ACADEMIC CURRICULA

Curriculum in Marine Biology (MARB)

The Department of Marine Biology offers these three degree programs: Marine Biology (MARB), Marine Biology License Option (MARB/LO) and Marine Fisheries (MARF). These curricula are subject to the following rules and requirements:

The student shall have earned at least a grade of C in BIOL 111 and 112. Students may not advance to BIOL 112 until a grade or C of better is earned in 111.

Transfer students must have a minimum GPR of 2.25 or approval of the MARB Department Head to be admitted to the Department. Transfer students with the required courses who meet the criteria listed above may be admitted directly into the MARB, MARB/LO and MARF degree programs.

Preference for available seats in courses in the Department will be given to students who have been admitted to the degree program. If additional spaces are available, students from other departments for whom courses in the Department are on their program of study, and who meet the course prerequisites, may be enrolled.

It is the student's responsibility to satisfactorily complete prerequisite coursework before enrolling in more advanced courses.

The Marine Biology program provides an excellent education in the biological sciences through studies undertaken in a unique coastal environment. The curriculum offers broad training in general biology, while emphasizing the local flora and fauna in estuaries and the marine environment. Students receive hands-on field sampling experience as well as internship opportunities.

Through a partnership with the Texas A&M University College of Veterinary Medicine, students in the Marine Biology curriculum may pursue a Certificate in Biomedical Sciences.

Students majoring in Marine Biology can be eligible for a secondary teaching field in Life Sciences pending a passing score on the state certification test (ExCET). See the Teacher Certification section of this catalog.

FRESHMAN YEAR

Fall Semester		**(Th-Pr)**	**Cr**
BIOL 111	Introductory Biology I†	(3-3)	4
CHEM 101	Fundamentals of Chemistry I.	(3-0)	3
CHEM 111	Fundamentals of Chemistry Laboratory I	(0-3)	1
HIST	American History Requirement‡‡	(3-0)	3
MARB 101	Succeeding in Science† (except transfer students)	(1-0)	1
MATH 151	Engineering Math	(3-0)	4
	Total Hours		16
Spring Semester			
BIOL 112	Introductory Biology II†	(3-3)	4
CHEM 102	Fundamentals of Chemistry II	(3-0)	3
CHEM 112	Fundamentals of Chemistry Laboratory II	(0-3)	1
ENGL 104	Composition and Rhetoric	(3-0)	3
HIST	American History Requirement‡‡	(3-0)	3
MATH 166	Topics in Contemporary Math‡	(3-0)	3
	Total Hours		17

SOPHOMORE YEAR

Fall Semester			
CHEM 227	Organic Chemistry I	(3-0)	3
CHEM 237	Organic Chemistry Lab I	(0-3)	1
KINE 198	Health and Fitness Activity	(0-2)	1
MARB 315	Natural History of Vertebrates†	(3-3)	4
PHYS 201	College Physics.	(3-3)	4
POLS 206	American National Government	(3-0)	3
	Total Hours		16

Spring Semester

CHEM 228	Organic Chemistry II	(3-0)	3
CHEM 238	Organic Chemistry Lab II	(0-3)	1
MARB 301	Genetics†	(3-3)	4
PHYS 202	College Physics	(3-3)	4
POLS 207	State and Local Government	(3-0)	3
	Total Hours		15

JUNIOR YEAR
Fall Semester

ENGL 301	Technical Writing	(3-0)	3
MARB 303	Biostatistics†	(2-2)	3
Elective in Humanities			3
Electives in Marine Biology§			8
	Total Hours		17

Spring Semester

KINE 199	Required Physical Activity*	(0-2)	1
MARB 310	Cell Biology†	(3-3)	4
MARB 435	Marine Invertebrate Zoology†	(3-3)	4
Elective in Marine Biology§			4
Elective in Social Science			3
	Total Hours		16

SENIOR YEAR
Fall Semester

MARB 420	Comparative Animal Physiology†	(3-3)	4
MARB 425	Marine Ecology†	(3-3)	4
Elective in Earth Science***			3
Electives in Marine Biology§			4
Elective			3
	Total Hours		18

Spring Semester

MARB 408	Marine Botany†**	(3-3)	4
MARB 482	Seminar in Marine Biology†****	(1-0)	1
Elective in Humanities			3
Elective in Marine Biology§			4
Elective			3
	Total Hours		15
	Total Curriculum Hours¤		**130**

Note: All electives must be chosen in consultation with, and approved by, the student's academic advisor. See University Core Curriculum for a listing of course options for humanities and social sciences electives. The 6-hour University Core Curriculum requirement for international and cultural diversity may be met with courses used to satisfy other degree requirements. Up to 4 hours of MARB 485 and/or MARB 484 may be substituted for courses in your curriculum. Please consult with your academic advisor.

