TEXAS A&M UNIVERSITY AT GALVESTON

1993-94 Catalog

Texas A&M University at Galveston

1993-94 Catalog #116

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☐ Cover: The Marine Mammal Research Program at TAMUG has identified over 1,200 individual dolphins in the Galveston Bay area. *Photo by Thomas Henningson.*

☐ The Mitchell Campus on Pelican Island houses most academic facilities, three dormitories, a student center, classrooms and laboratories, a small boat basin, docking for the TEXAS CLIPPER, and recreational facilities.

☐ Dignitaries gather for the groundbreaking of the new physical education facility, to be completed by Fall of 1994.

ACADEMIC CALENDER

FALL SEMESTER 1993*

August 25-27 Wednesday-Friday. Registration and add/drop for continuing students.

August 26-27 Thursday-Friday. Terminal registration and add/drop for new students only.

August 30 Monday. First day of fall semester classes.

August 30-Sept. 7 Monday-Tuesday. Late registration for all students.

September 3 Friday. Last day for dropping courses unrecorded. Last day to apply for all degrees to be awarded in December.

September 6 Monday. Q-drop begins. WP/WF begins for withdrawals.

September 7 Tuesday. Last day for enrolling in the University and to add new courses.

September 14 Tuesday. Census day.

October 15 Friday. Midsemester grades due to Admissions and Records Office, 10 a.m.

November 5 Friday. Last day for all students to Q-drop.

November ?? Monday-???. Dates and information for preregistration will be published at a later date.

November 25-26 Thursday-Friday. Thanksgiving holiday.

December 8 Wednesday. Last day of fall semester classes.

December 9 Thursday. Reading Day, no classes or examinations. Last day to officially withdraw from the University.

December 10, 13-15 Friday, Monday-Wednesday. Fall semester final exams for all students.

December 15-16 Wednesday-Thursday. Degree candidate grades due to Admissions and Records Office, 10 a.m.

December 17 Friday. Final grades for all non graduating students due to Admissions and Records Office, 10 a.m.

December 18 Saturday. Commencement, 1894 Grand Opera House, 9 a.m.

SPRING SEMESTER 1994*

January 13-14 Thursday-Friday. Registration and add/drop.

January 17 Monday. First day of spring semester classes.

January 17-25 Monday-Tuesday. Late registration for all students.

January 21 Friday. Last day for unrecorded drops. Last day to apply for all degrees to be awarded in May.

January 24 Monday. Q-drop begins. WP/WF begins for withdrawals.

January 25 Tuesday. Last day for enrolling in the University or to add courses.

February 1 Tuesday. Census day.

March 4 Friday. Midsemester grades due to Admissions and Records Office, 10 a.m.

March 14-18 Monday-Friday. Spring break.

April 1 Friday. Last day for all students to Q-drop.

April ?? Monday-???. Dates and information for preregistration will be published at a later date.

May 4 Wednesday. Last day of spring semester classes.

May 5 Thursday. Reading Day, no classes or examinations. Last day to officially withdraw from the University.

May 6, 9-11 Friday, Monday-Wednesday. Spring semester final exams for all students.

May 11-12 Wednesday-Thursday. Degree candidate grades due to Admissions and Records Office, 10 a.m.

May 13 Friday. Final grades for all non graduating students due to Admissions and Records Office, 10 a.m.

May 14 Saturday. Commencement, 1894 Grand Opera House, 9 a.m.

SUMMER SESSIONS 1994*

May 27 Friday. Open registration and add/drop for first summer term and 10-week term.

May 30 Monday. First day of first summer term and 10-week term.

June 1 Wednesday. Last day to drop unrecorded for first summer term and for 10-week term.

June 2 Thursday. Last day for enrolling in the University for first summer term and 10-week term and to add new classes. Census Day. Q-drop begins. WP/WF begins for withdrawals.

June 3 Friday. Last day to apply for degrees to be awarded in August for students completing degree requirements in the first summer term.

June ?? Monday-???. Preregistration for second summer term. Dates and information will be published at a later date.

June 17 Friday. Last day to Q-drop first summer term classes.

June 30 Thursday. Last day of first summer term classes.

July 1 Friday. First summer term final exams. Open registration and add/drop for second summer term classes.

July 4 Monday. Independence Day holiday.

July 5 Tuesday. First day of second summer term classes.

July 7 Thursday. Last day to drop unrecorded for second summer term. First summer term final grades due to Admissions and Records Office, 10 a.m.

July 8 Friday. Last day to enroll in the University for second summer term or to add classes. Q-drop begins. WP/WF begins for withdrawals. Census Day. Last day to apply for all degrees to be awarded in August for students completing degree requirements in the second summer term or the 10-week term.

July 19 Tuesday. Last day to Q-drop 10-week classes.

July 25 Monday. Last day to Q-drop second summer term classes.

August 5 Friday. Last day of second summer term and 10-week term classes.

August 8 Monday. Final exams for second summer term classes.

August 9 Tuesday. Final exams for 10-week term classes.

August 10 Wednesday. Grades for degree candidates due to Admissions and Records Office, 10 a.m.

Aug. 12-13 Friday-Saturday. Commencement programs at 7:30 p.m. Friday and Saturday, 9 a.m., G. Rollie White Coliseum, College Station. The College of Geosciences and Maritime Studies will be assigned to a commencement program at a later date.

* These dates are subject to change.

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(as of June 1, 1993)

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TEXAS A&M UNIVERSITY AT GALVESTON

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(Correct as of June 1, 1993)

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William A. Seitz ..... Director of Continuing Education and Interim Campus Dean for Research
Choo-Seng Giam ..... Director of the Coastal Zone Laboratory
Milton H. Abelow ..... Assistant to the Campus Dean for Budget and Planning

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.

General Statement

Texas A&M University at Galveston is the marine and maritime component of The Texas A&M University System. The undergraguate degree programs available at TAMUG are offered through the Texas A&M University College of Geosciences and Maritime Studies. TAMUG provides academic instruction in seven marine and maritime-related degree programs leading to Bachelor of Science degrees from Texas A&M University.

The location of the campus 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.

The Texas Institute of Oceanography (TIO) 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.

Courses of Study

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.

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.

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.

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. Documents certifying accreditation may be viewed in the Office of the Associate Campus Dean 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.

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 personal computers, with software available for student use. The library's Public Access Catalog, the computerized card catalog, runs on the PRIME computer, allowing library access to any computer terminal on campus and remote access by modem.

The library is the site of the Galveston Bay Information Center and has developed a Galveston Bay Literature Survey of information about the Bay.

Graduate Programs

Graduate programs of Texas A&M University in Biology, Oceanography, Range Science and 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; or the Office of Graduate Studies, Texas A&M University, College Station, TX 77843.

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, students are also responsible for assisting the ship's crew in maintaining

and operating the TEXAS CLIPPER, assisting with food services and maintaining their quarters during the training cruise.

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

While it is hoped 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.

Students must be admitted to TAMUG or TAMU (College Station) before applying to attend Summer School at Sea. Since the courses offered are freshman courses, applicants must be between high school graduation and freshman year in college. Spaces are filled on a "first come-first served" basis for eligible candidates once they have been accepted and paid their fees.

Information about the program and the "Summer School at Sea Form" is available from the Student Services Office.

☐ Spectators watch as the T/S TEXAS CLIPPER departs from its berth at the Mitchell Campus for the last time in 1993. A new ship, renamed the TEXAS CLIPPER II, will replace the aging vessel in 1994.

GENERAL INFORMATION

Students who complete the academic programs of 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 campus dean.

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 cultural heritage, social and moral responsibilities and our interrelations with the economies and cultures of the international community; and it will continue the tradition of providing thorough preparation in the student's selected discipline or profession.

Specific Requirements

1. Computer Usage 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 221; AGSL 201; ANSC 401; BANA 217; CPSC 110, 203; EDTC 445; ENGR 109; PHYS 401; RENR 201.

2. Foreign 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. Communication The ability to communicate through the use of the spoken or written word requires the development of speech and writing skills (6 hours). This requirement must be satisified by ENGL 104 (3 hours) and one of the following: ENGL 203, 210, 235, 236, 301, 325 or 341; SCOM 203, 243.

4. 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, 365, 366; also may select 3 hours from PHIL 240, 341 or 342.

5. 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 courses are specifically excluded. Four hours to be selected from BIOL 113/123; BOTN 101; CHEM 101/111, 103/113; GEOL 101; PHYS 201, 218; ZOOL 107. Remaining hours to be selected from above courses and/or AGRO 301, 405; ANTH 225; BIOL 114/124; CHEM 102/112, 104/114, 106/116, 222/242; FRSC 204; GENE 301, 310; GEOG 203/213; GEOL 106; HORT 201/202; METR 301, 304; PHYS 202, 208, 213, 219, 306/307; RENR 205/215; ZOOL 225.

6. 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, 205, 215, 301, 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; ENGL 203, 212, 221, 222, 227, 228, 231, 232, 251, 254, 280, 281, 313, 314, 315, 316, 319, 321, 322, 323, 334, 335, 336, 337, 338, 340, 345, 346, 350, 351, 360, 361, 365, 374, 375, 376, 377, 378, 390, 394, 396, 401, 410, 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; LBAR 203, 331 (no more than 3 hours of the humanities requirement may be satisified by LBAR 331); LING 215, 307, 313, 410, 431, 451; 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, 407; WMST 374, 461, 473, 475.

7. 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, 210, 225, 300, 311, 314, 402, 403, 410; ECON (any course); ENGL 209, 311; EPSY 320, 321; GEOG 201, 204, 306, 311, 330, 399, 401, 439, 440; INST 322; JOUR 102, 301, 401, 440; KINE 304, 319; LBAR 204; LING 105, 209, 311; POLS (any course); PSYC (any course except 203, 204); SCOM 105, 315, 320, 325; SOCI (any course except 220, 420); WMST 300, 316, 317, 424, 462.

8. Physical Education (4 hours) To be selected from any KINE 199 course offering. **Not required for TAMUG students at present time.**

9. 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.

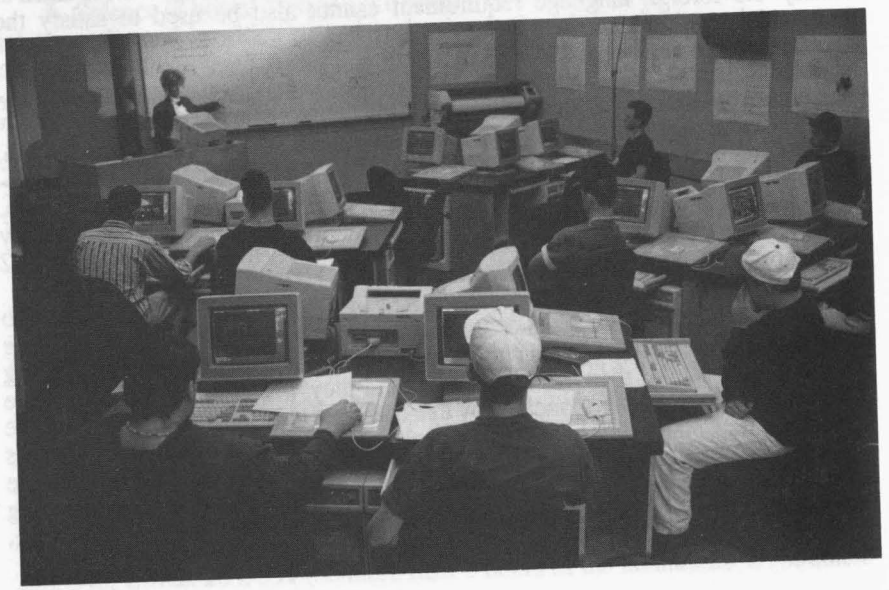
4. No student may satisfy all 12 hours of Core course requirements in the categories of Humanities and Social Science by courses having the same prefix.

