school chemistry and mathematics is required.

320. Geology for Civil Engineers. (2-3). Credit 3. Principles of physical geology; common minerals and rocks with their relationships and applications to construction, foundations and excavation. Prerequisite: Sophomore classification.

485. Problems. Credit 1 to 3. Advanced problems in geology. Prerequisite: Approval of department head.

HISTORY (HIST)

105. History of the United States. (3-0). Credit 3. English colonization; revolution; adoption of Constitution; growth of nationalism and sectionalism; Civil War; reconstruction.

106. History of the United States. (3-0). Credit 3. Since reconstruction; new social and industrial problems; rise of progressivism; United States emergence as world power; World War I; reaction and New Deal, World War II; contemporary America.

226. History of Texas (3-0) Credit 3. History of Texas from Spanish period to present day. Stress placed upon period of Anglo-American settlement, revolution, republic and development of modern state.

232. History of American Sea Power. (3-0). Credit 3. Development of American sea power from the 18th century to the present.

370. Civil War and Reconstruction. (3-0). Credit 3. Survey of background and causes of the war; military, political, economic and diplomatic aspects of the war; life behind the lines; reconstruction and post-war adjustments, 1861-1877.

444. American Military History Since 1901. (3-0). Credit 3. American military experience from 1901 to present; causes, nature and effect of wars in which the United States has participated. Effect of war on American history.

485. Problems. Credit 1 to 3. Selected fields of history not covered in depth by other courses. Reports and extensive reading required. Prerequisite: Approval of department head.

489. Special Topics in History. Credit 1 to 4. Selected topics in an identified area of History.

MANAGEMENT (MGMT)

105. Introduction to Business. (3-0). Credit 3. Over-all picture of business operation; includes analysis of specialized fields within business organizations; identifies role of business in modern society. American business system; legal environment; forms of business ownership; organizational structures; human resource management; labor-management relations; marketing, accounting, production, logistics, and financial functions. Limited to students in freshman or sophomore classification.

MARINE BIOLOGY (MARB)

200. Scientific Methods in Marine Biology. (1-3). Credit 2. An introduction to field, laboratory and analytical methods, equipment and instruments. The field portion will include making proper observations, sampling techniques and data recording. The laboratory portion will include sample analysis methods, use of instruments, introduction to data analysis including elementary statistics, introduction to scientific literature and report writing style.

301. Genetics. (3-3). Credit 4. Fundamental principles of genetics; physical basis of Mendelian inheritance; expression and interaction of genes, linkage, sex linkage, biochemical nature of genetic material and mutation. Prerequisites: BIOL 113 and 114; CHEM 227, 228, 237 and 238; and at least sophomore classification.

303. Biostatistics. (2-2). Credit 3. Introduction to sampling, experimental design, analysis of data and testing of hypotheses, with emphasis on methods applied to biological investigations. Parametric and non-parametric techniques.

Descriptive statistics, analysis of variance, correlation and regression. Prerequisites: MATH 131 and three credit hours of computer science.

310. Introduction of Cell Biology. (3-3). Credit 4. Introduction to the basic principles of cell structure and function. Molecular components of the cell, methods for study of the cell, structural bases of the cell cytoplasm and cytoplasmic organelles and their structure and function with particular emphasis on nucleus. Prerequisites: BIOL 113 or 114 and CHEM 228; Junior in MARB curriculum.

311. Ichthyology. (3-3). Credit 4. Freshwater and marine fishes. Subject will be mainly systematic, but evolution, ecology, life history and economics of more important species will be treated. Prerequisites: BIOL 114 and 124.

312. Field Ichthyology. (3-3). Credit 4. Field and laboratory studies on identification and ecology of freshwater and marine fishes of Texas. Field trips required. Prerequisite: MARB 311.

315. Natural History of Vertebrates. (3-3). Credit 4. Natural history of fishes, amphibians, reptiles, birds and mammals, with emphasis on coastal Texas vertebrates. Prerequisites: BIOL 114 and BIOL 124 or approval of instructor.

320. Marine Food Chains. (2-3). Credit 3. Examination of basic food chain concepts, including ecosystem roles, trophic levels and structure, energy and energy flows, and biogeochemical cycles. Methods of marine food chain analysis are considered in detail as well as exemplary marine food chain studies reported in the literature. Prerequisites: BIOL 114 and 124 and junior classification or approval of instructor.

325. Biospeleology. (3-3). Credit 4. A field oriented introduction to the biology of aquatic and terrestrial cave organisms with discussion on the origin of caves, cave environment, cave fauna and evolution, life. Field trips required. Prerequisites: BIOL 113 and 114, CHEM 101, GEOL 104.

330. Physiological Ecology. (3-0). Credit 3. Examination of how ecological pressures dictate individual and interorganismal physiological processes that lead to individual and community adaptation. Discussion of the physiological inter-relationships between members of an ecological community. Attention will be directed toward physiological systems of plants and animals. Prerequisites: BIOL 113, 114, 123, 124 or approval of instructor.

335. Fish Physiology. (3-0). Credit 3. Study of the basic physiology of fishes. Examination of fish cardiovascular, renal, digestive, locomotor, reproductive and central/peripheral nervous systems. Discussion of physiological adaptations enhancing survival in a water medium. Prerequisite: BIOL 113, 114, 123, 124 or MARB 311 or equivalent; approval of instructor.

350. Methods in Research Diving. (3-2). Credit 3. Survey of research methods and techniques using diving. Lecture and lab are designed to train students in safe, efficient use of diving to collect and record data underwater for studies primarily in biology, geology and archaeology. Prerequisites: BIOL 113 and 114, CHEM 101, PHYS 202.

400. Biology of Marine Mammals. (3-3). Credit 4. A broad-spectrum course on the taxonomy, evolution, morphology behavior and ecology of marine mammals, including sirenians, carnivores, baleen and toothed whales and dolphins. Prerequisite: BIOL 113,114,123,124,; MARB 315, 410; or approval of instructor.

408. Marine Botany. (3-3). Credit 4. Morphology, systematics, ecology and biochemistry of representative algae, fungi, and submarine grasses. Prerequisites: BIOL 114 and 124 or approval of instructor.

410. Animal Behavior. (2-3). Credit 3. Examination of ethological concepts. Discussion of the development, genetics, physiology and evolution of animal behavior patterns involved in reproduction, territoriality, aggression, communication, population dispersion, sociality and sociobiology of invertebrates and vertebrates. Prerequisites: BIOL 114 and 124 or approval of instructor.

412. Sociobiology of Reproduction. (3-0). Credit 3. Application of sociobiological concepts to examine the evolution and adaptive significance of reproductive strategies utilized by marine and terrestrial animals. Strategy-influencing factors to be discussed include: mate selection and competition, sex roles, bonding, parental investment in offspring, and socialization, Prerequisites: Biology 113 and 114 and MARB 301 or equivalent, or registration therein.

420. Comparative Physiology. (3-3). Credit 4. Principles of animal physiology. Vertebrates and invertebrates will be studied with particular emphasis on marine species. Basic concepts of osmotic and ionic regulation, excretion, respiration, metabolism, nervous integration, muscles, hormones and homeostasis. Prerequisite: 12 hours of biological sciences; CHEM 228.

425. Marine Ecology. (3-3). Credit 4. 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: MARB 311, MARB 408, MARB 435 and at least junior classification.

430. Coastal Plant Ecology. (3-3). Credit 4. Study of the identification, distribution, production, and ecological importance of estuarine, coastal marsh, and dune vascular plants; the interaction of plants with their abiotic and biotic environments; and techniques of vegetation management and evaluation. Prerequisite: BIOL 113 and 114 or approval of instructor.

435. Invertebrate Zoology. (3-3). Credit 4. General biology of marine invertebrate animals; morphology, evolution and systematics. Laboratory will stress studies of local fauna. Prerequisites: BIOL 114 and 124 and junior classification in Marine Biology, 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 and economic aspects of marine organisms. A survey course, not intended for use in the Marine Biology curriculum. Prerequisites: BIOL 113, 114, 123, 124 or equivalent; approval of instructor.

450. Developmental Biology. (3-3). Credit 4. Principles of developmental biology and descriptive and analytical embryology. Prerequisites: BIOL 124 and junior classification.