* - Must be taken S/U.

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

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

‡‡- The American history requirement may be fulfilled by American history courses offered at TAMUG, including HIST 370, 442 or 444. See Core Curriculum.

** - MARB 430, which is offered in the Fall semester, can be substituted for MARB 408.

§- 20 credit hours of biology electives required. A minimum of 12 credit hours must be taken from the following: BIOL 351, MARB 311, MARB 330, MARB 400, MARB 410, MARB 430, MARB 466, MARS 360, MARS 361. For the remainder of the 20 hours of biology electives, students may take a maximum of two mammals courses (selected from MARB 400, MARB 401, MARB 403), one of the two MARB scientific diving courses (either 345 or 350), or any other MARB 300-400 level classes.

***- The Earth Science elective may be chosen from GEOL 104, OCNG 251, METR 302 or courses approved by the student's academic advisor.

****- Designated writing intensive course.

¤-The total hours may be increased if the student is required to take remedial math, remedial English, foreign language or international and diverse cultures courses.

Curriculum in Marine Biology with a License Option (MARB-LO)

The Marine Biology License Option 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 curriculum provides the basics of marine biology 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 Marine Biology License Option 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, or are interested in the medical professions, are advised to take additional coursework in developmental biology, genetics, biochemistry, and physiology.

Cadets who enroll in and apply to graduate under one of the license option curricula must complete the appropriate license examination for Third Mate or Third Assistant Engineer in order to graduate from Texas A&M University. Certain USCG courses require a minimum grade of C (70%).

Freshman Year

Fall Semester		**(Th-Pr)**	**Cr**
BIOL 111	Introductory Biology I†	(3-3)	4
CHEM 101	Fundamentals of Chemistry I.	(3-0)	3
CHEM 111	Fundamentals of Chemistry Laboratory I	(0-3)	1
HIST	American History Requirement‡‡	(3-0)	3
MATH 106	Plane and Spherical Trigonometry	(4-0)	4
NAUT 103	Maritime Orientation and Life Saving*	(3-0)	3
MARB 101	Succeeding in Science	(1-0)	1
	Total Hours		19
Spring Semester			
BIOL 112	Introductory Biology II†	(3-3)	4
CHEM 102	Fundamentals of Chemistry II	(3-0)	3
CHEM 112	Fundamentals of Chemistry Laboratory II	(0-3)	1
MATH 151	Engineering Math	(3-2)	4
NAUT 203	Seamanship I*	(3-0)	3
NAUT 204	Terrestrial Navigation*	(3-0)	3
	Total Hours		18

Summer Session-Ten weeks aboard the University Training Ship

NAUT 200 Basic Communications, Navigation and Seamanship* 4

SOPHOMORE YEAR

Fall Semester			
CHEM 227	Organic Chemistry I	(3-0)	3
CHEM 237	Organic Chemistry Lab.	(0-3)	1
HIST	American History Requirement‡‡	(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 Hours		16
Spring Semester			
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 Hours		17

Summer Session-Ten weeks aboard the University Training Ship

NAUT 300 Intermediate Communication, Navigation and Seamanship* 4

JUNIOR YEAR

Fall Semester

KINE 198	Health and Fitness Activity	(0-2)	1
MARB 315	Natural History of Vertebrates†	(3-3)	4
MART 302	Marine Cargo Operations I*	(3-3)	4
NAUT 305	Ship Construction and Stability*	(3-3)	4
POLS 206	American National Government	(3-0)	3
	Total Hours		16

Spring Semester

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 304	Electronic Navigation*	(2-2)	3
NAUT 307	Global Maritime Distress Safety System*	(3-3)	4
Elective in Humanities			3
	Total Hours		19

Shoreside Summer

ECON 203	Principles of Economics	(3-0)	3
ENGL 301	Technical Writing	(3-0)	3
KINE 199	Required Physical Activity**	(0-2)	1
Elective in Humanities			3
	Total Hours		10

SENIOR YEAR

Fall Semester

MARB 303	Biostatistics†	(2-2)	3
MARB 425	Marine Ecology†	(3-3)	4
NAUT 406	Bridge Watchstanding*	(1-3)	2
Elective in Computer Science ***			3
Elective in Humanities		(3-0)	3
	Total Hours		15