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.

☐ Above: The Roamin' Empire is used for trawling in research outings and Marine Biology coursework.

☐ Below: Engineering students use this CAD (Computer-Aided Design) laboratory to study the manufacturing process.



ADMISSION

Texas A&M University has a strong institutional commitment to the principle of diversity in all areas. In that spirit, admission to Texas A&M University and any of its sponsored programs is open to all qualified individuals. To be admitted, an applicant must meet the admission requirements in effect for the desired term of entry. Texas A&M University reserves the right to defer the initial registration of newly admitted applicants if it appears their enrollment for a given semester will exceed the physical capabilities of the TAMUG campus and jeopardize the quality of education offered students to whom the University is already committed.

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 TAMUG 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 priority admission and the other for students who do not meet those requirements.

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. A third year is strongly recommended.
Electives	4	
Foreign Language	2	Although not required for admission, foreign language is required to graduate from Texas A&M. This requirement can be satisfied by the completion in high school of two units of the same foreign language.
Computer Science	1	Although not required for admission, a course in computer science is required to graduate from Texas A&M. This requirement can be satisified by the completion in a Texas high school of a course chosen from the following: Computer Mathematics I or II, Business Data Processing, Introduction to Computer Programming, Computer Programming, Micro-Computer Applications, Business Computer Applications I or II, Computer Science I or II or Business Computer Programming I or Data Processing. Similar courses taken elsewhere also will apply.

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.

Priority Admission

Applicants with complete applications on file by March 1 for the summer session and/or fall semester (November 1 for spring) who present the academic credentials required for priority admission are admitted as soon as possible. Priority admission requirements are stated in terms of a combination of required high school courses, class rank and minimum performance on the SAT (verbal and math) or ACT (composite):

If an applicant's rank in the high school class is:	Then the minimun test score for priority admission is:	
	SAT	*ACT*
Top 10%	No Minimum	
1st Quarter	1000	24
2nd Quarter	1100	27
3rd and 4th Quarters	1200	29

Regular Admission

Applicants with complete applications on file by March 1 who do not meet the priority admission criteria but do have the following qualifications will have their complete applications reviewed. Consistent with the Texas Equal Educational Opportunity Plan for Higher Education, automatic reviews will be given to Black and Hispanic applicants ranked in the top half of their graduating class and not otherwise admitted.

If an applicant's rank in the high school class is:	Then the minimum test score for regular admission is: SAT	ACT
1st Quarter	800	19
2nd Quarter	950	22
3rd and 4th Quarters	1100	27

Because the number of persons who can be admitted through this review depends on the number admitted through priority admission, this review will be completed after March 1 (November 1 for spring). Although we cannot guarantee admission to applicants in this category, we have been able to accommodate all who had applied and qualified by March 1 over the past two years. If the number of applicants is too large to allow for the admission of all who have these minimum credentials, those who present the best combination of academic qualifications and other attributes will be admitted.

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 18, 1993 and/or November 13, 1993 at a test site to be announced. Failure to complete the examinations will preclude a student's eligibility to enroll for the Spring 1994 semester if enrolling will take the student beyond nine 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 academic credit hours from Texas A&M University at Galveston or 3 academic 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 units required of entering freshmen, rank in the top quarter of their class and score at least 1200 on the SAT, with at least 600 on the verbal section of the SAT. 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.

Summer Provisional 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. A limited number of freshmen applicants who are not admitted through the priority or regular admissions procedures, but whose academic background suggests a possibility of success, may be offered the summer provisional program. If too many applicants request this option, those with the most promising previous academic performance combined with the most desirable additional credentials will be offered this option. To assure consideration for this program, the complete application with required credentials (official transcript with class rank, list of senior courses and SAT or ACT score sent directly from the testing agency) and $25 application fee must be on file by May 1. The student will be required to complete a minimum of 9 semester credit hours of coursework during the two consecutive summer terms and achieve a "C" average (2.0 GPR) on all courses attempted in order to continue in the fall semester. Students who attempt the provisional program and fail to earn a 2.0 GPR will not be permitted to continue enrollment at TAMUG. This program requires mandatory attendance on campus at TAMUG, the provisional program is not available for Summer School at Sea.

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 Superintendent of the Texas Maritime Training Program 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 and two official final high school transcripts 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 minimum of 18 transferable semester credits is required unless otherwise noted.

Marine Biology, Marine Biology with License Option and Marine Fisheries Transfer Applicants:

To transfer into or change their major to Marine Biology, Marine Biology with License Option or Marine Fisheries, a student must have **a minimum of 30 transferable semester credit hours** with a cumulative 2.75 GPR or better and a 2.75 GPR or better in each of the last two semesters of attendance. If a transfer course is used to substitute for a Marine Biology or Marine Fisheries major course, it must have a C grade or higher to be used in the degree plan. A **student who has**

fewer than 30 semester hours of transferable credit must meet the admission requirements for entering freshman as well as the 2.75 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. Students will be classified by the number of credits transferred. Depending on the number of transferred credits used in the student's degree plan, a student could be classified as a senior but be a curriculum sophomore.

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 GPR of 2.0 (C average) or better on the work attempted and must have at least a 2.0 GPR (2.75 GPR for MARB, MARB/LO or MARF majors) 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 Superintendent's 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 104 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.

☐ The Corps of Cadets gather at the Mary Moody Northen Student Center for the installation of new officers.

☐ Vertebrate zoology students examine mammal skulls.

REGISTRATION

Registration for the fall and spring semesters is accomplished at two times. In the preceding fall or 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

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 Associate Campus Dean for Academic Affairs, or the Campus Dean may be consulted.

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

CREDIT BY EXAMINATION

Students at TAMUG may earn course credits by demonstrating superior achievement on tests offered by several examination programs. Credit by examination is available both to freshmen who plan to enter the University and to students who are currently enrolled. TAMUG awards credit for scores on certain tests published by Advanced Placement Program (AP), the College Level Examination Program (CLEP), the College Board (CB) Achievement Tests, and the International Baccalaureate Higher Level Examinations. TAMUG also offers qualified students opportunities to earn credits by taking departmental challenge examinations prepared by the faculty. Information concerning credit by examination may be obtained from the Director of Counseling in Student Services.

Entering freshmen may take examinations for credit during the new student orientation conferences. This must be scheduled with the Director of Counseling at least four weeks prior to orientation.

POLICIES FOR THE TRANSFER OF UNDERGRADUATE COURSE CREDIT

The Texas Common Course Numbering System (TCCNS): Many colleges and universities in Texas have agreed to use the TCCNS. Texas A&M University has identified equivalent courses and has included the TCCNS in the TAMU and TAMUG course descriptions.

The transfer of course credit will be determined by the Office of Admissions and Records on a course by course basis. Credit submitted for transfer must be on an official transcript received by the Office of Admissions and Records from the registrar of the institution where the credit was earned. Course content will be determined from the catalog description or the syllabus. The transfer of credit decision will be based on the following criteria. All criteria are to be considered together; for example, criterion 10 may be qualified by criterion 7.

CREDIT FROM INSTITUTIONS ACCREDITED BY ONE OF THE REGIONAL ACCREDITING ASSOCIATIONS:

1. A course that is normally considered as part of a bachelor's degree program (not including the bachelor of technology or similar terminal degree) will be transferred. The following criteria, taken together, are used:
   a. The course is applicable to a bachelor's degree at Texas A&M.
   b. The course is similar to a course or courses offered for degree credit by Texas A&M.
   c. The course content is at or above the level of the beginning course in the subject matter offered by Texas A&M.
2. A course that is intended for use in a vocational, technical or occupational program will normally not transfer. In certain cases, credit for occupational skill courses will be considered. Transfer of this credit requires that the student major in engineering technology or industrial distribution at TAMU- College Station. Also, the department head and dean must approve the course for use in the student's degree program.
3. Credit for support courses such as math, science, and English intended specifically for use in an occupational program will not be transferred.
4. Credit for the course must be shown on the official transcript in semester hours or in units that are readily converted to semester hours.
5. A graduate level course will not be transferred for undergraduate credit unless approved for use in the student's undergraduate degree program by the student's major department and dean. This also applies for a course offered in a professional degree program such as nursing, law or medicine.
6. Credit by examination awarded by the sending institution will be transferred providing the student received credit for a specific transferrable course or courses at the institution, and the credit by exam is shown on an official transcript by course number.
7. A course similar to one offered by the Colleges of Agriculture and Life Sciences, Business Administration, Geosciences and Maritime Studies, or Engineering at the junior or senior level will be transferred by title only. Such courses may be used in the student's degree program only if approved by the department head and dean of the student's major field. Validation of such credit, either by examination or the completion of a higher level course, may be required.
8. A field experience, internship or student teaching course will be transferred by title only. Since an internship is considered to be the capstone of a professional curriculum, such credit will not be transferred from a two-year college.
9. Credit for cooperative education will not be transferred.
10. A course that is essentially equivalent to a Texas A&M course will be transferred as an equivalent course. An essentially equivalent course covers at least the same material, requires the same prerequisites and receives at least the same semester hour credit as the Texas A&M course. Two or more courses may be combined to form one or more equivalent courses. If there is any doubt about the equivalency of a course, the Texas A&M department offering the course subject matter will be asked to determine if the course is equivalent.

11. A student pursuing a bachelor's degree at Texas A&M may transfer from two-year colleges a maximum number of hours not to exceed six more than the number required through the freshman and sophomore years of his or her chosen curriculum at Texas A&M, generally 66 semester credits.

12. In any case where a decision can not be made using the above criteria, the Office of Admissions and Records will determine the transfer of credit based on university policy, previous action of the university and prior experience.

RESOLUTION OF TRANSFER DISPUTES FOR LOWER-DIVISION COURSES:

The transfer curricula shall be as prescribed by the current issue of the Coordination Board's guide to transfer curricula and transfer of credit. The following procedures shall be followed by Texas public institution of higher education in the resolution of transfer disputes involving lower division courses:

1. If an institution of higher education does not accept course credit earned by a student at another institution of higher education, that institution shall give written notice to the student and the other institution that the transfer of the course credit is denied.
2. The two institutions and the student shall attempt to resolve the transfer of the course credit in accordance with Board rules and/or guidelines.
3. If the transfer dispute is not resolved to the satisfaction of the student or the institution at which the credit was earned within 45 days after the date the student received written notice of the denial, the institution that denies the transfer of the course credit shall notify the Commissioner of its denial and the reason for the denial.

The Commissioner of Higher Education or the Commissioner's designee shall make the final determination about a dispute concerning the transfer of course credit and give written notice of the determination to the involved student and institutions.

CREDIT FROM NONACCREDITED SCHOOLS:

Students who transfer to Texas A&M from an institution of higher education that is not accredited by one of the regional accrediting associations may validate the work taken at the institution by one of the following methods:

1. Successful completion of a comprehensive departmental examination or nationally standardized examination that is approved by the department.
2. Successful completion of a higher level course in the same subject area when approved by the head of the department and the dean of the college.

Credit will be given to students transferring from nonaccredited public colleges in Texas for work completed with grades of C or better if they earn a grade point of 2.0 (C average) on the first 30 hours of residence work at this University.

CREDIT FROM INTERNATIONAL SCHOOLS:

Transfer work from international colleges and universities will be evaluated on an individual basis. No English course credit will be awarded for courses completed in non-English speaking countries. "A" level examinations will transfer. Baccalaureate II examinations will not transfer, however, these students may take CLEP or departmental examinations to receive credit.

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 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.

CONCURRENT ENROLLMENT AT TAMUG AND OTHER COLLEGES AND 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.