481. Seminar in Marine Biology. (1-0). Credit 1. Problem-oriented discussion session with topics and reports selected for current relevance in marine biology. May be repeated once only for credit. Prerequisite: Junior classification or approval of instructor.

485. Problems in Marine Biology. Credit 1 to 6 per semester. Special topics and problems suited to analysis by individuals or small groups concerning aspects of marine biology. Prerequisite: Approval of department head.

489. Special Topics in Marine Biology. Credit 1 to 4. Study of selected topics in identified area of marine biology. Prerequisite: Approval of instructor.

MARINE ENGINEERING (MARE)

101. Introduction to Engineering. (1-1) Credit 1. History and definition of engineering. Professional responsibilities and engineering ethics. Creative thought processes, problem solving and engineering calculations. Engineering communication. Introduction to engineering mechanics, electronics and computers.

180. Basic Machine Shop Techniques. (0-3). Credit 1. Safety, care of machines and hand-tools, cutting speeds and feeds, measuring instruments, gauging, standard machine tool work in metals, layouts, drilling, tapping, threading, vertical and horizontal milling and shaving.

200. Basic Operations. Credit 4. Practical application of student's classroom studies while at sea on training ship during sea-training period. Student required to complete several projects relating to engineering plant of ship. Prerequisite: NAUT 103.

203. Diesel Engine Technology. (2-3). Credit 3. Basic principles of two and four-stroke diesel engines; intake, scavenging and exhaust systems, injection systems; starting and reversing methods; cooling and lubricating systems; engine room layout in modern motor vessels.

205. Engineering Mechanics I. (3-0). Credit 3. Statics, basic vector operations, mechanics of particles and rigid bodies. Center of gravity, analysis of structures, friction, moments of inertia. Prerequisite: MATH 151, PHYS 218.

206. Engineering Mechanics II. (3-0). Credit 3. Dynamics; scalar and vector solutions of relative linear velocities and acceleration; kinetics; dynamics of translation and rotation; work; energy; impact; momentum. Prerequisite: MARE 105.

207. Electrical Circuits. (3-3) Credit 4. Steady state and transient circuit analysis. Linear differential equations describing RLC circuits. Transfer functions, principles of communications. Electrical power, three-phase circuits. Elements of non linear circuit phenomena. Prerequisites: PHYS 219, concurrent with MATH 308.

209. Mechanics of Materials. (3-0). Credit 3. Introduction to the study of stresses, strains and deformation of a solid body which results when static forces are applied. Transformation of stresses and strains, torsion, beam deflection and combined loadings are discussed. Prerequisite: MARE 105.

280. Welding Techniques. (0-3). Credit 1. To introduce students to the materials, equipment and techniques of welding and brazing and to develop skills required by the marine engineer for this work in the engine room of commercial ships.

300. Intermediate Operations. Credit 4. Training program for second sea-training period. Sea project required of each student under supervision of officer-instructors. Lifeboat and safety training.

301. Heat Transfer (3-2). Credit 4. Conduction, convection and radiation and their effects separately and in combination with one another. Steady and unsteady states, mathematical treatments, graphical and numerical solutions, dimensional analysis, heat exchanger and boiler design. Prerequisites: MATH 308, MARE 304, and CVEN 311 (concurrent registration).

303. Marine Thermodynamics I. (3-0). Credit 3. Energy concepts. First and second law of thermodynamics. Carnot and Rankine principles and reversible heat cycles. Properties and processes of vapors, vapor-power cycles and vapor refrigeration cycles. Prerequisite: MATH 161.

304. Marine Thermodynamics II. (3-0). Credit 3. Properties and processes of perfect gases, gas compression cycles, gas power cycles, air refrigeration cycles and processes involving mixture of gases and vapors. Prerequisite: MARE 303.

307. Electronic Circuits. (3-3). Credit 4. Boolean algebra, combinational logic design. Sequential circuit design with clocked and pulsed circuits. Transistors, construction of digital devices utilizing transistors and diodes. Operational amplifiers. Microprocessors: Elements of programming and interfacing. Prerequisites: MARE 207, MATH 308.

308. Electrical Machinery. (3-2). Credit 4. Principle types of direct-current and alternating-current electrical machines, including their characteristics, application and central device. Operation and testing of electrical machinery and transformers. Elements of design for control of electric machinery by using microprocessors and other digital circuitry. Prerequisite: MARE 307.

309. Marine Construction Materials. (3-3). Credit 4. Introduction to materials science; study of the properties of materials as related to marine engineering design and applications. Laboratory includes experimental testing of material properties and heat treatment techniques. Prerequisite: MARE 209.

310. Engineering Computation. (3-0). Credit 3. Techniques of problem solving using digital computers; concepts and properties of algorithms; solution of computational problems using numerical methods. Flow charting and program preparation. Prerequisites: MATH 161; ENGR 109.

319. Introduction to Design. (1-3). Credit 2. Study of the ship design program. Students will be exposed to mission analysis, conceptual design, contact design, preliminary design, and engineering during construction. Course will cover trade off analysis, financial analysis, scheduling, cost control, and design management. A design project will run concurrently with classroom work. Prerequisites: MARE 206, MARE 207, MARE 209.

400. Advanced Operations. Credit 4. Training program for third sea-training period. At the end of this period each student will have achieved the knowledge and will have demonstrated the ability to take complete charge of a modern marine power plant while underway at sea.

403. Marine Engineering Measurements Laboratory I. (1-2). Credit 2. Basic techniques and instrumentation for performing engineering measurements as applied to solid mechanics, fluid mechanics, thermodynamics, stress analysis and vibrations. Prerequisites: MARE 209; MARE 303, CVEN 311.

410. Marine Power Plants. (2-2). Credit 3. Design, selection and application of systems for marine propulsion and auxiliary system requirements. Prerequisites: MARE 301, 304 and CVEN 311.

411. Marine Machine Design. (3-0). Credit 3. Methods of the design and selection of components in the marine mechanical systems. Application of theory to the design of primary marine propulsion and auxiliary systems. Prerequisites: MARE 206, MARE 209.

412. Principles of Naval Architecture I. (3-0). Credit 3. Introduction to the naval architecture involved in ship design. Geometry of the ship, evaluation of stability, motions in waves and a study of ships' structures, including primary, secondary and tertiary stresses. Midship section design. Prerequisites: MARE 209, CVEN 311 or registration therein.

414. Ship Automation. (3-2). Credit 4. Linear servomechanism theory including transformation mathematics (Laplace transformation), the transfer function feedback, stability analysis and graphical techniques. Introduction to laboratory techniques involving open and closed loop concepts, negative and positive feedback concepts, position and velocity outputs. Prerequisites: MARE 307.

415. Economics of Marine Engineering Systems Design. (3-0). Credit 3. Application of the principles of economics in the decision process related to marine engineering problems regarding safety, reliability, economic and environmental considerations. Prerequisite: MARE 410 (concurrent registration).

416. Engineering Laboratory I. (0-4). Credit 1. Analysis of fundamentals of machinery dynamics, heat transfer, fluid friction losses in piping systems, steam nozzles. Steam reciprocating and diesel engines. Prerequisite: Senior classification.

419. Marine Engineering Design Projects. (2-6). Credit 4. The marine engineering design process, defining a design problem, goal recognition, information sources, patents, alternative designs, engineering economics, cost analysis, feasibility studies, proposals, specifications, preliminary design, modeling, decision making, optimization technique and reliability. A marine related design project is required, including oral and written reports. Prerequisite: Senior classification or approval of department head.

459. Mechanical Vibrations. (3-0). Credit 3. Basic theory of vibrating systems with single and multiple degrees of freedom and principles of transmission and isolation of vibrations. Prerequisite: MARE 206.

471. Ethics in Management and Engineering. (3-0). Credit 3. Ethical considerations and value judgements related to management and engineering decisions. Topics will include ethics, patents, environmental impact considerations, user health and safety responsibilities and obligations of managers and engineers to society, supervisory duties and responsibilities. Course work will include case studies and lectures by visiting managers, engineers and lawyers. Prerequisite: Senior classification.