Spring Semester

MARB 310	Cell Biology†	(3-3)	4
MARB 311	Ichthyology †	(3-3)	4
MARB 435	Invertebrate Zoology†	(3-3)	4
OCNG 401	Introduction to Oceanography	(3-0)	3
POLS 207	State and Local Government	(3-0)	3
	Total Hours		18

Summer Session-Ten weeks aboard the University Training Ship

NAUT 400	Advanced Communications, Navigation and Seamanship*		4
	Total Curriculum Hours¤		**160**

Note: All electives must be chosen in consultation with, and approved by, the student's academic advisor. See University Core Curriculum for a listing of course options for humanities and social sciences electives. The 6-hour University Core Curriculum requirement for international and cultural diversity may be met with courses used to satisfy other degree requirements. Please consult with your academic advisor.

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

‡‡-The American history requirement may be fulfilled by American history courses offered at TAMUG, including HIST 370, 442 or 444. See Core Curriculum.

* - Indicates license courses leading to a USCG license endorsement or sea time credit accrual which require a minimum grade of C (70%) or better to earn the endorsement or accrual. Cadets will be required to repeat the course until they earn a grade of C (70%) or better. NAUT 307 requires a grade of 75% or better.

** - Must be taken S/U.

*** - Select from CPSC 100-499.

¤-The total hours may be increased if the student is required to take remedial math, remedial English, foreign language or international and diverse cultures courses.

Marine Biology/Biomedical Sciences Certificate Program

This collaboration is intended to maximize the course offerings and resources of both the Biomedical Sciences program in College Station and the Marine Biology program in Galveston to provide students a greater wealth of opportunities.

The certificate program prepares the graduate for careers in aquatic animal health, seafood technology and various marine related disciplines as well as advanced studies in veterinary medicine, human medicine, allied health, biological oceanography and related biological disciplines. The program provides depth in an applied understanding of aquatic animal health and disease.

Because of limited resources the program will have a cap on the number of students admitted to the program. All courses in the program must be completed with a grade of C or better. The certificate will be awarded upon completion of a B.S. degree in Biomedical Sciences or Marine Biology.

Students desiring to obtain a certificate must have approval from the department granting the certificate. Students must have a cumulative 2.5 grade point ratio to be admitted to the certificate program and have completed BIOL 111, 112, CHEM 227 and 228.

Interested students should visit with an academic advisor in the department offering the certificate at least one semester prior to entry to discuss departmental requirements as well as to select coursework appropriate to his or her individual interests. Students should also consult an academic advisor in the major to determine how the certificate coursework will be applied to the degree. Students should seek additional advising if planning to pursue admission to medical school or veterinary medicine school.

Certificate in Biomedical Sciences (available to Marine Biology majors)

Students will complete 15 semester credit hours in BIMS consisting of:

At least 2 of the courses listed specifically as VAPH 305, VTPP 423 and VTPB 405 for 8 to 9 semester credit hours.

VAPH 305 Biomedical Anatomy (4 sch).

VTPP 423 Biomedical Physiology I (4 sch).

VTPB 405 Biomedical Microbiology (5 sch).

2 to 3 additional courses selected from approved BIMS directed electives for 6 to 7 semester credit hours.

Certificate in Marine Biology (available to Biomedical Sciences majors)

Students will complete 15 semester credit hours in MARB consisting of:

15 semester credit hours of approved marine biology electives (MARB prefix) chosen in consultation with an advisor.

Minor in Marine Biology

Students in other majors may establish a minor field of study in Marine Biology through completing 16 credits in any 300 or 400 level MARB course selected in consultation with a Marine Biology advisor. The student must have earned a C or better in BIOL 111 and BIOL 112. Only one of the two MARB scientific diving courses (either 345 or 350) can be used for the minor.

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 emphasized. 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.

FRESHMAN YEAR

Fall Semester		**(Th-Pr)**	**Cr**
BIOL 111	Introductory Biology I†	(3-3)	4
CHEM 101	Fundamentals of Chemistry I.	(3-0)	3
CHEM 111	Fundamentals of Chemistry Laboratory I	(0-3)	1
HIST	American History Requirement Δ	(3-0)	3
MATH 151	Engineering Math	(3-0)	4
MARB 101	Succeeding in Science	(1-0)	1
	Total		16

Spring Semester			
BIOL 112	Introductory Biology II†	(3-3)	4
CHEM 102	Fundamentals of Chemistry II	(3-0)	3
CHEM 112	Fundamentals of Chemistry Laboratory II	(0-3)	1
ENGL 104	Composition and Rhetoric	(3-0)	3
HIST	American History Requirement Δ	(3-0)	3
MATH 166	Topics in Contemporary Math	(3-0)	3
	Total		17