ACADEMIC RULES AND REGULATIONS

A handbook entitled Texas A&M University at Galveston University Regulations is prepared each year for the benefit of the student body. Because it is published at the beginning of the academic year, Texas A&M University at Galveston University Regulations (including periodic revisions) is the governing document in case of conflict between this catalog and the Regulations. It is the responsibility of each individual student to read this handbook carefully and to use it as a ready reference. Copies are available through most departments and the Office of Student Services.

Students applying for admission to Texas A&M at Galveston are required to submit transcripts of previous academic work and in some cases, results of standardized tests. The submission of altered documents or the failure to furnish complete and accurate information on admission forms will be grounds for disciplinary action.

The buying, selling, creating, duplication, altering, giving or fraudulently obtaining the Texas A&M diploma or other academic record is prohibited by state

law. A person who violates this statute or who aids another person in violation is guilty of a misdemeanor and is subject to a fine and/or confinement if convicted.

The University has the right to rescind a previously granted degree if the University becomes aware of information indicating that the degree never should have been granted.

Students are required to take the courses listed in a curriculum; however, the display of a curriculum does not in any way indicate the length of time required to finish 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 petitioned through the department head to the Associate Campus Dean for Academic Affairs.

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 shall be based upon performance and /or participation in class, exercises and tests, laboratory work and final examination as applicable to the course. 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 distributed in written form to the class during the first two weeks of a semester and during the first week of a summer term.

There are five passing grades at the undergraduate level, A,B,C, D and S, representing varying degrees of achievement; these letters carry grade points and significance as follow:

A	Excellent, 4 grade points per semester hour
B	Good, 3 grade points per semester hour
C	Satisfactory, 2 grade points per semester hour
D	Passing, 1 grade point per semester hour
F	Failing, no grade point (hours included in GPR)
I	Incomplete, no grade points (hours not included in GPR)
Q	Dropped course with no penalty
S	Satisfactory (C or above), hours not included in GPR
U	Unsatisfactory (D or F), no grade points (hours included in GPR)
X	No grade submitted (hours not included in GPR)
WP	Withdrew passing (A-D), hours not included in GPR
WF	Withdrew failing (F), hours included in GPR
NG	No grade. Course dropped, no penalty. Requires a dean's permission, hours not included in GPR.

There are three failing grades, F, WF and U, indicating work of unsatisfactory quality.

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

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 5th class day of a fall or spring semester or the 3rd class day of a summer term or 10-week summer term, with the approval of the department head of a student's major, a student may drop a course through the 50th class day of a fall or spring semester, the 14th class day of a summer term, or the 35th day of a 10-week summer term. 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.

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 five days of fall or spring semester or the first three days of a summer term receive no record on their permanent record. After the 5th class day of fall or spring semester or the 3rd class day of summer terms, students who withdraw from the University receive grades of WP or WF. WF grades shall be taken into account in determining the GPR. Students may not withdraw during final exam periods.

Repetition of a Course to Improve Grade

Any undergraduate student who wishes to repeat a course must do so before he or she completes a more advanced course in the same subject. What constitutes a more advanced course will be determined by the head of the department offering the course.

Credit in a course failed may be obtained only by registering and repeating the course in class. The original grade will remain on the student's permanent record, and both grades will be used in computing the GPR. An F or U previously made is not removed once the course is passed. Credit for each repeated course may only be used once toward degree requirements.

A student repeating a course in which a grade of B or better has been earned will not receive grade points for the repeated course, unless the catalog states the course may be repeated for credit.

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, I, and NG 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. Students should check the schedule booklet for instructions to access the Tele-grade system.

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 Associate Campus Dean for Academic Affairs, 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 Associate Campus Dean for Academic Affairs or the Campus Dean when an analysis of the deficiency indicates that a continuation is in the best interest of the student and the University. The Associate Campus Dean 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 Associate Campus Dean of Academic Affairs.

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. A license option student registered for NAUT 200, 300, or 400 or MARE 200, 300, or 400 will be considered a full-time student.

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 the Associate Campus Dean for Academic Affairs or the Campus 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 TAMUG.

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. Texas A&M University has the right to rescind a previously granted degree 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 Associate Campus Dean for Academic Affairs or the Campus Dean at the time the student makes the transfer or change will be applicable. The baccalaureate degree requirements for a graduating student who first enrolled more than seven years prior to the time of graduation will be established by his or her dean.

The following degrees are offered by the Texas A&M University for the satisfactory completion of resident study in the appropriate curriculum at Texas A&M University at Galveston College of Geosciences and Maritime Studies.

Bachelor of Science with a major in Marine Biology
Bachelor of Science with a major in Marine Engineering
Bachelor of Science with a major in Marine Fisheries
Bachelor of Science with a major in Marine Sciences
Bachelor of Science with a major in Marine Transportation
Bachelor of Science with a major in Maritime Administration
Bachelor of Science with a major in Maritime Systems Engineering

REQUIREMENTS FOR A BACCALAUREATE DEGREE

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

1. The student must complete, with at least a C average (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. **Marine Biology, Marine Biology with License Option, and Marine Fisheries majors must make a C or higher in all major courses (BIOL, MARB, MARF, MICR), in MARS 360 (Biochemistry) and in courses for their selected option (Vertebrate Zoology, Coastal and Wetlands or General Biology) taken at TAMU, TAMUG or transferred and substituted for courses in the degree plan curriculum.** Grades of F or WF shall be included, grades of WP and Q shall be excluded.
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. Marine Biology, Marine Biology with License Option and Marine Fisheries majors must make a C or higher in all major courses (BIOL, MARB, MARF, MICR), in MARS 360 (Biochemistry) and in courses for their selected option (Vertebrate Zoology, Coastal and Wetlands or General Biology) taken at TAMU, TAMUG or transferred and substituted for courses in the degree plan curriculum.
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 after consideration of his or her completed record.
7. The student must have settled all financial obligations to the University.
8. The student must satisify core curriculum requirements.
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 to receive his/her diploma at commencement.

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.

10. Students who have not cleared incomplete grades or filed official transcripts for transfer credit taken the last semester have until the fifth class day of the next term to complete these requirements. If this deadline is missed, the diploma will be destroyed and the student must reapply for graduation.

RESIDENCE REQUIREMENT

A candidate for a baccalaureate degree at Texas A&M University at Galveston must successfully complete a minimum of 36 semester hours of 300 and/or 400 level course work in residence at Texas A&M University at Galveston or College Station to obtain the degree. A minimum of 12 of these semester hours must be in the major. Candidates for license option curricula must complete the last two years of the minimum three-year training requirement at Texas A&M University at Galveston and participate in the Corps of Cadets. Students enrolled in a license option curriculum are required to participate in the Corps of Cadets every semester they are registered. Generally this will be eight regular semesters and three summer cruises. To fulfill degree requirements for graduation that semester, transfer courses taken during a student's final semester must be completed and cited on an official transcript in the Admissions and Records Office by 12 p.m. Thursday preceding commencement. A student pursuing a baccalaureate degree at Texas A&M University at Galveston may transfer a total of 66 semester credit hours from two-year institutions. Students who have attended a public two-year institution in Texas may refer to the Course Description section of this catalog for the Texas Common Course Numbers for transferability of courses.

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, in the first week of the semester or 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 student will receive one diploma with both majors listed on it. 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 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 the department head of the second degree plan program stating the courses required for the second degree. The student will pay two diploma fees and receive two diplomas.

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 TAMUG Fiscal 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 Fiscal 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 1993-94 are approximations and are subject to change because of economic conditions, legislative requirements or actions of the Texas A&M University System Board of Regents.

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)	$390.00	$390.00	$156.00
Student Services	98.00	98.00	49.00
Room and Board (7-Day Plan)*	1689.23	1689.23	610.54
Room Deposit	200.00		
General Property Deposit	10.00		
Identification Card	5.00		**3.00
Building Use Fee	150.00	150.00	60.00
Computer Use Fee	60.00	60.00	24.00
Student Center Complex Fee	10.00	10.00	18.00
Health Center Fee	25.00	25.00	12.50
Total	$2,637.23	$2,422.23	$ 933.04

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

For license option curriculum (based on fifteen hours during the regular school year or 4 hours for summer cruise:

	Fall Semester	Spring Semester	Summer Cruise
Tuition	$487.50	$487.50	$130.00
Student Services	98.00	98.00	32.68
Room and Board (7-Day Plan)*	1689.23	1689.23	1215.23
Room Deposit	200.00		
General Property Deposit	10.00		
Identification Card	5.00		**3.00
Cruise Fee			510.00
Computer Use Fee	60.00	60.00	
Building Use Fee	150.00	150.00	40.00
Student Center Complex Fee	10.00	10.00	5.00
Health Center Fee	25.00	25.00	25.00
Total	$2,734.73	$2,519.73	$1,957.91

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

DROP/ADD REFUNDS

A student may drop 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. A student may add courses during the first 7 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. 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 six dollars ($26.00) 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 sixty-two dollars ($162) per semester credit hour.

Students enrolled in license option curricula, whether resident or non-resident, pay $32.50 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. 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.

Application Fee

Effective for the Spring, 1994 semester, students who make new application to the University pay a $25.00 fee.

Student Services Fee

The student service fee is required of all students at the rate of $8.17 per semester credit hour not to exceed $98 per semester or $49 per summer term. Student services fees finance recreational activities, student government, student publications, student organizations, campus movies, intramural athletic programs, and social activities. The fee also provides counseling, graduate placement, and financial aid services.

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 supports the provision of advanced materials to

accepted students, the conduct of professional orientations and state mandated diagnostic testing.

Computer Use Fee

The computer use fee is charged at the rate of $4 per regular semester credit hour or $2 per summer semester credit hour. 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 nine 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, $635 + $56.96 tax
7-Day Plan	3 meals each day, $790 + $61.23 tax
Summer	
5-Day Plan	3 meals each day, Monday-Friday, $245 + $18.99 tax
7-Day Plan	3 meals each day, $265 + $20.54 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 TAMUG, 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 TAMUG policy for a student graduating or withdrawing from school, upon request, after clearance by the Residential Services and the Student Services Offices. The balance of the refund due will be issued through the Fiscal 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 $10 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 campus.

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.

Engineering Equipment Access Fee

A student registering in certain engineering courses may be required to pay a $70 Engineering Equipment Access Fee. The fee will not exceed $70 per course or $210 per semester.

Parking Permit

All students parking an automobile or motorcycle on the campus must pay a fee of $20.00 per regular semester and summer term. Boat permits will be issued for a fee of $30 per regular semester and $15 per 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 for a fee of $15. Eligibility requirements can be obtained through the Fiscal Office.

OTHER EXPENSES

Textbooks and Supplies: The cost of textbooks and supplies will vary with the quality of items purchased and with the course of study 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.

Shuttle Bus Fee: Students who wish to use the Shuttle Bus pay $20 per semester.

Other Items: Students may wish to purchase the Voyager, the campus annual. Tickets to Texas A&M home games may also be purchased at registration. 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 Fiscal 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 tuition and laboratory 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.

Non-resident students who are awarded competitive academic scholarships of at least $500 by the TAMUG Scholarship and Awards Committee for the academic year are entitled to pay Texas resident tuition for the academic year that the scholarship covers. The non-resident status is unchanged.

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.

FINANCIAL AID RECIPIENTS: Students receiving financial aid may owe some portion of any refund back to the appropriate federal or state programs. Financial aid refunds are determined prior to the release of any funds to the student who has withdrawn.

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 Fiscal Office is returned unpaid by the bank on which it is drawn, the person presenting it will be required to pay a penalty of $25 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 TAMUG. 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 handicapped and multicultural services.