485. Problems. Credit 1 to 4 each semester. Special problems in marine engineering not covered by any other course in the curriculum. Work may be in either theory or laboratory. Approval of department head.

MARINE FISHERIES (MARF)

423. Mariculture. (3-3). Credit 4. Study of factors determining the success of efforts to cultivate estuarine and marine species of economic importance for use as human food. Mariculture practices used world wide in the production of algae, mollusks, crustaceans and fishes will be discussed. Prerequisite: Junior classification or approval of instructor.

445. Marine Fisheries Management. (2-2). Credit 3. Basic knowledge from marine ichythology, biology of fishes and biological oceanography related to applied aspects of marine fisheries sciences. Emphasis placed on management techniques applicable to tidal-influenced inland water, estuaries and oceans. Prerequisite: Approval of instructor.

481. Marine Fisheries Seminar. (1-0). Credit 1. Problems oriented discussion session -- topics and reports selected for current relevance in marine fisheries sciences. May be repeated once only for credit. Prerequisite: Junior classification or approval of instructor.

485. Problems in Marine Fisheries. Credit 1 to 6. Special topics and problems suited to analysis by individuals or small groups concerning aspects of marine fisheries sciences. Prerequisite: Approval of department head.

MARINE SCIENCES (MARS)

101. Introduction to Marine Sciences. (1-0). Credit 1. A non-technical introduction to the field of marine sciences, including biology, ocean activities and marine industries. Course includes lectures, seminars, outside speakers and industrial contacts.

110. General Oceanography. (3-0). Credit 3. Survey of oceanography including the history of marine and maritime research and progress, introduction to the world ocean, basic principles of the marine sciences, open ocean environments, and coastal environments. Course is designed to maximize at sea experience aboard T/S Texas Clipper.

250. BASIC Programming. (2-2). Credit 3. Introduction to micro-computers and BASIC as a programming language; algorithms, storage, conditional clauses, arrays, matrices, functions, character strings, routines and subroutines, word processing, spread sheets and data bases.

301. COBOL. (3-0). Credit 3. An introduction to the use of computers as data processing problem solving tools. A first course covering fundamental concepts. Technology and theory with opportunity to create new programs in COBOL and utilize existing programs to solve business related problems.

306. Stratigraphy and Sedimentation. (3-3). Credit 4. Principles of stratigraphy and study of environments of deposition. Laboratory work in sampling, analyzing and interpreting sedimentary rocks. Field trips required. Prerequisite: Approval of department head.

310. Field Methods in Marine Sciences. (1-6). Credit 3. Techniques of documenting collected materials, the methods of reconnaissance and the mapping of traverses in the major coastal environments. Sampling and recording techniques, interview procedures and the use of maps and remotely sensed imagery will be introduced. Prerequisite: 15 hours of marine sciences or the equivalent.

340. Geochemistry. (3-0). Credit 3. Chemical principles and processes that govern the behavior of geologic materials. Silica and carbonate low temperature equilibrium and kinetics. Prerequisites: CHEM 101, 102; or consent of instructor.

360. Biochemistry. (3-0). Credit 3. General introductory biochemistry; structures of lipids, saccharides and nucleotides; amino acids and protein structure; relationship of protein structure to biochemical reactivity; kinetics (and inhibition) of enzyme-catalyzed reactions; membrane phospholipids and glycoproteins and the structure and function of membranes; catabolic reaction pathways of monosaccharides and fatty acids; oxidative phosphorylation. Prerequisites: BIOL 114, CHEM 228, or CHEM 227 and consent of instructor.

375. Science of Fluids. (3-0). Credit 3. Classical fluid mechanics; fundamental physical principles. Fluid statics, principles of fluid motion, frictionless flow, surface waves, viscous flows, turbulence, molecular basis of fluid mechanics. Prerequisite: MATH 251.

380. Introduction to Physical Chemistry. (3-0). Credit 3. Classical thermodynamics with applications to gases, liquids, solutions and phase equilibria. Kinetics and transport properties of gases. Statistical mechanics, spectroscopy, instrumentation and quantum theory at the survey level. Prerequisites: CHEM 101, 102, 111 and 112; MATH 151.

405. Waterborne Transportation of Hazardous Chemicals. (3-0). Credit 3. Basic concepts associated with the transportation of hazardous chemicals in congested port areas, along the nation's inland waterways, and at sea. Special emphasis on the hazards of fire, health, air and water pollution and chemical reactivity. Promulgation of safe operating practices by industry, the USCG and IMO.

410. Introduction to Physical Oceanography. (3-0). Credit 3. Introduction to elements of the physics of the ocean; descriptive aspects and theoretical explanations of circulation, characteristic structure, and waves. Prerequisites: MATH 251 or equivalent; PHYS 219 or equivalent, or approval of instructor.

420. Introduction to Chemical Oceanography. (3-0). Credit 3. Introduction to chemical processes in the marine environment. Composition of sea salt, chemical speciation of dissolved material in the ocean. Biogeochemistry of oxygen, major elements, nutrient elements and some trace metals in the surface and deep ocean. Formation, chemical composition and alterations of detrital material and marine sediments. Simple models which relate ocean chemistry to the circulation of identifiable masses of water. Radioisotopes and stable isotopes in chemical oceanography. Prerequisite: CHEM 102.

430. Introduction to Geological Oceanography. (3-0). Credit 3. Introduction to geological processes in the marine system: Physiographic provinces, origin and evolution of basins, shelves, slopes, and beaches. Geological sampling and geophysical methods; coastal beach and estuarine processes. Prerequisite: Consent of instructor.

435. Exploration Geophysics. (3-0). Credit 3. Physio-mechanical properties of rocks and sediments. Seismic reflection and refraction principles applicable to offshore, coastal and onshore exploration. Determination of media velocity and stratigraphy from reflection and refraction studies in both marine and non-marine systems. Prerequisites: PHYS 202, GEOL 104, MATH 151 or approval of instructor.

450. Electrical and Physical Measurements. (2-3). Credit 3. Study of basic instrumentation pertinent to marine sciences and biology as well as simple circuit design and digital electronics. Laboratory emphasizes spectroscopy, environmental measurements, and basic oceanographic measurements. Prerequisites: CHEM 102, PHYS 202, MATH 131 or 151.

481. Seminar. (1-0). Credit 1. Problem-oriented discussion session. Topics and reports selected for current relevance. May be repeated once only for credit. Prerequisite: Approval of department head.

485. Problems. Credit 1 to 6 each semester. Special topics and problems suited to analysis by individuals or small groups concerning special aspects of marine sciences. Prerequisite: Approval of department head.

489. Special Topics in Marine Sciences. Credit 1 to 4. Study of selected topics in identified area of marine sciences. Prerequisite: Approval of instructor.

MARINE TRANSPORTATION (MART)

301. Ocean Transportation I. (4-0). Credit 4. Shipping in the world economy. Production of service; shipping process, equipment, labor, conferences, rate-making, role of government. Buying of service by shipper, finance of shipping, international conventions and treaties.

302. Marine Cargo Operations I. (3-3). Credit 4. Objectives and problems with break-bulk cargo handling during loading, discharging and in-transit carriage. Requirements of special refrigerated and dangerous cargos. Heavy lift operations with conventional cargo gear and its restraints. Cargo loss prevention, safety and related documentation, as well as log book entries, modern cargo concepts-con-

tainerization, roll-on roll-off, LASH and others. Maximum cargo efficiency with relation to space, cargo gear, crew and labor costs. Practical cargo gear use and cargo observations during lab periods.

304. Ocean Transportation II. (3-0). Credit 3. Marine insurance problems and cases and how they relate directly to a ship's officer. Hull, cargo and personal injury cases are examined from the officer's and insurers' points of view. Introduction to Admiralty Law and the court process for seamen's rights and ship owner's privileges. Actual hearings and trials are observed to complete the background. Prerequisite: MART 301 or approval of department head.

321. Maritime Law I. (2-0). Credit 2. Basic laws governing vessel navigation; International and U.S. Inland Rules for the prevention of collision at sea, and the safety of life at sea convention. Prerequisite: NAUT 200.