SOPHOMORE YEAR

Fall Semester			
CHEM 227	Organic Chemistry I	(3-0)	3
CHEM 237	Organic Chemistry Lab I	(0-3)	1
KINE 198	Health and Fitness Activity	(0-2)	1
MARB 315	Natural History of Vertebrates†	(3-3)	4
OCNG 251	Oceanography	(3-0)	3
OCNG 252	Oceanography Laboratory	(0-3)	1
PHYS 201	College Physics.	(3-3)	4
	Total		17

Spring Semester			
CHEM 228	Organic Chemistry II	(3-0)	3
CHEM 238	Organic Chemistry Lab II	(0-3)	1
MARB 311	Ichthyology†	(3-3)	4
PHYS 202	College Physics.	(3-3)	4
POLS 206	American National Government	(3-0)	3
	Total		15

JUNIOR YEAR

Fall Semester

ENGL 301	Technical Writing	(3-0)	3
MARB 301	Genetics†	(3-3)	4
MARB 303	Biostatistics†	(2-2)	3
MARB 312	Field Ichthyology†	(3-3)	4
MARB 436	Non-Vertebrate Fisheries†	(3-3)	4
	Total		18

Spring Semester

BIOL 351	Fundamentals of Microbiology†	(3-3)	4
MARB 320	Fisheries Techniques†	(3-3)	4
MARB 360	Marine Conservation Biology†	(3-3)	4
POLS 207	State and Local Government	(3-0)	3
Elective in Humanities			3
	Total		18

SENIOR YEAR

Fall Semester

MARB 423	Mariculture†	(3-3)	4
MARB 425	Marine Ecology†	(3-3)	4
MARB 445	Marine Fisheries Management†	(3-3)	4
Elective in Humanities			3
	Total		15

Spring Semester

ECON 202	Principles of Economics	(3-0)	3
KINE 199	Required Physical Activity*	(0-2)	1
MARB 460	Fisheries Population Dynamics†	(3-3)	4
MARB 482	Seminar†	(1-0)	1
Directed Electives †‡			7
	Total		16
		Total Curriculum Hours¤	**132**

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

Δ -The American history requirement may be fulfilled by American history courses offered at TAMUG, including HIST 370, 442 or 444. See Core Curriculum.

* - Must be taken S/U.

‡ - Directed Elective must be selected from 300-400 level MARB courses or 200-300-400 level MATH or CPSC courses. Recommended elective courses include: Fish Physiology (MARB 335), Marine Parasitology (MARB 405), Aquatic Animal Nutrition (MARB 426), Introduction to Computing (CPSC 203), Biochemistry (MARS 360).

¤-The total hours may be increased if the student is required to take remedial math, remedial English, foreign language or international and diverse cultures courses.

Note: The 6-hour University Core Curriculum requirement for international and cultural diversity may be met with courses used to satisfy other degree requirements. Please consult with your academic advisor.

Curriculum in Marine Engineering Technology (MARR)

Texas A&M University at Galveston is a special purpose institution for teaching, research, and public service pertaining to marine and maritime studies in science, engineering, and business. The university is also the home of the Texas Maritime Academy. Within this context, the goal of the Department of Marine Engineering Technology is to prepare students for performing engineering work in the marine sector or marine-related shore-based industries involving the design, production, operation, maintenance, and management of engineering systems and projects. Opportunities for such work abound in the vicinity of the university, which is located just south of the fourth largest metropolis in the U.S. The Houston/Galveston area has extensive port facilities, considerable commercial, recreational, and military ship traffic, and ever-increasing offshore and onshore infrastructure associated with the oil industry. Career opportunities of various kinds (e.g. operational, management, leadership, etc.) are therefore available for these graduates who are ideally suited for working on ships, at port facilities, and at shore facilities, particularly in power generation, distribution, and concomitant auxiliary support systems. The program provides a license option and a non-license Option. The license option is intended for cadets of the US Maritime Service Corps who can then appear for the US Coast Guard's license examination, enabling them to serve as engineering officers aboard sea-going vessels.

Our goal is to provide students with a strong background in engineering fundamentals, mathematics, and analytical methods, which is reinforced by practical machine-shop and laboratory applications, including several on the training ship. The curriculum builds on a foundation of basic engineering topics such as fluid mechanics, thermodynamics, electricity, drafting, and materials science to develop inter-disciplinary skills required for the practice of marine engineering. In particular, the program's objectives are to produce students who: (1) Can practice engineering pertaining to marine and facilities power systems and associated auxiliary systems (e.g. propulsion, electrical power generation and distribution, refrigeration, and air conditioning) in support of the maritime sector (the Navy, Coast Guard, and companies operating sea-going vessels), the offshore oil and gas industry, and companies involved in facilities management or shore-based power systems; in particular, to plan, design, construct, operate, and maintain engineering systems intended to provide marine propulsion and electrical power; and (2) Are well-prepared to engage in lifelong education and professional development.