STUDENT FINANCIAL ASSISTANCE

The purpose of student financial aid at TAMUG is to assist students in meeting the reasonable costs of their education. Financial aid is available to eligible U.S. citizens and non-resident aliens who are enrolled in degree granting programs making satisfactory academic progress towards a baccalaureate degree.

Financial aid may include federal and state grants, scholarships, work-opportunities, and student loans. Students submitting a complete application will be considered for all types of need-based assistance.

To apply for financial aid please submit the following items:

- Free application for Federal Student Aid (FAFSA). On question 32a list Texas A&M at Galveston.
- TAMUG Financial Aid Questionnaire.
- Federal Student Aid Report (SAR).
- Transfer students must submit a Financial Aid Transcript from every school previously attended even if you did not receive financial aid.
- If your application is selected for Verification, you will be asked to substantiate the information you reported on the FAFSA.

Costs of Attendance: TAMUG uses average costs of attendance in determining financial need. These costs include tuition and fees (30 hours per year FTE), room and board, books and supplies, personal expenses, and transportation. Additional costs may be added for child care or disability related expenses. There are five categories of student budgets: Texas resident(9mo), non-Texas resident(9mo), cadet(9mo), cadet(12mo), and new cadet(12mo).

SATISFACTORY ACADEMIC PROGRESS POLICY: The purpose of the TAMUG Satisfactory Academic Progress Policy for financial aid is to ensure that students benefiting from financial assistance make reasonable and consistent progress towards a baccalaureate degree. TAMUG's policy is consistent with U.S. Department of Education and Texas Higher Education Coordinating Board guidelines. The policy measures both qualitative and quantitative progress and is

the applicable minimum standard for all types of financial assistance awarded by TAMUG.

Satisfactory academic progress for financial aid is defined as: the maintenance of a cumulative GPR of 2.0 or greater and the successful completion of at least 24 credit hours per academic year.

Students who do not meet the standard will be placed on financial aid probation for the next semester enrolled; they may receive financial assistance in the probationary semester. If in the probationary semester the student achieves a 2.5 GPR and completes every class attempted, then probation is continued on a semester by semester basis until the student's cumulative GPR is greater than 2.0. If the student does not achieve a 2.5, then financial aid eligibility is terminated.

Financial aid termination may be appealed in writing to the Director of Financial Aid. Appeals are considered on a case by case basis due to extenuating circumstances.

Freshmen, matriculating as full time students, shall have six years of aid eligibility in which to complete a degree. Transfer student eligibility will be prorated accordingly.

FINANCIAL AID AVAILABLE:

GRANT PROGRAMS: Grants are awarded based on financial need. Grants do not have to be repaid. TAMUG participates in these programs: Federal Pell Grant, Federal Supplemental Educational Opportunity Grant, State Student Incentive Grant, State Scholarship for Ethnic Recruitment, Texas Tuition Scholarship, and Texas Public Education Grant.

SCHOLARSHIPS: Scholarships are generally based on academic achievement and leadership. The TAMUG Scholarship and Awards Committee evaluates applicants and makes awards in the spring for the following academic year.

A limited number of non-resident students awarded a competitive TAMUG scholarship valued at $500 or more are eligible to pay resident tuition.

All students are encouraged to apply for scholarships offered in their hometown's or from national sources. Information regarding such sources is available from high school counselors and reference materials in public libraries.

Opportunity Award Scholarships are made to freshmen who have not previously attended college. To apply, a student must be regularly admitted to the university and be a U.S. citizen or permanent resident. You must complete a scholarship application available from the Financial Aid Office, send SAT or ACT scores to the Admissions Office prior to February 1 and submit a high school transcript reflecting all grades through the end of the fall semester of the senior year.

Academic Excellence Awards are made to continuing Sophomores, Juniors and Seniors who have established an academic record with TAMUG. Full time students who have achieved a GPR of 2.50 or higher are eligible to apply. Applications are available in the Financial Aid Office and are due by March 1 for consideration for the following academic year.

PART-TIME STUDENT EMPLOYMENT: All students who are making satisfactory academic progress are eligible to work on campus without regard to financial need. The Personnel Office coordinates both on and off campus employment.

Interested students may seek positions through the job listings posted outside of the Personnel Office. Student employment is limited to 20 hours per week, and there are no fringe benefits, and students must maintain a 2.0 GPR. The Financial Aid Office monitors the satisfactory academic progress of all student employees.

A limited number of Federal and Texas Work-Study awards are made each year. Students awarded from either source still must seek their positions through the regular student employment process.

STUDENT LOAN PROGRAMS: TAMUG participates in these loan programs: Federal Perkins, Federal Stafford Student Loan, Federal Unsubsidized Stafford Student Loan, Federal Parent Loan for Undergraduate Students, Federal Supplemental Loans for Students and College Access Loans . All loans require an application and a promissory note. Credit reviews may be performed on Federal PLUS and Texas CAL loans. New borrowers are required to attend pre-loan counseling before receiving the first disbursement of any loan.

DISPOSITION OF STUDENT AID FUNDS: Students awarded grants or TAMUG scholarships will have funds credited to their accounts on the first day of class in the Fiscal Office. Scholarship awards sent to the Financial Aid Office indicating the recipient and made payable to TAMUG will be credited to the student's account. Student employees are paid bi-weekly. Student loan checks are made payable to the student and are available in the Fiscal Office. Veterans Benefits are paid directly to the student.

Enrollment is verified prior to the release of any financial aid. Fiscal refunds due to financial aid credits are made after the 12th class day. Freshman, enrolled in their first semester of study will have the proceeds of their first loan disbursement held for 30 days in accordance with federal law.

Students should come to campus prepared to pay for deposits, books, supplies, sundries, and for Cadets uniforms.

REFUND AND REPAYMENT POLICY: Students who receive financial aid and withdraw, or are expelled from TAMUG, may owe a portion of any refund back to one or more financial aid programs. In accordance with federal law, refunds are made to financial aid programs before to students.

The term refund refers to a refund of school charges (generally tuition, fees, room and board) made to a student due to their withdrawal. The Fiscal Office is responsible for calculating the gross amount of a refund using the policy published in the catalog. The Financial Aid Office reviews refunds to determine if, and in what amounts, funds should be returned to federal or state financial aid programs in accordance with applicable federal and state regulations.

Funds returned to financial aid programs will be credited based on the prioritized list below:

FFEL Loans(Stafford, SLS, PLUS)
Federal Perkins Loan
Federal Pell Grant
Federal SEOG
State aid programs
Private scholarships
The student

A student may also owe a repayment to a financial aid program due to withdrawal from TAMUG. Repayments result from cash disbursement of financial aid that the student is not entitled to if they withdraw.

Students who have borrowed money are required to receive exit loan counseling when they graduate, withdraw, or drop below 1/2 time course load.

VETERANS BENEFITS: The Financial Aid Office files claims for Veterans Benefits verifying a veteran's enrollment at TAMUG. Students are asked to submit the following documents to substantiate their claim: Certified copy of their DD-214, showing an Honorable discharge from service. A signed Degree Plan for your major indicating all of the courses necessary to receive that degree. VA form 22-1990 to establish eligibility or: VA form 22-1995 to transfer their eligibility. Other documentation may be required. Enrollment is certified and claims are forwarded to the appropriate VA regional office. Adjudication may take 4 to 6 weeks; therefore, VA students should come to TAMUG ready to pay the initial costs of enrollment. Veterans are required to maintain a cumulative GPR of 2.0 or greater and successfully complete 24 credit hours per year to maintain eligibility. Students failing to meet the standard are placed on probation for one semester. Students who achieve a 2.0 GPR in the probationary semester are eligible for a second probationary semester. Students who do not are reported to the V.A. as ineligible.

HAZLEWOOD TUITION EXEMPTION: Texas residents who have fully exhausted all potential Veterans Benefits and are not eligible for any other federal or student grant benefits (including Pell, SEOG, and SSIG) should contact the Financial Aid Office to determine if they are eligible for a Hazlewood tuition exemption.

Inquiries regarding financial aid or veterans benefits may be addressed to the Director, Financial Aid Office, Texas A&M - Galveston, P.O. Box 1675, Galveston, TX 77553-1675. (409) 740-4500.

CAREER PLANNING AND PLACEMENT

The Office of Career Planning and Placement provides a wide variety of assistance to graduating students seeking professional employment. Its services include job search information, career planning and corporate recruiting.

The Office of Career Planning and Placement hosts recruiters from different employing organizations. It also provides individual and group career counseling services to insure that Texas A&M University at Galveston graduates are well informed, prepared for the job search and availed of every opportunity to choose from professional alternatives. There is also a career resource room which contains a variety of information on careers and job search techniques. Each fall the office hosts a Career Exploration Day, targeted to the freshmen, sophomore, and junior level students. This day is an opportunity for students to explore future career options.

The use of the services provided by the Career Planning and Placement office is limited to students and former students of Texas A&M University. Students who wish to use these services should register with the office as early as their sophomore year and avail themselves of the available resources. Before participating in on-campus job interviews, students are required to complete a credentials file.

Appointments are necessary for individual counseling. All other services are available during regular office hours.

COUNSELING

Students who need counseling concerning non-academic problems or vocational choices should seek assistance from the Director of Counseling in Student Services.

Educational, career, and personal counseling are provided for all students. 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 Campus 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. With limited exceptions, all Texas A&M University at Galveston students are required to live in campus housing and participate in the board plan if campus housing is available. Approximately fifty percent of the undergraduate students are housed on campus, and returning students are given priority in granting permission to live off campus. **Campus residents accepting housing in the Fall semester are required to sign a nine-month contract and are not permitted to move off campus for the Spring semester.**

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 Fiscal Office. Rooms are assigned in accordance with the date on which the housing application and room deposit are received in the Fiscal 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. LO students are housed separately from NLO students.

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, counseling, and graduate placement 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 Drama Club, and the Endangered Sea Species 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 provides each student with the opportunity to participate in regularly organized activities. Co-rec teams are organized in flag football, basketball, softball, and volleyball. Texas A&M University at Galveston also has softball, volleyball, and rugby teams which compete in local leagues. The Campus Sail Team competes 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 TAMUG 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 military 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 encouraged to apply for 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's Office, 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 Commandant's 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. 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. 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 a Coast Guard approved color vision test.

Engineer Cadet - Minimum vision of 20/200 in each eye correctible to 20/50 in each eye. Vision beyond these parameters requires a waiver. 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 entering the Corps. Periodic random tests are 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 screening may result in dismissal from the Corps of Cadets and LO programs.

6. The U.S. Coast Guard presently requires payment for all documents and tests that are required for license and graduation.

EXAMINATION REQUIREMENT AS A CONDITION FOR GRADUATION

While not a University academic requirement, in accordance with federal regulations and the University's participation agreement with the U.S. Maritime Administration, students who enter the U.S. Merchant Marine Licensing program in the fall of 1991 (and after), with the expected graduation date of spring/summer 1995, will be required to pass the examination administered by the Coast Guard for the issuance of a license as a condition of graduation from Texas A&M. Any student who graduates in 1995 or in subsequent years, but who entered the maritime program before the fall of 1991, will not be affected.

Students in the class of 1995 who are found to be not physically qualified for Coast Guard licensing just prior to graduation may be exempt from the requirement.

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. Students must also 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 and three summer cruises.

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 $300 per month provided through the Maritime Administration. Incentive payments 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.

Enrollment in the SIP program requires the cadet to accept midshipman status and to apply for, and accept if tendered, a commission in the Merchant Marine Reserve/United States Naval Reserve (MMR/USNR). The cadet must also meet physical qualifications for commissioning at the time of graduation.

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:

- Maintain the commission for six years.
- Sail on their applicable license at sea for four months each consecutive two-year period for eight years.
- Complete two weeks of active duty training in the Navy every year for six years.
- 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.