406. Marine Cargo Operations II. (3-2). Credit 4. Principles and practice of bulk liquid, gas handling and carriage by water craft. Theoretical and practical problems involved in loading, stowing and discharging of petroleum, chemical, elevated temperature and cryogenic cargoes. Marine pollution abatement, personnel safety and fire-fighting techniques and systems.

416. Port Operations, Administration and Economics. (3-0). Credit 3. Concepts of the port and methods of intermodal transfer. Port functions divided and analyzed along business lines - economics, management, finance, accounting and marketing. Cost studies. Prerequisite: ECON 321; MGMT 105; or approval of department head.

421. Maritime Law II. (3-0). Credit 3. Essential principles of admiralty, general maritime and international law as applicable to the marine industry and ocean shipping. Evolution and state of the law concerning maritime liens, ship mortgages, rights of seamen and harbor workers, limitation of liability, bills of lading and cargo carriage, collision liability, general average, marine salvage, charter parties and international rights and responsibilities of ships and shipping.

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

485. Problems. Credit 1 to 4. Directed study in problems in marine transportation not covered by other courses in the department. Prerequisite: Senior classification or approval of department head.

489. Special Topics in Marine Transportation. Credit 1 to 3. Study of selected topics in identified area of marine transportation and nautical science. Prerequisite: Approval of instructor.

MARITIME ADMINISTRATION (MARA)

212. Business Law. (3-0). Credit 3. Legal principles affecting managerial decisions including: contract law, agency, law of business entities, inclusive of partnership, limited partnership and corporation; creditors' rights, debtor protection; and the Uniform Commercial Code; negotiable instruments and sales. Prerequisite: Sophomore classification.

363. The Management Process. (3-0). Credit 3. Management as an academic discipline is defined and its evolution sketched. Goal setting; planning, controlling and decision-making; models for thinking about organizations; organization design; organization change; models for understanding individual behavior; job performance and job satisfaction; interpersonal behavior, motivation and

leadership, behavior in work groups; and careers in management. Prerequisite: Junior classification.

373. Personnel Management. (3-0). Credit 3. Relationship of the personnel function to the whole organization; manpower planning; recruitment; selection, including employment application; separation; compensation; training; performance appraisal; labor relations and safety. Prerequisites: MARA 363 or approval of MARA department head.

401. Brokerage and Chartering. (3-0). Credit 3. Operational and legal environment of ship brokerage and chartering; responsibilities of owner and charterer under various charter forms; American, British and Canadian acts governing charters and bills of lading; rules and regulations concerning loading and discharging. Prerequisite: Senior classification or approval of MARA department head.

402. Inland Waterways. (3-0). Credit 3. Development of inland waterways of the U.S. and federal policies relating to them. Port and terminal development, competition with other transportation forms, manpower, rates, environmental concerns and the impact of waterway systems on regional economies. Prerequisite: Senior classification or approval of MARA department head.

435. Labor Law and Policy. (3-0). Credit 3. Federal and state public policy and law regulating collective bargaining and issues in employment discrimination law. Legal environment of labor relations; conspiracy doctrine applied to labor union; labor injunctions; Norris-LaGuardia Act; Wagner Act; Taft-Hartley Act; National Labor Relations Board; control of bargaining unit; strikes, lockouts and picketing; secondary boycotts; National Emergency Labor Disputes; Landrum Griffin Act; legal bases of public section unionism; race, sex and religious discrimination in employment. Prerequisite: Senior classification or approval of MARA department head.

460. Management Systems and Control. (3-0). Credit 3. Applications of management planning and control techniques to complex organizational problems and management decision-making tasks; socio-technical work systems and human-machine systems; basic system theory and concepts; basic control theory and concepts; systems design process; systems analysis techniques such as simulation models and sensitivity analysis; information technology and management information systems; program and project management; and special-purpose planning and control systems. Prerequisites: MARA 363 or BANA 364 and CPSC 203 or MARS 301 or approval of MARA department head.

466. Management Policy. (3-0). Credit 3. Policy problems of business organizations; top management problem-solving and decision-making; planning; appraising the business environment; the firm's financial, human and physical resources; forecasting, developing objectives and strategies; evaluating alternatives; implementing strategies; measuring results; profitability and social responsibility. Use of case analysis. Prerequisite: MARA 363, MKTG 321, BANA 303, FINC 341 and graduating senior classification.

485. Problems. Credit 1 to 4. Directed study on selected problems in the area of Maritime Administration not covered in other courses. Prerequisite: Approval of MARA department head.

MARITIME SYSTEMS ENGINEERING (MASE)

100. Introduction to Maritime Systems Engineering. (1-1). Credit 1. Activities and career opportunities in the ocean and maritime industries; lectures, seminars and field trips; outside speakers and industry contact. Desalinization, ocean mining, fish farming, pollution, pipeline, submersibles and habitats, fixed and floating platforms, high-speed marine transportation.

301. Dynamics of Waves and Structures. (3-0). Credit 3. Prediction of loads due to wind, current and waves; introduction to concepts of linear structural dynamics and to the design of ocean structures; mooring and towing analysis; fluid-structure interactions; vibration of submerged structures. Prerequisites: OCEN 300, CVEN 345.

401. Measurements in the Ocean. (3-0). Credit 3. Fundamentals of measurement systems. Design of measurement systems, or instrumentation, used to evaluate oceanographic parameters of scientific and engineering interest. Fundamentals of underwater acoustics and the use of these fundamentals in ocean measurement systems. Introduction to laboratory and field techniques for measuring engineering parameters in the ocean environment. Prerequisite: OCEN 300 or registration therein.

407. Design of Ocean Engineering Facilities. (1-6). Credit 4. Design of structures, equipment and systems for the ocean; environmental, logistical and reliability requirements. Complete design process followed through a group design project. Delineation of alternatives, constraints, economics and environmental consequences included to strengthen real-life problem solving skills. Prerequisite: OCEN 300, 400.

410. Measurements in the Ocean Laboratory. (0-3). Credit 1. Laboratory and field techniques for measuring engineering parameters in the ocean environment. Prerequisite: OCEAN 300, MASE 401 or registration therein.

411. Advanced Hydrodynamics I. (3-0). Credit 3. Hydrodynamics of ship design, semisubmersible platforms, underwater pipelines, hydrofoils, etc. Studies are made of principal types of flow, flow of ideal and real liquids around flat and curved surfaces, separation, eddying, and cavitation. Additional studies are made of flow around discontinuities in a surface, wave making, flow of liquid around a hydrofoil, production of thrust in a liquid and interaction of hull, appendages and propulsion devices. Prerequisite: OCEN 462.

412. Advanced Hydrodynamics II. (3-0). Credit 3. This is a continuation of MASE 411. A presentation of additional techniques and current data available for the practical applications of hydrodynamics to industry design problems. Subject matter includes potential flow patterns and velocity and pressure diagrams around various bodies, source-sink flow diagrams, data on separation, eddying, and vortex motion, inception and effect of cavitation on propellers, data on ship waves and calculation of appendage resistance. Prerequisite: MASE 411.

415. Marine Structures Design. (3-0). Credit 3. Forcing function of surface waves and currents. Dynamics of marine structure, deterministic and probabilistic approaches to fixed structure design, design project-dynamic analysis of a fixed offshore structure from a given design wave. Prerequisite: OCEN 300.

485. Problems in Maritime Systems Engineering. Credit 1 to 4. Directed study on selected current problems in the ocean and/or maritime industry. Offered to enable individuals or groups to undertake and complete with credit some specialized investigation not covered by other courses. Prerequisite: Approval of department head.

489. Special Topics in Maritime Systems Engineering. Credit 1 to 4. Special topics in identified areas of maritime systems engineering. Prerequisite: Approval of instructor.

MARKETING (MKTG)

321. Marketing. (3-0). Credit 3. Institutions, processes and problems involved in transferring goods from producers to consumers with emphasis on economic and social aspects. Prerequisite: ECON 202 or approval of MARA department head.

MATHEMATICS (MATH)

106. Plane and Spherical Trigonometry. (4-0). Credit 4. Definitions of trigonometric functions; evaluation of functions of special angles, fundamental relations; solution of triangles; trigonometric reductions; angular measure; functions of composite angle; logarithms, inverse trigonometric functions; trigonometric equations; basic ideas and formulas of spherical trigonometry; solution of spherical triangles, application to terrestrial and astronomical triangles.