FRESHMAN YEAR

Fall Semester		**(Th-Pr)**	**Cr**
CHEM 107	General Chemistry for Engineering Students	(3-3)	4
ENGL 104	Composition and Rhetoric	(3-0)	3
KINE 198	Health and Fitness Activity	(0-2)	1
MARE 100	Marine Engineering Fundamentals†	(2-3)	3
MATH 150	Functions, Trigonometry and Linear Systems	(3-2)	4
	Total		15
Spring Semester			
ENGR 111	Foundation of Engineering I†	(1-3)	2
HIST	American History Requirement‡	(3-0)	3
MATH 151	Engineering Mathematics I	(3-2)	4
NAUT 103	Maritime Orientation and Lifesaving*	(2-3)	3
PHYS 218	Mechanics	(3-3)	4
	Total		16

SUMMER SESSION-Ten weeks aboard the University Training Ship

MARE 200 Basic Operations†* 4

SOPHOMORE YEAR

Fall Semester			
ENGR 112	Foundations of Engineering II†	(1-3)	2
MARE 303	Marine Thermodynamics†	(3-0)	3
MARE 205	Engineering Mechanics I†	(3-0)	3
MARE 242	Manufacturing Methods I†	(0-3)	1
MATH 152	Engineering Mathematics II	(3-2)	4
PHYS 208	Electricity and Optics	(3-3)	4
	Total Hours		17

SOPHOMORE YEAR
Spring Semester

HIST	American History Requirement‡	(3-0)	3
MARE 206	Engineering Mechanics II†	(3-0)	3
MARE 207	Electrical Power I†	(2-3)	3
MARE 243	Manufacturing Methods II†	(1-3)	2
MARE 261	Engineering Analysis†	(3-0)	3
MARE 311	Steam Propulsion Plants†	(2-3)	3
	Total Hours		17

SUMMER SESSION-Ten weeks aboard the University Training Ship

MARE 300 Intermediate Operations†* 4

JUNIOR YEAR
Fall Semester

MARE 209	Mechanics of Materials†	(3-0)	3
MARE 313	Heat Transfer†	(2-3)	3
MARE 305	Fluid Mechanics Theory†	(3-3)	4
MARE 306	Electrical Power II†	(2-3)	3
Elective in humanities/social and behavioral sciences/international and cultural diversity# (Recommended any course fulfilling the social and behavioral sciences/international and cultural diversity requirement)		(3-0)	3
	Total Hours		16

Spring Semester

ENGL 301	Technical Writing	(3-0)	3
MARE 309	Marine Construction Materials†	(2-3)	3
MARE 312	Diesel Propulsion Plants†	(2-3)	3
POLS 207	State and Local Government	(3-0)	3
Elective in humanities/social and behavioral sciences/international and cultural diversity∇ (Recommended any course fulfilling the humanities/international and cultural diversity requirement)		(3-0)	3
	Total		15

SUMMER SESSION-Ten weeks aboard the University Training Ship

MARE 400 Advanced Operations†* 4

SENIOR YEAR
Fall Semester

KINE 199	Required Physical Activity**	(0-2)	1
MARE 307	Marine Electronics†	(2-3)	3
MARE 441	Engineering Economics and Project Management†	(3-0)	3
MARE 451	Senior Design Project I†	(1-3)	2
NVSC 200	Merchant Marine Officer I	(3-0)	3
POLS 206	American National Government	(3-0)	3
	Total		15

Spring Semester

MARE 401	Marine Auxiliary Systems†	(2-3)	3
MARE 402	Shipboard Automation and Control†	(3-0)	3
MARE 405	Naval Architecture†	(2-3)	3
MARE 452	Senior Design Project II†	(1-3)	2
Elective in humanities/social and behavioral sciences/international and cultural diversity∇		(3-0)	3
(Recommended any course fulfilling the humanities/international and cultural diversity requirement)			
	Total		14
	Total Hours¤		**137**

Note: All electives must be chosen in consultation with, and approved by, the student's academic advisor. See University Core Curriculum for a listing of course options for humanities and social sciences electives. The 6-hour University Core Curriculum requirement for international and cultural diversity may be met with courses used to satisfy other degree requirements. Please consult with your academic advisor.