The U.S. Coast Guard MARTP (Maritime Academy Reserve Training Program) program allows Cadets to enlist as a seaman (E-3) in the Coast Guard Reserve at the end of his or her freshman or sophomore year and receive reserve pay for the time spent in drill, Montgomery GI Bill tuition benefits, and eligibility for Maritime Administration Student Incentive Pay (MARAD SIP). For information about this program, contact TAMUG Naval Science department.

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. Students 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 the student is 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 advises and counsels 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.

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 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.

Three options are offered. These are a vertebrate zoology option, a coastal and wetlands ecology option and a general biology option. Students will declare an option at the end of their curriculum sophomore year (as opposed to academic sophomore year) and will then be assigned to an advisor whose teaching and research activities lie within that option. Students will be required to choose three electives from courses within their chosen option and to chose two electives from courses within the other options. The electives must be five actual classes (problems courses excluded).

Marine Biology majors must make a C or higher in all major courses (BIOL, MARB, MARF, MICR), MARS 360 (Biochemistry) and in courses for their selected option (Vertebrate Zoology, Coastal and Wetlands, or General Biology) taken at TAMU, TAMUG or transferred and substituted for courses in the degree plan curricula. In addition, Marine Biology majors must make a C or higher in BIOL 113 before they can enroll in BIOL 114; and they must make a C or higher in BIOL 114 before they can take any major courses (MARB, MARF, MICR), MARS 360 ((Biochemistry), and in courses for their selected option (Vertebrate Zoology, Coastal and Wetlands, or General Biology) taken at TAMU or TAMUG.

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
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
MARB 303 Biostatistics*#	(2-2)	3
PHYS 201 College Physics	(3-3)	4
Elective in Computer Science#		3
Elective in Earth Science#	(3-3)	4
		Total 18

Spring Semester	*(Th-Pr)*	*Cr*
CHEM 228 Organic Chemistry II	(3-0)	3
CHEM 238 Organic Chemistry Lab II	(0-3)	1
MARB 315 Natural History of Vertebrates*#	(3-3)	4
PHYS 202 College Physics	(3-3)	4
POLS 207 State and Local Government	(3-0)	3
Elective in Social Science	(3-0)	3
		Total 18

JUNIOR YEAR

Fall Semester	*(Th-Pr)*	*Cr*
ENGL 301 Technical Writing	(3-0)	3
MARB 408 Marine Botany*	(3-3)	4
MARB 435 Invertebrate Zoology*	(3-3)	4
MARS 360 Biochemistry*	(3-0)	3
Elective - Option*		3
		Total 17

Spring Semester	*(Th-Pr)*	*Cr*
MARB 301 Genetics*	(3-3)	4
MARB 310 Cell Biology*	(3-3)	4
Elective - Option*		3
Elective - Option*		4
Elective in Humanities		3
		Total 18

SENIOR YEAR

Fall Semester	*(Th-Pr)*	*Cr*
Elective - Option*		4
MARB 481 Seminar in Marine Biology*	(1-0)	1
MARB 420 Physiology*	(3-3)	4
Elective Option*		3
Elective		3
Elective in Social Science		3
		Total 18

Spring Semester	*(Th-Pr)*	*Cr*
MARB 425 Marine Ecology*	(3-3)	4
MARB 482 Seminar in Marine Biology	(1-0)	1
MARB 450 Developmental Biology*	(3-3)	4
Elective in Humanities		3
Elective		3
		Total 15

Total Hours - 138‡

NOTE: All electives must be chosen in consultation with, and approved by, the student's academic advisor. Electives in humanities to be chosen from fine arts, theater arts, humanities, foreign language, history, literature, philosophy, archaeology or geography. Elective in social science to be chosen from cultural anthropology, geography, political science, psychology, sociology, applied ethics, economics.

* - Indicates required courses in the Marine Biology major. These courses will be used to compute the major GPR.

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

*** - Other calculus, or logic elective may be substituted with approval.

- These classes may be taken either sophomore year semester.

‡ - The total hours may be increased if the student is required to take a foreign language.

ELECTIVE COURSES WITHIN OPTIONS

Vertebrate Zoology Option

MARB 311	Ichthyology
MARB 312	Field Ichthyology
MARB 335	Fish Physiology
MARB 401	Biology of Marine Mammals
WFSC 315	Herpetology*
WFSC 400	General Mammalogy*
WFSC 402	Ornithology*
WFSC 417	Biology of Fishes*
ZOOL 318	Chordate Anatomy*

General Biology Option

MARB 325	Biospeleology
MARB 330	Physiological Ecology
MARB 410	Animal Behavior
MARB 412	Sociobiology of Reproduction
MICR 351	Microbiology

Coastal and Wetlands Option

AGRO 301	Soils*
MARB 300	Scientific Methods
MARB 320	Marine Food Chains
MARB 336	Plant Physiology
MARB 430	Coastal Plant Ecology
MARB 431	Wetlands Ecology
MARB 436	Marine Biology of the Upper Texas Coast
MARS 306	Stratigraphy and Sedimentation
MARS 340	Geochemistry
OCNG 401	Introduction to Oceanography

Other Elective Courses

MARB 305	Use of SAS in Marine Biology
MARB 350	Methods in Research Diving

*** Courses currently available only at TAMU - College Station.**

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.

Marine Biology License Option majors must make a C or higher in all major courses (BIOL, MARB, MARF, MICR), MARS 360 (Biochemistry) and in courses for their selected option (Vertebrate Zoology, Coastal and Wetlands, or General Biology) taken at TAMU, TAMUG or transferred and substituted for courses in the degree plan curricula. In addition, Marine Biology majors must make a C or higher in BIOL 113 before they can enroll in BIOL 114; and they must make a C or higher in BIOL 114 before they can take any major courses (MARB, MARF, MICR), MARS 360 ((Biochemistry), and in courses for their selected option (Vertebrate Zoology, Coastal and Wetlands, General Biology, or License Option) taken at TAMU or TAMUG.

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 300 Scientific Methods*	(1-3)	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*	(2-2)	3
MARB 310 Cell Biology*	(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 435 Invertebrate 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. Electives in humanities to be chosen from fine arts, theater arts, humanities, foreign language, history, literature, philosophy, archaeology or geography. Elective in social science to be chosen from cultural anthropology, geography, political science, psychology, sociology, applied ethics, economics.

* - Indicates required courses in the Marine Biology License Option major. These courses will be used to compute the major GPR.

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

*** - Other calculus, or logic elective may be substituted with approval.

‡ - The total hours may be increased if the student is required to take a foreign language.

Curriculum in

MARINE ENGINEERING (MARE)

The Marine Engineering curriculum is a thermal power oriented specialization of a classical Mechanical Engineering program. A thorough preparation in mathematics, science, and basic engineering courses is the foundation for further study in the design of ship propulsion plants and electrical power generation and distribution equipment.

Marine Engineering focuses on cycles, principles and methods used to convert the energy in fossil fuels into useful power and the design of the major components and support systems in the power cycle. Courses in marine engineering are supplemented with studies in naval architecture and maritime application of electrical engineering fundamentals. The students' education is enhanced through the use of computer simulation of propulsion plants and direct observation of marine machinery aboard the university's training ship. Graduates can obtain employment in shipyards, with marine engineering consulting firms, electric power utilities and other industries dealing with the energy conversion processes, equipment design and manufacturing, or sales.

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
MATH 151 Engineering Mathematics	(3-2)	4
		Total 16

Spring Semester	(Th-Pr)	Cr
CHEM 102 Fundamentals of Chemistry II	(3-0)	3
CHEM 112 Fundamentals of Chemistry Lab II	(0-3)	1
ENGR 109 Engineering Problem Solving and Computing	(2-3)	3
MATH 161 Engineering Mathematics II	(3-0)	3
PHYS 218 Mechanics	(3-3)	4
NAUT 103E Maritime Orientation and Lifesaving	(2-3)	3
		Total 17

SOPHOMORE YEAR

Fall Semester	(Th-Pr)	Cr
ENGL 203 Introduction to Literature	(3-0)	3
MARE 205 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
POLS 206 American National Government	(3-0)	3
		Total 19

Spring Semester	(Th-Pr)	Cr
MARE 206 Engineering Mechanics II	(3-0)	3
MARE 209 Mechanics of Materials	(3-0)	3
MATH 308 Differential Equations	(3-0)	3
MARE 207 Electrical Circuits	(3-3)	4
MARE 304 Marine Thermodynamics II†	(3-0)	3
MARE 180 Basic Machine Shop Techniques	(0-3)	1
MARE 280 Welding Techniques	(0-3)	1
		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 Electronic Circuits	(3-3)	4
MARE 309 Marine Construction Materials†	(3-3)	4
MARE 310 Engineering Analysis for Marine Engineers†	(3-0)	3
		Total 18

Spring Semester	(Th-Pr)	Cr
HIST 106 History of the U.S.*	(3-0)	3
MARE 308 Electrical Machinery	(3-2)	4
MARE 319 Introduction to Design†	(1-3)	2
MARE 410 Marine Power Plants†	(2-2)	3
MARE 412 Principles of Naval Architecture I†	(3-0)	3
MARE 415 Economics of Marine Engineering System Design	(3-0)	3
		Total 18

SENIOR YEAR

Fall Semester	(Th-Pr)	Cr
ENGL 301 Technical Writing	(3-0)	3
MARE 411 Marine Machine Design†	(3-0)	3
MARE 413 Principles of Naval Architecture II†	(3-2)	3
MARE 414 Automated Systems and Underwater Robotics	(3-2)	4
Elective in Humanities		3
Elective in Social Science		3
		Total 19

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
POLS 207 State and Local Government	(3-0)	3
		Total 14

Total Hours - 139 ‡

NOTE: All electives must be chosen in consultation with, and approved by, the student's academic advisor. Electives in humanities to be chosen from fine arts, theater arts, humanities, foreign language, history, literature, philosophy, archaeology or geography. Elective in social science to be chosen from cultural anthropology, geography, political science, psychology, sociology, applied ethics, economics.

† - Indicates required courses in the Marine Engineering major. These courses will be used to compute the major GPR.

* - 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.

‡ The total hours may be increased if the student is required to take a foreign language.

Curriculum in

MARINE ENGINEERING WITH A LICENSE OPTION

This 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. The program builds on the Marine Engineering curriculum with three summer cruises on the University's training ship and academic year training in first aid, marine firefighting and shipboard maintenance. Upon successful completion of the program, the student will qualify to sit for the U.S. Coast Guard license examination to serve as a Third Assistant Engineer on ocean-going steam or motor vessels of any gross tonnage and any power rating. Graduates can obtain employment in any of the fields open to graduates of the Marine Engineering program, as well as the additional opportunity for employment with shipping firms in sea-going engineering positions or shore support positions that require the additional training and qualification of the license.