130. Mathematical Concepts-Pre-Calculus. (3-0). Credit 3. Functions and their graphs. Analytic geometry; linear and quadratic functions, polynomial functions. Trigonometric functions. Exponents.

131. Mathematical Concepts-Calculus. (3-0). Credit 3. Limits and continuity. Rates of change, slope. Differentiation: the derivative, maxima and minima, techniques. Integration: the definite and indefinite integral techniques. Curve fitting. Prerequisite: MATH 130 or equivalent. Credit will not be given for more than one of the following: MATH 121, 131, 142, or 151.

151. Engineering Mathematics I. (3-2). Credit 4. Rectangular coordinates, analytical geometry, functions, limits, derivatives of functions, applications, integration, areas and volumes by integration. Prerequisites: High school algebra, trigonometry and geometry or satisfactory performance on a qualifying exam. Credit will not be given for more than one of the following: MATH 121, 131, 142, or 151.

161. Engineering Mathematics II. (3-0). Credit 3. Differentiation and integration techniques and their applications, improper integrals, approximate integration, Mean Value Theorems, analytic geometry, infinite series, power series, Taylor series. Prerequisite: MATH 151

166. Topics in Contemporary Mathematics II. (3-0). Credit 3. Finite mathematics, matrix theory, probability theory, game theory. Credit will not be given for more than one of MATH 141 and 166.

251. Engineering Math III. (3-0). Credit 3. Vector calculus, calculus of functions of several variables, partial derivatives, directional derivatives, gradient, multiple integration, line integrals, Stokes' theorems. Prerequisite: MATH 161.

304. Linear Algebra. (3-0). Credit 3. Introductory course in linear algebra covering abstract ideas of vector space and linear transformation as well as models and applications of these concepts; i.e., systems of linear equations, matrices and determinants. Prerequisite: MATH 161 or equivalent.

308. Differential Equations. (3-0). Credit 3. Linear equations, solutions in series, solutions using Laplace transforms, systems of differential equations, partial

differential equations and boundary value problems. Fourier series. Prerequisite: MATH 251 or equivalent.

311. Topics in Applied Mathematics I. (3-0). Credit 3. Matrices, determinants, systems of linear equations, eigenvalues, eigenvectors, diagonalization of symmetric matrices. Vector analysis; normal derivative, gradient, divergence, curl, line and surface integrals, Gauss', Green's and Stokes' theorems. Prerequisite: MATH 221, 251, 253, and 308 or concurrent enrollment therein.

485. Problems. Credit 1 to 4. Special problems in mathematics not covered by any other course in the curriculum. Work may be in either theory or laboratory. Prerequisite: Approval of department head.

MECHANICS AND MATERIALS (MEMA)

460. Introduction to Continuum Mechanics. (3-0). Credit 3. Tensor formulation of the underlying physical and mathematical principles pertinent to continuous mass media. Solid and fluid mechanics and their interrelationships. Consideration limited to Cartesian tensors. Prerequisite: Senior classification.

METEOROLOGY (METR)

302. Weather Reports and Forecasting. (3-0). Credit 3. Basic description of atmospheric characteristics and processes relevant to the understanding of weather patterns and atmospheric principles.

MICROBIOLOGY (MICR)

351. Fundamentals of Microbiology. (3-4) Credit 4. Basic microbiology; comparative morphology, taxonomy, pathogenesis, ecology, variation, physiology of microorganisms. Prerequisites: CHEM 227, 237; three hours of biology; or approval of instructor.

NAUTICAL SCIENCE (NAUT)

103. Maritime Orientation and Lifesaving. (2-3). Credit 3. Introduction to the maritime industry, the ships, the seaman and the purpose of the U.S. Merchant Marine. Shipboard nomenclature, cargoes and recent trends in the marine industry. Practical lifeboat and lifesaving training for certification as Lifeboatman by the U.S. Coast Guard.

200. Basic Communications, Navigation and Seamanship. Credit 4. Practical application of student's classroom studies aboard training ship during first training cruise. Student completes basic projects in communications, navigation, seamanship and rules of the road. Prerequisite: NAUT 103, 203, 204 or permission of department head.

201. Naval Architecture I. (3-2). Credit 4. Description of ship as self-sustaining unit. Shipbuilding nomenclature and dimensions, types of construction and classification of merchant ships. Classification societies, shipbuilding materials and methods and structural components of ships.

202. Naval Architecture II. (3-0). Credit 3. Ship's lines drawing and form calculations; principles of flotation and buoyancy; inclining experiments, free liquids, transverse stability; motion of ships in waves, seaway and dynamic loads, ship structure tests.

203. Seamanship I. (2-3). Credit 3. Intermediate lifeboat, lifesaving and firefighting procedures. Practical use in lab of manila lines, wire, splicing, knots, block and tackle, cargo gear, anchoring, mooring and steering gear operations.

Introduction to the International Rules of the Road. Projects aboard merchant, research and offshore oil vessels in the ports of Galveston and Texas City.

204. Terrestrial Navigation. (2-2). Credit 3. Fundamentals of piloting, chart construction and development, aids to navigation, useful publications, principles of magnetism and the magnetic compass, great circle, Mercator and middle latitude sailing.

300. Intermediate Communications, Navigation and Seamanship. Credit 4. Practical application of student's classroom studies aboard training ship during second training cruise. Student completes intermediate projects in communications, navigation, seamanship and rules of the road. Thorough study made of U.S. Public Health requirements in first aid. Prerequisite: NAUT 200, 301, 303 or permission of department head.

301. Seamanship II. (2-3). Credit 3. Mechanical appliances aboard ship, accident prevention, vessel sanitation, Marine inspection laws and regulations, search and rescue procedures, communications.

302. Seamanship III. (1-3). Credit 2. Principles and methods of propulsion and steering of ships. Ship handling in narrow channels and heavy seas, docking, undocking, mooring and towing.

303. Celestial Navigation. (2-3). Credit 3. 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; marine gyro compass, radio direction finder, Loran, Omega, Decca, satellite, echo sounder, Doppler and integrated navigation systems. Marine radar theory, operation and interpretation. Student examined for U.S. Coast Guard Certification as "Radar Observer" following completion of course.

400. Advanced Communications, Navigation and Seamanship. Credit 4. 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. Prerequisite: NAUT 200, 300, 304 or equivalent, MART 321, or permission of department head.

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

NAVAL SCIENCE (NVSC)

101. Introduction to Naval Science. (2-1). Credit 2. Sea power and the naval service; mission, organization, regulations, and broad warfare components of the Navy; overview of officer and enlisted rank and rating structures, procurement and recruitment, training and education, promotion and advancement, and retirement policies. Basic tenents of naval courtesy and customs, discipline, naval leadership and ship's nomenclature. Major challenges facing Naval officers; areas of equal opportunity and drug/alcohol abuse. Prerequisite: Approval of department head.

102. Naval Ship Systems I. (3-0). Credit 3. Introduction to naval ship systems. Types, structure and purpose of naval ships; ship propulsion systems; auxiliary power systems; interior communication and damage control; elements of ship design and stability characteristics. Prerequisite: NVSC 101 or approval of department head.

200. Naval Science for the Merchant Marine Officer I. (3-0). Credit 3. Organization of the U.S. Navy (including the Naval Control of Shipping Organization) with discussion of the Merchant Marine Naval Reserve commission in order to provide a sound basis for liaison between the U.S. Navy and the Merchant Marine. Seapower will be analyzed and Naval damage control procedures and underway replenishment procedures will be introduced.

201. Naval Ship Systems II. (3-0). Credit 3. Theory and principles of operation of naval weapons systems; types of weapons and fire control systems, capabilities and limitations, theory of target acquisition, identification and tracking, trajectory principles, and basics of naval ordnance. Prerequisite: NVCS 102 or approval of department head.

300. Naval Science for the Merchant Marine Officer II. (3-0). Credit 3. The nature of the hostile naval threat and types of surface, subsurface, and air attacks to which both U.S. Naval and merchant shipping can be subjected are presented. Self-defense measures which merchant ships can employ and Naval escort defensive actions will be analyzed. The student will become proficient in maneuvering when in convoy and familiar with naval communications procedures. Prerequisite: NVSC 200.