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

* - Indicates license courses leading to a USCG license endorsement or sea time credit accrual which require a minimum grade of C (70%) or better to earn the endorsement or accrual. Cadets will be required to repeat the course until they earn a grade of C (70%) or better.

** - Must be taken S/U.

‡-The American history requirement may be fulfilled by American history courses offered at TAMUG, including HIST 370, 442 or 444. See Core Curriculum.

∇ -Must complete 6-hours of humanities and 3-hours of social and behavioral sciences of which two courses must be designated as international and cultural diversity. Suggested courses are given in parenthesis.

¤-The total hours may be increased if the student is required to take remedial math, remedial English, computer science, foreign language or if the humanities or social science requirements do not fulfill the international and diverse cultures requirement.

Curriculum in Marine Engineering Technology Non-License Option (MARR-NLO)

This program is designed to prepare the student for a career as an engineering technologist in the maritime profession. The program is available in a License Option version for students who want to serve as an engineering officer aboard seagoing vessels and in a Non-License Option for students who want an education in maritime-related applied engineering but do not plan to serve at sea. The MARE curriculum is a thermal power-oriented specialization of a classical Mechanical Engineering Technology program. A thorough preparation in mathematics, science, and basic engineering courses is the foundation for further study in ship propulsion plants and electrical power generation and distribution equipment. Marine Engineering Technology focuses on power cycles, principles, and methods used to convert the energy in fossil fuels into useful power, and the selection and operation 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 operation of marine machinery aboard the University's training ship. This curriculum is pending approval.

FRESHMAN YEAR

Fall Semester		**(Th-Pr)**	**Cr**
CHEM 107	General Chemistry for Engineering Students	(3-3)	4
ENGL 104	Composition and Rhetoric	(3-0)	3
KINE 198	Health and Fitness Activity	(0-2)	1
MARE 100	Marine Engineering Fundamentals †	(2-3)	3
MATH 150	Functions, Trigonometry and Linear Systems	(3-2)	4
	Total		15
Spring Semester			
ENGR 111	Foundation of Engineering I†	(1-3)	2
HIST	American History Requirement‡	(3-0)	3
MATH 151	Engineering Mathematics I	(3-2)	4
PHYS 218	Mechanics	(3-3)	4
Elective in humanities/social and behavioral sciences/international and cultural diversityΔ (Recommended any course fulfilling the social and behavioral sciences/international and cultural diversity requirement)		(3-0)	3
	Total		16

SOPHOMORE YEAR

Fall Semester			
ENGR 112	Foundations of Engineering II†	(1-3)	2
MARE 303	Marine Thermodynamics†	(3-0)	3
MARE 205	Engineering Mechanics I†	(3-0)	3
MARE 242	Manufacturing Methods I†	(0-3)	1
MATH 152	Engineering Mathematics II	(3-2)	4
PHYS 208	Electricity and Optics	(3-3)	4
	Total Hours		17
Spring Semester			
MARE 206	Engineering Mechanics II†	(3-0)	3
MARE 207	Electrical Power I†	(2-3)	3
MARE 243	Manufacturing Methods II†	(1-3)	2
MARE 261	Engineering Analysis†	(3-0)	3
MARE 311	Steam Propulsion Plants†	(2-3)	3
HIST	American History Requirement‡	(3-0)	3
	Total Hours		17

JUNIOR YEAR

Fall Semester			
MARE 209	Mechanics of Materials†	(3-0)	3
MARE 305	Fluid Mechanics Theory†	(3-3)	4
MARE 306	Electrical Power II†	(2-3)	3
MARE 313	Heat Transfer†	(2-3)	3
Directed elective (Selected from marine sciences/engineering)			3
	Total Hours		16

Spring Semester

ENGL 301	Technical Writing	(3-0)	3
MARE 309	Marine Construction Materials†	(2-3)	3
MARE 312	Diesel Propulsion Plants†	(2-3)	3
POLS 207	State and Local Government	(3-0)	3
Elective in humanities/social and behavioral sciences/international and cultural diversityΔ		(3-0)	3
(Recommended any course fulfilling the humanities/international and cultural diversity requirement)			
	Total		15

SENIOR YEAR

Fall Semester

KINE 199	Required Physical Activity**	(0-2)	1
MARE 307	Marine Electronics†	(2-3)	3
MARE 441	Engineering Economics and Project Management†	(3-0)	3
MARE 451	Senior Design Project I†	(1-3)	2
POLS 206	American National Government	(3-0)	3
Elective in Marine Engineering**			3
	Total		15