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
MATH 151 Engineering Mathematics	(3-2)	4
		Total 16

Spring Semester	(Th-Pr)	Cr
CHEM 102 Fundamentals of Chemistry II	(3-0)	3
CHEM 112 Fundamentals of Chemistry Lab II	(0-3)	1
ENGR 109 Engineering Problem Solving and Computing	(2-3)	3
MATH 161 Engineering Mathematics II	(3-0)	3
PHYS 218 Mechanics	(3-3)	4
NAUT 103E Maritime Orientation and Lifesaving	(2-3)	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 205 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
POLS 206 American National Government	(3-0)	3
		Total 19

Spring Semester	(Th-Pr)	Cr
MARE 206 Engineering Mechanics II	(3-0)	3
MARE 209 Mechanics of Materials	(3-0)	3
MATH 308 Differential Equations	(3-0)	3
MARE 207 Electrical Circuits	(3-3)	4
MARE 304 Marine Thermodynamics II†	(3-0)	3
MARE 180 Basic Machine Shop Techniques	(0-3)	1
MARE 280 Welding Techniques	(0-3)	1
		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
MARE 301 Heat Transfer†	(3-2)	4
MARE 307 Electronic Circuits	(3-3)	4
MARE 309 Marine Construction Materials†	(3-3)	4
MARE 310 Engineering Analysis for Marine Engineers†	(3-0)	3
		Total 18

Spring Semester	(Th-Pr)	Cr
HIST 106 History of the U.S.*	(3-0)	3
MARE 308 Electrical Machinery	(3-2)	4
MARE 319 Introduction to Design†	(1-3)	2
MARE 410 Marine Power Plants†	(2-2)	3
MARE 412 Principles of Naval Architecture†	(3-0)	3
MARE 415 Economics of Marine Engineering Systems Design	(3-0)	3
		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
ENGL 301 Technical Writing	(3-0)	3
MARE 411 Marine Machine Design	(3-0)	3
MARE 413 Principles of Naval Architecture II†	(3-0)	3
MARE 414 Automated Systems and Underwater Robotics	(3-2)	4
NVSC 200 Merchant Marine Officer I	(3-0)	3
Elective in Social Science		3
		Total 19

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
NVSC 300 Merchant Marine Officer II	(3-0)	3
POLS 207 State and National Government	(3-0)	3
		Total 17

SHORESIDE SUMMER		
Elective in Humanities		3
		Total 3

Total Hours - 157 ‡

NOTE: All electives must be chosen in consultation with, and approved by, the student's academic advisor. The elective in humanities is to be chosen from fine arts, theater arts, humanities, foreign language, history, literature, philosophy, archaeology or geography. The elective in social science is to be chosen from cultural anthropology, geography, political science, psychology, sociology, applied ethics, economics.

† - Indicates required courses in the Marine Engineering License Option major. These courses will be used to compute the major GPR.

* - 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.

‡ - The total hours may be increased if the student is required to take a foreign language.

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.

Marine Fisheries majors must make a C or higher in all major courses (BIOL, MARB, MARF, MICR), MARS 360 (Biochemistry) and in courses for their selected option (Vertebrate Zoology, Coastal and Wetlands, or General Biology) taken at TAMU, TAMUG or transferred and substituted for courses in the degree plan curricula. In addition, Marine Fisheries majors must make a C or higher in BIOL 113 before they can enroll in BIOL 114; and they must make a C or higher in BIOL 114 before they can take any major courses (MARB, MARF, MICR), MARS 360 ((Biochemistry) taken at TAMU or TAMUG.

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 300 Scientific Methods	(1-3)	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*	(2-2)	3
PHYS 202 College Physics	(3-3)	4
		Total 19

JUNIOR YEAR

Fall Semester	(Th-Pr)	Cr
MICR 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 482 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 elective in humanities is to be chosen from fine arts, theater arts, humanities, foreign language, history, literature, philosophy, archaeology, and geography. The elective in social science is to be chosen from cultural anthropology, geography, political science, psychology, sociology, applied ethics and economics.

* Indicates required courses in the Marine Fisheries major. These courses will be used to compute the major GPR.

** - 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, with approval.

‡ - The total hours may be increased if the student is required to take a foreign language.

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, or to take additional science courses to prepare for admission to graduate school.

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	(3-3)	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	(2-2)	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
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 in Humanities		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. Nine of the twelve credits of undesignated electives in the junior and senior years must be advanced work in science and mathematics. The elective in humanities is to be chosen from fine arts, theater arts, humanities, foreign language, history, literature, philosophy, archaeology or geography. The elective in social science is to be chosen from cultural anthropology, geography, political science, psychology, sociology, applied ethics or economics.

* - 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.

‡ - The total hours may be increased if the student is required to take a foreign language.

† - Indicates required courses in the Marine Sciences major. These courses will be used to compute the major GPR. Also, if any upper level MARS or OCNG elective courses are taken, they will be used in the major GPR.

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. Students who wish to enter a physical science graduate program will need to take additional course work in science and mathematics.

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 State and Local 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	(2-2)	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 elective in humanities is to be chosen from fine arts, theater arts, humanities, foreign language, history, literature, philosophy, archaeology or geography. The elective in social science is to be chosen from cultural anthropology, geography, political science, psychology, sociology, applied ethics or economics.

† - Indicates required courses in the Marine Sciences License Option major. These courses will be used to compute the major GPR. Also, if any upper level MARS or OCNG elective courses are taken, they will be used in the major GPR.

* - 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.

‡ - The total hours may be increased if the student is required to take a foreign language.

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 elective in humanities is to be chosen from fine arts, theater arts, humanities, foreign language, history, literature, philosophy, archaeology or geography.

‡ - Indicates required courses in the Marine Transportation major. These courses will be used to compute the major GPR.

† - The total hours may be increased if the student is required to take a foreign language.

* - 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.

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
		Total 15

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 - 133†

NOTE: All electives must be chosen in consultation with, and approved by, the student's academic advisor. The elective in humanities to be chosen from fine arts, theater arts, humanities, foreign language, history, literature, philosophy, archaeology or geography.

† - The total hours may be increased if the student is required to take a foreign language.

‡ - Indicates required courses in the Maritime Administration major. These courses will be used to compute the major GPR.

* - 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 which must be a laboratory.

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, or coastal engineering. Since the design of coastal and offshore facilities or marine systems encompasses many engineering fields, it is essential that the program include the fundamentals of the physical sciences and mathematics, as well as the engineering aspects that constitute the design of marine facilities. The Maritime Systems Engineering program includes courses in physical sciences, mathematics, marine engineering, civil engineering, and ocean engineering. 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 sophomore years.

The Maritime Systems Engineering Department has two laboratories, the Fluid Dynamics Laboratory and the Ocean Measurements Laboratory. The Ocean Measurements Laboratory includes current meter, tidal gauge, and a wave flume equipped with a flapper wavemaker for laboratory wave simulations. The Fluid Dynamics Laboratory includs conventional hydraulic work benches as well as a Laser Doppler Anemometer System to demonstrate the fundamental principles of flow measurements.

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
MATH 151 Engineering Mathematics	(3-2)	4
		Total 16

Spring Semester	(Th-Pr)	Cr
CHEM 102 Fundamentals of Chemistry II	(3-0)	3
CHEM 112 Fundamentals of Chemistry Lab II	(0-3)	1
ENGR 109 Engineering Problem Solving and Computing	(2-3)	3
MATH 161 Engineering Mathematics II	(3-0)	3
PHYS 218 Mechanics	(3-3)	4
Social Science Elective		3
		Total 17

SOPHOMORE YEAR

Fall Semester	(Th-Pr)	Cr
ENGL 203 Introduction to Literature	(3-0)	3
MARE 205 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
POLS 206 American National Government	(3-0)	3
		Total 19

Spring Semester	(Th-Pr)	Cr
MARE 206 Engineering Mechanics II	(3-0)	3
MARE 209 Mechanics of Materials	(3-0)	3
MATH 308 Differential Equations	(3-0)	3
ECON 203 Principles of Economics	(3-0)	3
GEOL 320 Geology for Civil Engineers	(2-3)	3
Humanities Elective		3
		Total 18

JUNIOR YEAR

Fall Semester	(Th-Pr)	Cr
CVEN 311 Fluid Dynamics ‡	(3-0)	3
CVEN 345 Theory of Structures‡	(3-0)	3
HIST 106 History of the U.S.*	(3-0)	3
MARE 309 Marine Construction Materials	(3-3)	4
MARE 310 Engineering Analysis for Marine Engineers	(3-0)	3
		Total 16

Spring Semester	(Th-Pr)	Cr
CVEN 344 Reinforced Concrete Structures‡	(2-3)	3
CVEN 346 Structural Steel Design‡	(2-3)	3
MASE 336 Flow Measurement Fundamentals	(2-2)	3
MASE 301 Dynamics of Waves and Structures‡	(3-0)	3
OCEN 300 Ocean Engineering Wave Mechanics‡	(3-0)	3
OCEN 462 Hydromechanics‡	(3-0)	3
		Total 18

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 Hydrodynamics of the Coastal Zone‡	(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 401 Measurements in the Ocean‡	(3-0)	3
MASE 405 Finite Element Analysis in Engineering Design‡	(3-0)	3
MASE 407 Design of Ocean Engineering Facilities‡	(1-6)	4
MASE 410 Measurements in the Ocean Lab	(0-3)	1
POLS 207 State and Local Government	(3-0)	3
		Total 14

Total Hours - 133†

NOTE: All electives must be chosen in consultation with, and approved by, the student's academic advisor. Electives in humanities to be chosen from fine arts, theater arts, humanities, foreign language, history, literature, philosophy, archaeology or geography. Elective in social science to be chosen from cultural anthropology, geography, political science, psychology, sociology, applied ethics, economics.

† - The total hours may be increased if the student is required to take a foreign language.

‡ - Indicates required courses in the Maritime Systems Engineering major. These courses will be used to compute the major GPR.

* - 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.

COURSE DESCRIPTIONS

All undergraduate courses offered at the University are described on the following pages and are listed by disciplines, arranged alphabetically. The number in parenthesis at the end of some listings is the Texas Common Course Number from the Texas Common Course Numbering System.

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. (ACCT 2301)

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. (ACCT 2302)

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

ANTHROPOLOGY (ANTH)

210. Social and Cultural Anthropology. (3-0). Credit 3. Evolution of cultures; differences, similarities and effects of material and nonmaterial culture on economic, social and political organization. (ANTH 2351)

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. (BIOL 1306)

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. (BIOL 1307)

123. Introductory Biology Laboratory. (0-3) Credit 1. Labor5atory supporting BIOL 113. Prerequisite: BIOL 113 or registration therein. (BIOL 1106)

124. Introductory Biology Laboratory. (0-3). Credit 1. Laboratory supporting BIOL 114. Prerequisite: BIOL 113, 123. (BIOL 1107)

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. (COCS 1306)

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: ECON 203, MATH 151, 166.

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. Prerequisites: BANA 364, 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. (CHEM 1311)

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. (CHEM 1312)

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. (CHEM 1111)

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. (CHEM 1112)

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. (CHEM 2323)

228. Organic Chemistry II. (3-0) Credit 3. Continuation of CHEM 227. Prerequisite: CHEM 227. (CHEM 2325)

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. (CHEM 2123)

238. Organic Chemistry Laboratory. (0-3). Credit 1. Continuation of CHEM 237. Prerequisites: CHEM 237; CHEM 228 or registration therein. (CHEM 2125)

315. Quantitative Analysis. (3.0). Credit 3. Introduction to quantitative methods of analysis; solution chemistry. Chemical equilibrium of analytically useful reactions and of processes important in advanced analytical methods including electrochemistry, separations and kinetic methods. Prerequisite: CHEM 102.

318. Quantitative Analysis Laboratory. (0-1). Credit 1. Laboratory work consists of selected experiments in quantitative analysis designed to typify operations of general application; work is primarily volumetric with limited gravimetric experiments. Prerequisites: CHEM 112. CHEM 315 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.

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.

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. (COSC 1317)

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 (CAEX)

001. Basic Mathematical Skills. Credit 0. 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 0. 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 0. 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. Prerequisites: MATH 151, 166. (Formerly ECON 204). (ECON 2302)

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, MATH 151, 166 or approval of advisor. (ECON 2301)

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 203.

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. Prerequisites: ECON 202, senior classification.

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: ECON 203. 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. Graphical approach to the engineering design process as applied to products; methods of graphical communications, three-dimensional geometry, working drawings, data analysis, computer graphics, introduction to team dynamics and creative problem solving. (ENGR 1204)

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. (ENGL 1302, 1304 or 1307)

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.