301. Navigation and Naval Operations I. (2-2). Credit 3. Theory, principles and procedures of ship navigation in coastal and open ocean environments; piloting, celestial navigation, ocean and tidal currents and associated publications and logs; introduction to USN electronic and satellite navigation systems. Prerequisite: NROTC advanced classification.

302. Navigation and Naval Operations II. (2-2). Credit 3. Duties and responsibilities of the OOD(U/W), navigator and bridge watch team during routine and special at sea evolutions; relative motion, formations tactics, internationals and inland rules of the nautical road and applied aspects of ship handling; familiarization with naval communications and messages. Prerequisite: NVCS 301.

402. Leadership and Management II. (2-0). Credit 2. Naval junior officer responsibilities; division management and administration; current Navy policies and their application within the division. Prerequisite: NVCS 401.

485. Problems. Credit 1 to 3. Directed study in problems in the field of naval science not covered by other courses in department. Prerequisite: Senior classification and approval of department head.

489. Special Topics in Naval Science. Credit 1 to 4. Selected topics in identified areas of naval science. Prerequisite: Approval of instructor.

OCEAN ENGINEERING (OCEN)

300. Wave Mechanics. (3-0). Credit 3. Physical and mathematical fundamentals of ocean wave behavior. Mechanics of wave motion. Use of statistics and probability to develop design wave criteria. Prerequisite: CVEN 311 or MEEN 213.

400. Basic Coastal Engineering. (3-0). Credit 3. Mechanics of wave motion. Wave refraction, diffraction, and reflection. Wave forecasting. Shore processes. Planning of coastal engineering projects. Design of seawalls, breakwaters, and fixed offshore installations. Offshore pipelines. Dredging. Control of oil spills in estuaries and at sea. Prerequisite: CVEN 311; OCEN 300.

462. Hydromechanics. (3-0). Credit 3. Kinematics of fluids, incompressible, irrotational and turbulent flow. Navier-Stokes equations, flow of viscous fluids. Prerequisites: CVEN 311; MATH 308.

OCEANOGRAPHY (OCNG)

401. Introduction to Oceanography. (3-0). Credit 3. Subject matter survey. Interdisciplinary relationship between biological, chemical, geological, geophysical and physical aspects of field. Prerequisites: Approval of instructor; junior or senior classification; MATH 131 and CHEM 102, 104, or 114.

PHYSICS (PHYS)

201. College Physics. (3-3). Credit 4. Fundamentals of classical mechanics, heat and sound. Prerequisite: MATH 130 or equivalent.

202. College Physics. (3-3). Credit 4. Continuation of PHYS 201. Fundamentals of classical electricity and light; introduction to contemporary physics. Prerequisite: PHYS 201.

218. Mechanics. (3-3). Credit 4. Mechanics for students of the physical sciences. Prerequisite: MATH 151 or registration therein.

219. Electricity. (3-3). Credit 4. Continuation of Physics 218. Electricity, magnetism and optics. Prerequisite: MATH 161 or equivalent; PHYS 218 or equivalent.

485. Problems. Credit 1 to 4. Special work in laboratory or theory to meet individual requirements in cases not covered by regular curriculum. Prerequisite: Approval of department head.

POLITICAL SCIENCE (POLS)

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.

331. Introduction to World Politics. (3-0). Credit 3. Analysis of contemporary world from point of view of nation-state; political problems, factors involved in foreign policies and relations of nations. Prerequisite: POLS 206 or approval of department head.

347. Politics of Energy and the Environment. (3-0). Credit 3. U. S. energy and environmental problems and policies and the political, legal and institutional factors influencing their development and implementation. Prerequisite: POLS 206 or approval of department head.

340. Introduction to Public Administration. (3-0). Credit 3. American public administration; development of public service; theories of organization and management, executive leadership and policy formation, personnel practices and public relations. Prerequisite: POLS 206 or approval of department head.

485. Problems. Credit 1 to 6 each semester. Individual instruction in selected aspects of political science not adequately covered by other courses. Prerequisite: Approval of department head.

PSYCHOLOGY (PSYC)

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

RUSSIAN (RUSS)

101. Beginning Russian I (3-2) Credit 4. Elementary language study with oral, written, and reading practice. Attention given to background for conversation. Part of class preparation will be done in language laboratory.

102. Beginning Russian II (3-2) Credit 4. Continuation of RUSS 101. Part of class preparation will be done in language laboratory. Prerequisite: RUSS 101.

SPANISH (SPAN)

101. Beginning Spanish I. (3-2). Credit 4. Elementary language study with oral, written, and reading practice. Preparation for conversation. Part of class preparation will be done in language laboratory.

102. Beginning Spanish II. (3-2). Credit 4. Continuation of SPAN 101. Part of class preparation will be done in language laboratory. Prerequisite: SPAN 101.

STATISTICS (STAT)

302. Statistical Methods. (2-2). Credit 3. Intended for undergraduate students in the biological sciences and agriculture except agriculture economics. Nonmathematical introduction to concepts of random sampling and statistical inference; estimation and testing hypotheses of means and variances; analyses of variance; regression analysis; chi-square tests. Prerequisite: MATH 141, 166, or equivalent.

☐ Students in TAMUG residence halls may decorate as preferred providing fire and safety standards are observed and substantive changes are approved in advance by the Residential Services Office.

THE FACULTY

The faculty and administrative positions are current as of June 1, 1991. Figures in parentheses indicate date of first appointment at the University and date of appointment to present positions, respectively.

AHERNS, Thomas J., Lecturer in Marine Engineering (1990).

ALDRICH, David V., Professor of Marine Biology (1966, 1978). B.A., Kenyon College, 1950; M.A., Ph.D., Rice University, 1952, 1954.

ANZ-MEADOR, Phillip D., Lecturer in Marine Sciences (Physics Laboratory) (1989). B.S., M.S., Ph.D., Baylor University, 1982, 1985, 1989.

BASKARAN, M., Lecturer in Marine Sciences (Physics Laboratory) (1988). B.S., V.H.N.S.N. College, 1977; M.S., School of Physics, Kamaraj University, Madurai, 1979; Ph.D., Physical Research Laboratory, Ahmedabad, 1985.

ALLEN, Ruth M., Lecturer in Marine Sciences (1991). B.S., University of Michigan, 1959; M.S., Michigan State University, 1961; Ph.D., Michigan State University, 1972.

BERG-ANDREASSEN, Jan, Temporary Head and Assistant Professor, Maritime Administration (1990). B.S., M.S., University of Oslo, Norway, 1972, 1979; M.B.A., M.A., Ph.D.,University of Houston, 1981, 1983, 1988.

BLOZINSKI, Anthony P., Associate Professor of General Academics (Mathematics) (1976, 1980). B.S., Seattle University, 1966; M.S., Ph.D., Purdue University, 1968, 1970.

BOLER, James S., Lecturer, General Academics (1985). B.A., Ph.D., Rice University, 1971, 1974.

BOURGEOIS, Captain Peter J., Lecturer, Marine Transportation (Captain of the Texas Clipper) (1990). B.S., U.S. Merchant Marine Academy, 1956.

BURNETT, John, Lecturer, Marine Transportation (1991). B.S., Texas A&M University, 1985.

CARHART, John W., Lecturer in General Academics (Political Science) (1988). B.A., M.A., Southwest Texas State University, 1981, 1988.

CHANG, Tyne-Hsien (Ted), Associate Professor of Maritime Systems Engineering (1981). B.S., National Chen-kung Univesity, 1974; M.S., Ph.D., University of Florida, 1978, 1981.

CLAYTON, William H., President Emeritus (1971) (1987). B.S., Bucknell University, 1949; Ph.D., Texas A&M University, 1965.

CHRISTENSEN, Monique D., Lecturer, General Academics (1990). B.S., College Sophie Germain, Paris, France, 1959; M.S., University of Paris, France, 1963; M.A., University of Utah, 1967.

CLYBURN, John H., Lecturer, General Academics (1973). B.A., University of Texas, 1958; M.A., University of Houston, 1959.

COLE, Collier M., Lecturer in General Academics (Psychology) (1983). B.A., University of California at Los Angeles, 1971; M.A., Ph.D., University of Houston, 1973, 1976.