Spring Semester

MARE 452	Senior Design Project II†	(1-3)	2
Elective in Marine Engineering†**			3
Elective in Marine Engineering†**			3
Elective in Marine Engineering†**			3
Elective in humanities/social and behavioral sciences/international and cultural diversityΔ		(3–0)	3
(Recommended any course fulfilling the humanities/international and cultural diversity requirement)			
	Total		14
	Total Hours¤		**125**

Note: All electives must be chosen in consultation with, and by, the student's academic advisor. See University Core Curriculum for a listing of course options for humanities and social and behavioral sciences electives. The 6-hour University Core Curriculum requirement for international and cultural diversity may be met with courses used to satisfy other degree requirements. Please consult with your academic advisor.

* - Must be taken S/U.

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

‡-The American history requirement may be fulfilled by American history courses offered at TAMUG, including HIST 370, 442 or 444. See Core Curriculum.

**-Students may take any of the 400 level courses offered by the Marine Engineering Department in their senior year including standard courses such as MARE 401, 402 and 405, which are offered to license option students.

¤-The total hours may be increased if the student is required to take remedial math, remedial English, computer science, foreign language or if the humanities or social science requirements do not fulfill the international and diverse cultures requirement.

Δ–Must complete 6-hours of humanities and 3-hours of social and behavioral sciences of which two courses must be designated as international and cultural diversity. Suggested courses are given in parenthesis.

Curriculum in Marine Sciences (MARS)

The Marine Sciences curriculum concentrates on the physical and chemical aspects of science of the marine, estuarine, and coastal environment. The coastal location of the campus enables students to acquire extensive hands-on field experience in addition to a solid base of academic instruction in chemistry, geology, physics, biology, and mathematics. Advanced work centers around four semesters of oceanography. Electives in the junior and senior year allow the student to obtain a broader background in ocean studies or to specialize, usually in the areas of environmental science, geology, or chemistry. The Marine Sciences graduate has a strong, well-rounded foundation in the quantitative physical sciences with considerable field and laboratory experience. With suitably chosen electives, graduates are qualified to enter M.S. or Ph.D. programs in Oceanography or related disciplines, or to move directly into jobs in environmental monitoring, oceanographic instrumentation, pollution control, the offshore oil industry and other fields.

Students majoring in Marine Sciences or Ocean and Coastal Resources can be eligible for a secondary teaching field in Physical Sciences, pending a passing score on the state certification test (ExCET). See the Teacher Certification section of this catalog.

Students may choose to pursue a minor in geology or chemistry through TAMU. To obtain a minor in geology you must choose a minimum of 16 hours of geology electives from the following: GEOL 104 (required), MARS 305, 306, 330, 340, 370, or 435. To obtain a minor in chemistry you must take CHEM 101/111, 102/112, 227, 228, 237, 238, 383, 316 and 318.

FRESHMAN YEAR

Fall Semester		**(Th-Pr)**	**Cr**
CHEM 101	Fundamentals of Chemistry I	(3-0)	3
CHEM 111	Fundamentals of Chemistry Laboratory I	(0-3)	1
ENGL 104	Composition and Rhetoric	(3-0)	3
GEOL 104	Physical Geology	(3-3)	4
KINE 199	Required Physical Activity*	(0-2)	1
MATH 151	Engineering Mathematics I	(3-2)	4
	Total		16
Spring Semester			
BIOL 111	Introductory Biology I	(3-3)	4
CHEM 102	Fundamentals of Chemistry II	(3-0)	3
CHEM 112	Fundamentals of Chemistry Laboratory II	(0-3)	1
KINE 198	Health and Fitness Activity	(0-2)	1
MATH 161	Engineering Mathematics II	(3-0)	3
OCNG 251	Oceanography†	(3-0)	3
OCNG 252	Oceanography Laboratory†	(0-2)	1
	Total		16

SOPHOMORE YEAR

Fall Semester			
BIOL 112	Introductory Biology II	(3-3)	4
CHEM 227	Organic Chemistry I	(3-0)	3
CHEM 237	Organic Chemistry I Lab	(0-3)	1
HIST	American History Requirement‡	(3-0)	3
MARS 281	Sophomore Seminar†	(1-0)	1
PHYS 218	Mechanics	(3-3)	4
	Total		16
Spring Semester			
CHEM 228	Organic Chemistry II	(3-0)	3
CHEM 238	Organic Chemistry II Lab	(0-3)	1
MARS 210	Marine Geography	(3-0)	3
MATH 251	Engineering Mathematics III	(3-0)	3
PHYS 208	Electricity and Optics	(3-3)	4
POLS 206	American National Government	(3-0)	3
	Total		17