222. World Literature.(3-0).Credit 3. Representative works (in translation) of major authors from A.D. 1500 to the present, including Cervantes, Moliere, Voltaire, Goethe, Tolstoy and Dostoevsky. Prerequisite: ENGL 104. (ENGL 2333)

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. (ENGL 2328)

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.

489. Special Topics in English. Credit 1 to 4. Selected topics in an identified area of English language and literature. May be repeated for credit.

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. (FREN 1411)

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. (FREN 1412)

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. (GEOG 1301)

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.

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. (GEOL 1403)

305. Invertebrate Paleontology. (2-3). Credit 3. Analysis of history of like and processes controlling it; study of groups of organisms important in the marine fossil record; application of paleontology to geologic problems. Field trips may be required. Prerequisite: GEOL 104 or approval of department head.

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. (HIST 1301)

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. (HIST 1302)

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. HIST 2301)

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

373. The Great Depression and World War II.(3-0).Credit 3. The United States, 1929-1945; cultural, social, economic and political developments in the nation; global diplomacy and military strategy.

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.

374. The United States after World War II. (3-0). Credit 3. The United States since World Ware II; political, economic, cultural and social changes and role as a world leader.

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. (BUSI 1301)

MARINE BIOLOGY (MARB)

300. 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. Prerequisites: BIOL 113, 114, 123, 124; curriculum sophomore or approval of instructor.

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: MARS 360; CHEM 227, 228, 237 and 238; curriculum sophomore or approval of instructor.

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, three credit hours of computer science, curriculum sophomore or approval of instructor.

305. Use of SAS in Marine Biology.(3-0). Credit 3. Students learn to put research data into a SAS data set, analyze and manipulate the data to make statistical determinations and to present data. Statistical analyses include analysis of variance, regression, correlation, T-tests and other methods. Prerequisites: Curriculum sophomore or approval of instructor.

310. Introduction to Cell Biology. (3-3). Credit 4. Introduction to the basic principles of cell structure and function. Molecular components of the cell, methods for study of the cell, structural bases of the cell cytoplasm and cytoplasmic organelles and their structure and function with particular emphasis on nucleus. Prerequisites: BIOL 114, CHEM 228, MARS 360, curriculum junior or approval of instructor.

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, 124, curriculum sophomore or approval of instructor.

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, curriculum sophomore or approval of instructor.

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, 124, curriculum sophomore 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, 124 , curriculum junior or approval of instructor.

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

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 interrelationships 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 or approval of instructor.

336. Plant Physiology. (3-0). Credit 3. Examination of the cellular and physiological mechanisms involved in plant energy production, fluid transport and hormonal systems. Discussion of special adaptation for estuarine and offshore environments vs. desert environments. Prerequisites: Curriculum sophomore or 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 114, CHEM 101, PHYS 201 or approval of instructor.

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, 124, curriculum sophomore 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, 124, curriculum sophomore 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 114, MARB 301 or equivalent, or registration therein, curriculum sophomore or approval of instructor.

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. Prerequisites: BIOL 114, CHEM 228, MARB 310, MARS 360, curriculum junior or approval of instructor.

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 315, 408, 435; ENGL 301; curriculum senior or approval of instructor.

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 114, curriculum junior or approval of instructor.

431. Wetlands Ecology, Monitoring and Delineation.(2-6).Credit 4. Study of the characteristics and importance of wetlands and methods for delineating, monitoring and evaluating wetlands. Students will become knowledgeable in wetland soils, plants, ecological interactions of wetlands and other habitats and animals and the laws pertaining to obtaining permits and managing wetlands of the U.S. Prerequisites: BIOL 113, 114, 123 and 124 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 113, 114, 123, 124, curriculum junior or approval of instructor.

436. Marine Biology of the Upper Texas Coast.(3-3).Credit 4. Survey of the principles of physical, chemical, geological and biological oceanography as applied to the northern Gulf of Mexico. Galveston Bay and adjacent offshore waters will provide examples. Prerequisites: Curriculum sophomore 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; curriculum junior or approval of instructor.

450. Developmental Biology. (3-3). Credit 4. Principles of developmental biology and descriptive and analytical embryology. Prerequisites: BIOL 113, 114, 123, 124; MARB 435; curriculum junior or approval of instructor.

481. Seminar in Marine Biology.(1-0).Credit 1. Critique of articles from the current biology literature. Emphasis placed on evaluation of methods and results reported in scientific papers. Prerequisites: Curriculum junior or approval of instructor.123. Introductory Biology Laboratory. (0-3). Credit 1. Laboratory supporting BIOL 113. Prerequisite: BIOL 113 or registration therein. (BIOL 1106)

482. Seminar in Marine Biology.(1-0).Credit 1. Compilation of literature pertaining to topics in marine biology. Emphasis placed on preparation of a written report and presentation of a synopsis of that report. Prerequisites: Curriculum junior or approval of instructor.

485. Problems in Marine Biology. Credit 1 to 6 per semester. Special topics and problems in field and/or laboratory work suited to analysis by individuals or small groups concerning aspects of marine biology. Usually requires a report describing techniques and results. Only 3 credit hours may be used in the degree plan curriculum. Prerequisites: 2.25 GPR, curriculum sophomore and approval of instructor.

489. Special Topics in Marine Biology. Credit 1-4. Study of selected topics in an identified area of marine biology. Prerequisite: Curriculum junior or approval of instructor.

MARINE ENGINEERING (MARE)

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 205.

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 Analysis for Marine Engineers. (3-0). Credit 3. The course offers some advanced topics of analysis with engineering applications, linear algebra, eigenvalue problems with engineering applications, optimization, special functions (with heat transfer applications), integral transforms with applications to heat propagation, boundary value problems and statistics. Prerequisites: ENGR 109, Math 308.

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.

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.

413. Principles of Naval Architecture II. (3-0). Credit 3. Introduction to ship resistance, its associated propulsion requirements, maneuvering and control. Components of ship's resistance for frictional, form and wave drag. Resistance in a seaway. Model testing and ship correlation. Theory of the screw propeller and its interaction with the hull. Propeller design and selection. Associated delivered power requirements. Ship maneuvering, control and path keeping. Prerequisite: MARE 412.

414. Automated Systems and Underwater Robotics. (3-2). Credit 4. The course will present an integration of principles of robotics and automation with applications to underwater vehicles, underwater robotics and ship automation. It will introduce elements of robotic vision and sensing with marine applications. Prerequisite: MATH 308.

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.

485. Problems. Credit 1 to 8 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: Curriculum junior 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. Seminar in Marine Fisheries.(1-0).Credit 1. Critique of articles from the current marine fisheries literature. Emphasis placed on evaluation of methods and results reported in scientific papers. Prerequisites: Curriculum junior approval of instructor.

482. Seminar in Marine Fisheries.(1-0).Credit 1. Compilation of literature pertaining to topics in marine fisheries. Emphasis placed on preparation of a written report and presentation of a synopsis of that report. Prerequisites: Curriculum junior or approval of instructor.

485. Problems in Marine Fisheries. Credit 1 to 6 per semester. Special topics and problems in field and/or laboratory work suited to analysis by individuals or small groups concerning aspects of marine fisheries. Usually requires a report describing techniques and results. Only 3 credit hours may be used in the degree plan curriculum. Prerequisites: 2.25 GPR, curriculum sophomore and approval of instructor.

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.

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. Prerequisites: CHEM 237, PHYS 202 or PHYS 219, GEOL 104 or approval of instructor.

330. Petroleum Geology. Credit 3. Origin, migration and accumulation of petroleum. Reservoir rock, traps, accumulation and conditions, and subsurface methods. Prerequisite: Approval of instructor.

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 approval 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. Prerequisites: MATH 251, PHYS 218 or approval of instructor.

376. Introduction to Unix and C.(3-0).Credit 3. Introduction to the Unix operating system and C-Language programming in a multi-user networked environment.

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. Prerequisite: CHEM 101.

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: Approval 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 or PHYS 219, 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 or PHYS 219, 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. Prerequisite: NAUT 201 or concurrent enrollment.

302. Marine Cargo Operations I. (3-3). Credit 4. Objectives and problems with break-bulk cargo handling during loading, discharging and in-transit carriage. Requirements of special refrigerated and dangerous cargos. Heavy lift operations with conventional cargo gear and its restraints. Cargo loss prevention, safety and related documentation, as well as log book entries, modern cargo concepts-containerization, roll-on roll-off, LASH and others. Maximum cargo efficiency with relation to space, cargo gear, crew and labor costs. Practical cargo gear use and cargo observations during lab periods. Prerequisite: NAUT 200, 202, 301 or concurrent enrollment.

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. Prerequisites: MART 302, NAUT 300.

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 452, MART 301, MGMT 105, or approval of MART 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. Prerequisites: MART 301, 321, or MARA 212.

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 MART department head.

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. (BUSI 2301) Note: BUSI 2301=MGMT 212=MARA 212.

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. Prerequisites: BANA 303, ECON 203.

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. Prerequisites: BANA 303, ECON 203.

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.

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, 373, 460.

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)

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: CVEN 345; OCEN 300 or concurrent enrollment therein.

336. Flow Measurement Fundamentals. (2-2). Credit 3. Introduction to fundamental principles of measuring fluctuating velocities in flows, emphasis on the properties of lasers particularly relevant to Laser Doppler Measurements; probe methods for velocity measurement. The laboratory includes the experimental investigation of surface waves and classic fluid dynamic problems. Prerequisites: PHYS 219, CVEN 311.

401. Measurements in the Ocean.(3-0).Credit 3. Introduction to laboratory and field techniques for measuring engineering parameters in the ocean environment. Fundamentals of underwater acoustics and the use of these fundamentals in ocean measurement systems. Fundamentals of remote sensing by satellites. Prerequisites: OCEN 300 or approval of instructor.

405. Finite Element Analysis in Engineering Design.(3-0). Credit 3. Introduction to the fundamental theory and techniques; direct approach and energy formulation; element equations, assembly and solution schemes; computer implementation, design considerations; applications to field problems; original computer project required. Prerequisites: MARE 209, CVEN 345, MARE 310.

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. Hydrodynamics of the Coastal Zone.(3-0).Credit 3. Basic ideas and assumptions, long waves over shallow bottom, estuary as a stratified media, salinity intrusion, diffusion and dispersion phenomenon in coastal water, mass transport in estuary modeling of estuary circulation, sediments and sedimentation in estuary. Prerequisite: OCEN 462.

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 8. 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: MARA 363.

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. (MATH 1316)

130. Mathematical Concepts-Pre-Calculus. (3-0). Credit 3. Functions and their graphs. Analytic geometry; linear and quadratic functions, polynomial functions. Trigonometric functions. Exponents. (MATH 2312)

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. (MATH 2413)

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.

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.

489. Special Topics in Mathematics. Credit 1 to 4. Selected topics in an identified area of mathematics. May be repeated for credit.

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 MART 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. Prerequisite: NAUT 103.

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. Prerequisite: NAUT 201.

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. Prerequisite: NAUT 103 or concurrent enrollment.

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. Prerequisite: Algebra and trigonometry recommended.

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: METR 302, NAUT 200, 301, 303 or permission of MART 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. Prerequisite: NAUT 203 or concurrent enrollment.

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. Prerequisite: NAUT 202, 301 or concurrent enrollment.

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. Prerequisites: NAUT 200, 204 or permission of MART department head.

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. Prerequisite: NAUT 303.

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. Prerequisites: NAUT 200, 300, 302, 304; MART 302, 321, 406.

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. Prerequisites: NAUT 204, 304, 400.