COLEMAN, Charles H., Jr., Lecturer, Marine Sciences (Geology Laboratory) (1981). B.S., Texas A&M University, 1975; M.S., University of Houston-Clear Lake, 1986.

COOPER, Robert N., Lecturer in General Academics (Mathematics) (1988). B.S., M.S., University of Southwestern Louisiana, 1959, 1962; Ph.D., Texas A&M University, 1972.

CORKE, Henry E., Lecturer in Marine Sciences (Physics Laboratory) (1977). B.S., M.S., Ph.D., University of Houston, 1961, 1963, 1970.

CRAVEY, Melanie J., Assistant Professor of Marine Sciences (Chemistry) (1983, 1986). B.S., Lamar University, 1972; Ph.D., University of Houston, 1977.

CURLEY, Stephen J., Associate Professor of General Academics (English) and Head of the Department of General Academics (1973, 1985). B.A., Fordham University, 1968; Ph.D., Rice University, 1974.

CURRY, Barbara E., Lecturer in Marine Biology (1991). B.A., University of California, Santa Cruz, 1986; M.S., Moss Landing Marine Laboratories, 1990.

CURTISS, Carol D., Lecturer in Marine Transportation (1991). B.S., U.S. Merchant Marine Academy, 1980.

DAVIS, Randall W., Associate Professor of Marine Biology and Head of Marine Biology (1990). B.S., University of California, Riverside, 1974; Ph.D., University of California, San Diego, 1980.

EFTHIMIADIS, Andrew B., Lecturer in Marine Transportation (1990). B.S., Texas A&M University, 1988.

ESTES, Ernest L. III, Professor of Marine Sciences (Geology) (1976, 1987). B.S., Lawrence University, 1965; M.S., Duke University, 1967; Ph.D., University of North Carolina, 1971.

EVANS, William E., Professor of Maritime Administration and of Marine Biology and Dean of Texas Maritime College (1989). B.S., Bowling Green State University, 1953; M.A., Ohio State University, 1954; Ph.D., University of California at Los Angeles, 1975.

FELLOWS, Albert T., Lecturer in Marine Engineering (1988). B.S., State University of New York, 1944.

FITZGERALD, Steve M., Lecturer in Marine Engineering (1989). B.S., M.S., Texas A&M University, 1986, 1988.

FOLDEN, Charles A., Lecturer in Marine Sciences (Chemistry Laboratory) (1980). B.S., California State University, Long Beach, 1975; M.A., Governors State University, 1979.

FORD, Captain Stephen F., Lecturer in Marine Transportation and Head of Marine Transportation (1988). B.S., U.S. Merchant Marine Academy, 1970; M.B.A., University of Houston, 1978.

GIAM, Choo-Seng, Professor of Marine Sciences (Chemistry) and Director of the Coastal Zone Laboratory (1988). B.S., University of Malaya, 1954; B.S., M.S., Ph.D., University of Saskatchewan, 1955, 1961, 1962.

GRAGG, Sara E., Lecturer in General Academics (English) (1988). B.A., M.A., Ph.D., University of Arkansas, 1949, 1950, 1971.

GRAVES, Gilda G., Lecturer in Marine Sciences (1990). B.S., Sacred Heart University, San Juan, 1983; M.S., University of Southwestern Louisiana, 1986.

GRIFFIN, Lawrence L., Associate Professor of Marine Sciences (Chemistry) (1976, 1984). B.A., M.S., Ph.D., University of Texas at Austin, 1962, 1965, 1972.

HARPER, Donald E., Jr., Associate Professor of Marine Biology (1975, 1980,) B.S., University of Miami, 1963; M.S., Ph.D., Texas A&M University, 1966, 1970.

HAYMES, William E., Lecturer in Marine Sciences (Physics Lab) (1989). B.S., M.S., University of Missouri-Rolla, 1964, 1971; Ph.D., University of Manchester, England, 1976.

HAYNES, James L., Lecturer in Marine Transportation (1991). B.S. University of Nebraska, 1965.

HICKS, Lawrence F., Senior Lecturer (1990) and Temporary Head of Marine Engineering (1991). B.S., U.S. Naval Academy, 1952; B.S. and M.S., Webb Institute, 1958.

HITE, Gerald E., Associate Professor of Marine Sciences (Physics) (1980, 1984). B.S., Case Western Reserve, 1962; M.S., University of Illinois, 1965; Ph.D., University of Illinois, 1967; Habilitation, Universitat Kaiserslautern, 1974.

IBARRA, Michael J., Lecturer in Marine Sciences (Chemistry Laboratory) (1989). B.S., Southwest Texas State University, 1976; M.S., University of Texas at San Antonio, 1983.

ILIFFE, Thomas M., Visiting Lecturer in Marine Biology (1989). B.S., Penn State University, 1970; M.S., Florida State University, 1973; Ph.D., University of Texas Medical Branch, 1977.

JOHNSON, Thomas S., Associate Professor of General Academics (English) (1974, 1981). B.A., Loyola University of Los Angeles, 1966; M.A., University of California at Los Angeles, 1968; Ph.D., University of Texas at Austin, 1973.

KANZ, James E., Associate Professor of Marine Biology (1978, 1985). B.A., University of Washington, 1966; Ph.D., Tufts University, 1973.

KLEIN, Douglas J., Professor of Marine Sciences (Physical Chemistry) (1979, 1987). B.S., Oregon State University, 1965; M.A., Ph.D., University of Texas, 1967, 1969.

KNOCK, Susan L., Lecturer in Marine Biology, (1990). B.A., The Colorado College, 1975; Ph.D., University of Texas Medical Branch, 1988.

KNOX, Kris J., C.P.A., Lecturer in Maritime Administration (1984). B.B.A., M.B.A., University of Houston, 1979, 1984.

KUHLMANN, Deborah, Lecturer in General Academics (English) (1986). B.A., Texas Christian University, 1970; M.A., University of Arkansas, 1980; Ph.D., Texas Christian University, 1985.

KUPERSMITH, John A., Senior Lecturer in Marine Engineering (1990). B.A., University of Texas at Austin, 1972; M.S.E., University of California at Berkeley, 1979.

LANDRY, Andre M., Jr., Associate Professor of Marine Biology (1977, 1981). B.S., Tulane University, 1968; M.S., Ph.D., Texas A&M University, 1971, 1977.

LEITZELL, Captain Timothy R., Lecturer in Marine Transportation (1988). B.S., State University of New York, 1968; M.B.A., University of Houston, 1975.

LEVINE, William S., Visiting Assistant Professor of English, General Academics (1990). B.A., State University of New York at Stoney Brook, 1980; Ph.D., Indiana University, 1989.

LUTZ, Anne B., Lecturer in Marine Sciences (Geology Laboratory) (1989). B.A., State University of New York, Fredonia, 1967; Ph.D., Pennsylvania State University, 1973.

LUXEMBURG, Leon A., Lecturer in Marine Engineering (1989). B.S., Moscow University, 1973; M.S., University of Kentucky, 1983; Ph.D., Texas A&M University, 1987.

MANNELLI, Sandra C., Lecturer in Marine Sciences (Chemistry Lab) (1989). B.S., Texas A&M University, 1983; M.A., University of Houston-Clear Lake, 1986.

McCLOY, James M., Professor of Marine Sciences (Marine Geography) and Vice President for Academic Affairs (1971, 1984, 1988). B.A., California State College at Los Angeles, 1961; Ph.D., Louisiana State University, 1969.

MEDULAN, Louise M., Lecturer in General Academics (English) (1984). B.A., Metropolitan State College, Denver, Colorado, 1980; M.A., University of Houston-Clear Lake, 1984.

MERRELL, William J., Professor of Marine Sciences (Oceanography) and President (1987). B.S., M.A., Sam Houston State University, 1965, 1967; Ph.D., Texas A&M University, 1971.

MICHEL, Urszula, Lecturer, General Academics (1991). B.A., Jagellonian University, Cracow, 1973.

MOHAMMAD, Golam, Visiting Assistant Professor, Maritime Administration (1990). B.A., M.A.,University of Dacca, 1976, 1977; M.S., University of Kentucky, 1983; Ph.D., Ohio State University, 1989.

MOORE, Sylvia M., Lecturer in Marine Sciences (Chemistry Lab) (1975). B.S., San Diego State University, 1955.

NANCE, James M., Lecturer in Marine Biology (1984). B.S., M.S., Brigham Young University, 1974, 1976; Ph.D., Texas A&M University, 1984.

NICHOLAS, Robert H., Jr., Lecturer in Marine Transportation (Maritime Law) (1988). B.S., Lamar University, 1963; J.D., University of Texas at Austin, 1966.

PARK, Edward T., Professor of Marine Biology (1969, 1983). B.S., M.S., Pusan Fisheries College (Korea), 1952, 1957; Ph.D., University of Washington, 1965.

PICCARDO, Olimpia M., Lecturer in General Academics (1990). B.A., M.S., Universidad Central de Venezuela, Caracas, 1964; 1966.

PRICE, Robert E., Jr., Lt., USN, Assistant Professor of Naval Science (1989). B.B.A., University of Texas, 1985.

RAY, Sammy M., Professor Emeritus of Marine Biology (1990). B.S., Louisiana State University, 1942; M.S., Ph.D., Rice University, 1952, 1954.

RYAN, James G., Assistant Professor, General Academics (1990). B.A., M.A., University of Delaware, 1970, 1973; M.A., Ph.D., University of Notre Dame, 1975, 1981.

SANTSCHI, Peter H., Professor of Marine Sciences (1988). B.S., Gymnasium Berne, Switzerland, Matura, 1963; M.S., Ph.D., University of Berne, 1971; 1975; Privatdozent, Switzerland Federal Institute of Technology, 1984.

SCHLEMMER, Frederick C. II, Associate Professor of Marine Sciences (Meteorology, Oceanography) (1978, 1985). B.S., U.S. Naval Academy, 1965; M.A., University of South Florida, 1971; Ph.D., Texas A&M University, 1978.

SCHMALZ, Thomas G., Associate Professor of Marine Sciences and Acting Head of Marine Sciences (Chemistry, Computer Science) (1981, 1985, 1989). B.S., Montana State University, 1970; Ph.D., University of Illinois, 1975.

SCHWARZ, John R., Professor of Marine Biology (1976, 1986). B.S., Ph.D., Rensselaer Polytechnique Institute, 1967, 1972.

SEITZ, Patricia A., Lecturer, Marine Sciences (1991). B.A., Rice University, 1971; Ph.D., University of Texas at Austin, 1977.

SEITZ, William A., Professor of Marine Sciences (Chemistry, Computer Science) and Dean of the Moody College of Marine Technology (1977, 1988). B.A., Rice University, 1970; Ph.D., University of Texas at Austin, 1973.

SLOTTA, Larry S., Professor of Marine Engineering and Director of Engineering Programs (1989). B.S., M.S., University of Wyoming, 1956, 1959; Ph.D., University of Wisconsin, 1962.

STREETER, Don C., Lecturer in General Academics (English)(1990). B.S., University of Minnesota, 1933; M.A., Ph.D., State University of Iowa, 1938,1948.

SUEN, Ching Y., Associate Professor of General Academics (Mathematics) (1984, 1990). M.S., Tsing Hua University, 1978; Ph.D., University of Houston, 1983.

SZUCS, Joseph M., Associate Professor of General Academics (Mathematics) (1980, 1984). B.S., Ph.D., Szeged University, 1965, 1967.

VAN LOO, William C., Lecturer in Marine Engineering (1982). B.S., City College of New York, 1969; M.A., Hofstrau University, 1973.

von ZHAREN, Wyndylyn M., Lecturer in Maritime Administration (1990). B.A., M.A., Ed.D., University of Florida; J.D., University of South Carolina Law School, 1987.

WANG, Y. H., P.E., Professor of Maritime Systems Engineering (1980). B.S., National Taiwan University, 1952; M.S., San Jose State University, 1962; Ph.D., University of Southern California, 1972.

WARD, Gwendolyn H., Lecturer in Marine Sciences (1989). A.B., Wesleyan College, 1968; M.S., Cornell University, 1971.

WARDLE, William J., Associate Professor of Marine Biology (1973, 1983). B.S., Lynchburg College, 1963; M.S., Ph.D., Texas A&M University, 1970, 1974.

WATSON, Diane B., Lecturer and Librarian (1988). B.S., University of Oklahoma, 1968; M.L.S., Vanderbilt University/Peabody College, 1973.

WEBB, James W., Associate Professor of Marine Biology (1978, 1988). B.S., University of South Carolina, 1966; M.S., University of Georgia, 1973; Ph.D., Texas A&M University, 1977.

WHITAKER, Robert E., Lecturer in Marine Sciences (1987). B.A., M.S., Ph.D.,Texas A&M University, 1961, 1971, 1973.

WIEST, Natalie H., Lecturer and Library Director (1982). B.A., Pennsylvania State University, 1971; M.S., Drexel University, 1973; M.S., University of Tennessee, 1980.

WILLETT, Donald E., Assistant Professor of General Academics (History) (1985, 1986). B.A., St. Edward's University, 1972; M.A., Stephen F. Austin University, 1976; Ph.D., Texas A&M University, 1985.

WILLIAMS, Mollye W., Lecturer, Marine Biology (1991). B.S., Texas A&M University, 1989; M.S., University of Houston at Clear Lake, 1991.

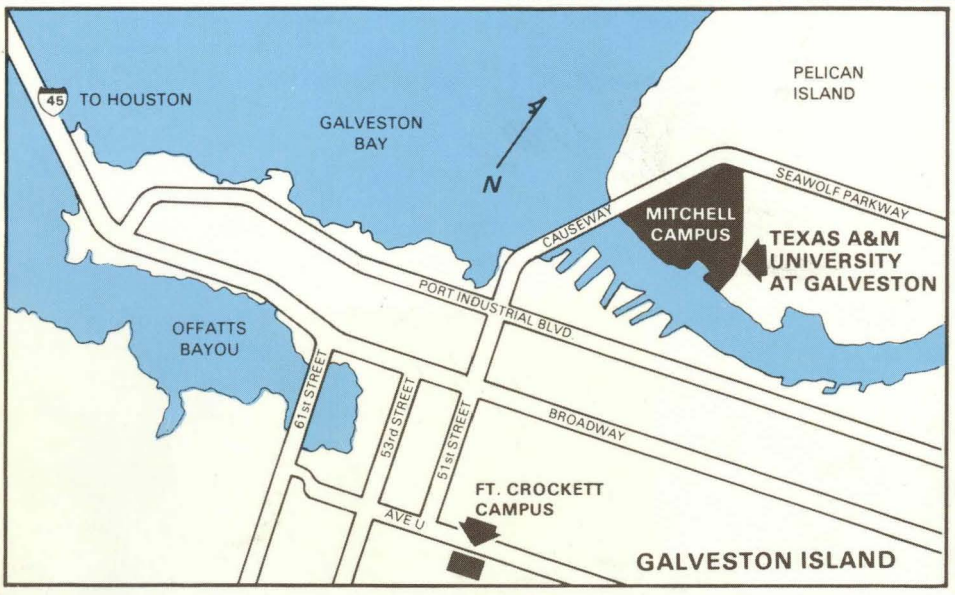
WILSON, Paul C., P.E., Lecturer in Maritime Systems Engineering (1981). B.S., Texas A&M University, 1948; M.S., University of Houston, 1974.

WORTHY, Graham, A.J., Assistant Professor, Marine Biology (1990). M.S., Ph.D., University of Guelph, Canada, 1982, 1985.

WRAY, David O., Lecturer in General Academics (Mathematics) (1989). B.S., M.S., Ph.D., University of Houston, 1974, 1976, 1987.

WURSIG, Bernd W., Professor of Marine Biology (1989). B.A., College of New Rochelle, 1969; B.S., Ohio State University, 1971; Ph.D., State University of New York, Stony Brook, 1978.

YOUNG, Sidney E., Lecturer, General Academics (1991). B.S., M.A., Stephen F. Austin State University, 1964, 1967.



Telephone Information

Admissions and Records	(409) 740-4415
Campus Operator	740-4400
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Housing	740-4598
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