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. Ocean Engineering 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 or equivalent 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. (PHYS 1401)

202. College Physics. (3-3). Credit 4. Continuation of PHYS 201. Fundamentals of classical electricity and light; introduction to contemporary physics. Prerequisite: PHYS 201. (PHYS 1402)

218. Mechanics. (3-3). Credit 4. Mechanics for students of the physical sciences. Prerequisite: MATH 151 or registration therein. (PHYS 2425)

219. Electricity. (3-3). Credit 4. Continuation of Physics 218. Electricity, magnetism and optics. Prerequisite: MATH 161 or equivalent; PHYS 218 or equivalent. (PHYS 2426)

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. (GOVT 2305)

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. (GOVT 2306)

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.

489. Special Topics in Political Science. Credit 1 to 4. Selected topics in an identified area of political science and public policy. May be repeated for credit.

PSYCHOLOGY (PSYC)

107. Introduction to Psychology. (3-0). Credit 3. Introductory course dealing with elementary principles of human behavior. (PSYC 2301)

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. (RUSS 1411)

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. (RUSS 1412)

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. (SPAN 1411)

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. (SPAN 1412)

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.

THE FACULTY

The faculty and administrative positions are current as of Spring, 1993. Figures in parentheses indicate date of first appointment at the University and date of appointment to present positions, respectively.

ALLEN, Lee M., Senior Lecturer in Maritime Administration and General Academics (1992). B.A., M.A., University of Nevada, Las Vegas, 1971, 1974; Ph. D., University of Utah, 1980; J.D., University of Houston, 1987.

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

BASKARAN, M., Senior Lecturer in Marine Sciences (Physics, Oceanography) (1988, 1992). 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.

BENFIELD, Mark C., Lecturer in Marine Biology (1992). B.S. University of Toronto, 1980; M.S. University of Natal, Durban, 1985; Ph.D., Texas A&M University, 1991.

BERG-ANDREASSEN, Jan, Assistant Professor of Maritime Administration and Head of Maritime Administration (1990, 1991). 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, Peter J., Lecturer in Marine Transportation (Captain of the Texas Clipper) (1990). B.S., U.S. Merchant Marine Academy, 1956.

BURNETT, John, Lecturer in Marine Transportation (1990). 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 and Head of Maritime Systems Engineering (1981, 1991). B.S., National Chen-kung University, 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 (French) (1990). B.S., College Sophie Germain, Paris, France, 1959; M.S., University of Paris, France, 1963; M.A., University of Utah, 1967.

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 in Marine Sciences and Director of the Geology Laboratory (1981, 1992). B.S., Texas A&M University, 1975; M.S., University of Houston-Clear Lake, 1986.

COOPER, Robert N., Senior Lecturer in General Academics (Mathematics) (1988, 1991). B.S., M.S., University of Southwestern Louisiana, 1958, 1962; Ph.D., Texas A&M University, 1972.

CORBETT, James J., Lecturer in General Academics (Mathematics) (1991). B.A., M.A., Sam Houston University (1966, 1976).

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., Senior Lecturer in Marine Sciences (Chemistry) (1983, 1991). 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.

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.

DEMEDEIROS, Liberio E., Lt. USN, Associate Professor of Naval Science (1992). B.S., Miami University, 1987.

ESTES, Ernest L. III, Professor of Marine Sciences and Maritime Systems Engineering (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 Oceanography, Wildlife and Fisheries Science and Marine Biology, and President of the Texas Institute of Oceanography (1989, 1989, 1991). 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.

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, Stephen F., Senior Lecturer in Marine Transportation and Head of Marine Transportation (1988,1991). 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.

GIBBONS, William S. Chief Petty Officer USN, Lecturer in Naval Science (1991).

GILL, Gary A., Assistant Professor of Marine Sciences (1992). B.S., University of Washington, 1976; M.S., Ph.D., University of Connecticut, 1980, 1986.

GRAGG, Sara E., Senior Lecturer in General Academics (English) (1988, 1991). B.A., M.A., Ph.D., University of Arkansas, 1949, 1950, 1971.

GRAVES, Gilda G., Lecturer in Marine Sciences (Chemistry Laboratory) (1990). B.S., Sacred Heart University, San Juan, 1983; M.S., University of Southwestern Louisiana, 1986.

GUERARA, Eduardo, Lecturer in Marine Biology (1993). B.S. Universidad del Valle (Colombia), 1973; M.S., Auburn University, 1979; Ph.D., University of South Carolina, 1992.

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.

GUILLEN, George G. Lecturer in Marine Biology (1991). B.S., M.S., Texas A&M University, 1979, 1983.

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 and Director of the Physics Laboratory (1989, 1992). 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.

HITE, Gerald E., Associate Professor of Marine Sciences and Maritime Systems Engineering (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., Assistant Professor of Marine Biology (1989, 1991). 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 (Chemistry, Physics) (1979, 1987). B.S., Oregon State University, 1965; M.A., Ph.D., University of Texas, 1967, 1969.

KNOX, Kris J., C.P.A., Lecturer in Maritime Administration (1984). B.B.A., M.B.A., University of Houston, 1979, 1984; Ph.D., University of Texas Health Science Center at Houston, 1992.

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.

LANDRY, Andre M., Jr., Professor of Marine Biology (1977, 1991). 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.

LIU, Xiaoyu, Lecturer in Marine Sciences (Computer Science) (1991). B.S., M.S., Lanzhou University, China, 1980, 1983; Ph.D., Arizona State University, 1989.

LUKENS, Richard W., Senior Lecturer in Marine Engineering (1991). B.S. University of Oklahoma, 1976; M.S. Naval Post Graduate School, 1983.

LUTZ, Anne B., Lecturer in Marine Sciences (Geology) (1989). B.A., State University of New York, Fredonia, 1967; Ph.D., Pennsylvania State University, 1973.

LUXEMBURG, Leon A., Assistant Professor in Marine Engineering (1989, 1991). 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 Associate Campus Dean for Academic Affairs (1971, 1984, 1988). B.A., California State College at Los Angeles, 1961; Ph.D., Louisiana State University, 1969.

MERRELL, William J., Professor of Marine Sciences (1987, 1992). B.S., M.A., Sam Houston State University, 1965, 1967; Ph.D., Texas A&M University, 1971.

MICHEL, Urszula, Lecturer, General Academics (Russian) (1991). B.A., Jagellonian University, Cracow, 1973.

MOHAMMAD, Golam, Assistant Professor of Maritime Administration (1990, 1991). 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 and Director of Chemistry Laboratory (1975, 1991). B.S., San Diego State University, 1955.

NICHOLAS, Robert H., Jr., Lecturer in Marine Transportation (Maritime Law) (1988). B.S., Lamar University, 1963; J.D., University of Texas at Austin, 1966.

NICHOLS, Alfred C., Lecturer in Marine Sciences (Chemistry Laboratory) (1991). B.S. University of Alabama, 1971; B.S., M.S. Auburn University, 1973, 1981; Ph.D. University of South Alabama, 1985.

PICCARDO, Olimpia M., Lecturer in General Academics (Spanish) (1990). B.A., M.S., Universidad Central de Venezuela, Caracas, 1964; 1966.

RAY, Sammy M., Professor Emeritus of Marine Biology (1990). B.S., Louisiana State University, 1942; M.S., Ph.D., Rice University, 1952, 1954.

RICHARDSON, John S., Lecturer in Marine Sciences (Chemistry Laboratory) (1992). B.S., East Texas Baptist University, 1963; M.S., Texas Tech University, 1969; Ph.D., Texas A&M University, 1976.

RHOADES, Alice J., Lecturer and Librarian (1991). B.S. Baylor University, 1976; M.L.I.S., University of Texas at Austin, 1987.

RYAN, James G., Assistant Professor, General Academics (Political Science and History) (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 (Oceanography, Environmental Chemistry) (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 Head of Marine Sciences (Chemistry, Computer Science) (1981, 1985, 1991). B.S., Montana State University, 1970; Ph.D., University of Illinois, 1975.

SCHMIDLY, David J., Professor of Wildlife and Fisheries Science and Campus Dean (1992). B.S., M.S., Texas Tech University, 1966, 1968; Ph.D., University of Illinois - Champaign/Urbana, 1971.

SCHWARZ, John R., Professor of Marine Biology (1976, 1986). B.S., Ph.D., Rensselaer Polytechnique Institute, 1967, 1972.

SEITZ, Patricia A., Lecturer in Marine Biology (1991). B.A., Rice University, 1971; Ph.D., University of Texas at Austin, 1977.

SEITZ, William A., Professor of Marine Sciences, director of Continuing Education and Interim Campus Dean for Research (Chemistry, Computer Science) (1977, 1992). B.A., Rice University, 1970; Ph.D., University of Texas at Austin, 1973.

SLOTTA, Larry S., Professor of Marine Engineering (1989). B.S., M.S., University of Wyoming, 1956, 1959; Ph.D., University of Wisconsin, 1962.

SMITH, Cynthia L., Lecturer in Marine Transportation (1992). B.S., Texas A&M University, 1981, 1987.

STEPHENS, Judy, Lecturer in Maritime Systems Engineering (1992). B.A., University of Southern California, 1968; M.Ed., University of St. Thomas, 1982; M.A., University of Houston, 1987

STEWART, Terri, Lecturer in Maritime Administration (1991). B.S., University of Texas Medical Branch, 1979; M.B.A., University of Houston at Clear Lake, 1984; Ph.D., University of Texas Health Science Center at Houston, 1992.

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.

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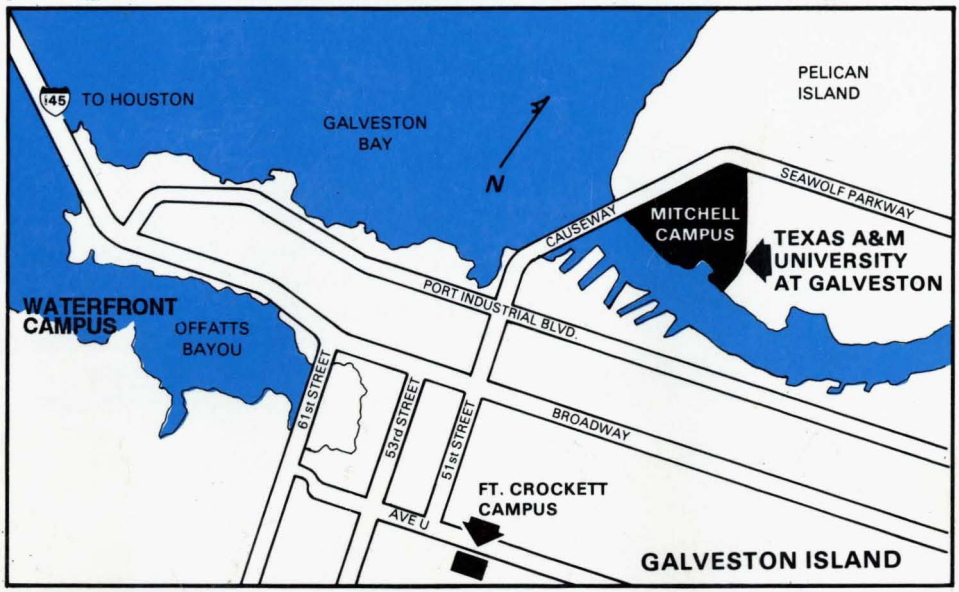
I45 TO HOUSTON
GALVESTON BAY
N
PELICAN ISLAND
SEAWOLF PARKWAY
CAUSEWAY
MITCHELL CAMPUS
TEXAS A&M UNIVERSITY AT GALVESTON
PORT INDUSTRIAL BLVD
WATERFRONT CAMPUS
OFFATTS BAYOU
61st STREET
53rd STREET
51st STREET
BROADWAY
FT. CROCKETT CAMPUS
AVE U
GALVESTON ISLAND