JUNIOR YEAR

Fall Semester

HIST	American History Requirement‡	(3-0)	3
MARS 303	Introduction to Computing and Data Display†	(2-2)	3
or CPSC 203	Introduction to Computing † (3-0) Credit 3		
OCNG 420	Introduction to Biological Oceanography†	(3-0)	3
POLS 207	State and Local Government	(3-0)	3
Professional Elective §			3
	Total		15

Spring Semester

ENGL 301	Technical Writing	(3-0)	3
MARS 325	Introduction to Geographic Information Systems†	(2-2)	3
MARS 410	Introduction to Physical Oceanography†	(3-0)	3
MARS 440	Introduction to Chemical Oceanography†	(3-0)	3
Professional Elective §			3
	Total		15

SENIOR YEAR

Fall Semester

MARS 430	Introduction to Geological Oceanography†	(3-0)	3
MARS 481	Seminar†	(1-0)	1
Elective in Humanities			3
Professional Elective §			3
Professional Elective §			3
Elective			3
	Total		16

Spring Semester

MARS 460	Modern Oceanographic Methods†	(3-9)	6
MARS 485 or 488	Writing Intensive Directed Studies†	(3-0)	3
Elective in Humanities			3
Professional Elective §			3
	Total		15
		Total Hours¤	**126**

Note: All electives must be chosen in consultation with, and approved by, the student's academic advisor. See University Core Curriculum of course options for humanities and social sciences electives. The 6-hour University Core Curriculum requirement for international and cultural diversity may be met with courses used to satisfy other degree requirements. Please consult with your academic advisor.

* - Must be taken S/U.

†-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.

‡-The American history requirement may be fulfilled by American history courses offered at TAMUG, including HIST 370, 442 or 444. See Core Curriculum.

§-Professional Electives must be chosen from 300 or 400 level Science or Mathematics courses, except GEOL 301.

¤-The total hours may be increased if the student is required to take remedial math, remedial English, foreign language or international and diverse cultures courses.

Curriculum in Marine Sciences with a License Option (MARS-LO)

This program retains the basic physical science core of the Marine Sciences curriculum, and leads toward a license as a deck officer in the United States Merchant Marine. 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 combine a broad base of courses in physical science and mathematics and practical instruction in seamanship and navigation with upper-level oceanography courses chosen by the student.

The objective of the program is to provide students with a sound intellectual and educational background to function in a scientifically and technologically advanced society, while also providing the practical hands-on training needed for employment in the maritime industry. Graduates are particularly well qualified to serve on research vessels where an understanding of the scientific purpose of the voyage is required. Students who wish to enter a physical science graduate program will need to take additional course work in science and mathematics.

Cadets who enroll in and apply to graduate under one of the license option curricula must complete the appropriate license examination for Third Mate or Third Assistant Engineer in order to graduate from Texas A&M University. Certain USCG courses require a minimum grade of C (70%).

FRESHMAN YEAR

Fall Semester		**(Th-Pr)**	**Cr**
BIOL 111	Introductory Biology I	(3-3)	4
KINE 198	Health and Fitness Activity	(0-2)	1
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		15

Spring Semester			
BIOL 112	Introductory Biology II	(3-3)	4
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 aboard the University Training Ship

NAUT 200 Basic Communications, Navigation and Seamanship* 4

SOPHOMORE YEAR

Fall Semester			
CHEM 101	Fundamentals of Chemistry I	(3-0)	3
CHEM 111	Fundamentals of Chemistry Laboratory I	(0-3)	1
GEOL 104	Physical Geology	(3-3)	4
KINE 199	Required Physical Activity**	(0-2)	1
NVSC 200	Merchant Marine Officer I	(3-0)	3
PHYS 218	Mechanics	(3-3)	4
	Total		16

Spring Semester			
CHEM 102	Fundamentals of Chemistry II	(3-0)	3
CHEM 112	Fundamentals of Chemistry Laboratory II	(0-3)	1
MARS 210	Marine Geography	(3-0)	3
NAUT 301	Seamanship II*	(2-3)	3
NAUT 303	Celestial Navigation*	(2-3)	3
PHYS 208	Electricity and Optics	(3-3)	4
	Total		17

SUMMER SESSION-Ten weeks aboard the University Training Ship

NAUT 300	Intermediate Communications, Navigation and Seamanship*		4

JUNIOR YEAR

Fall Semester

MARS 303	Introduction to Computing and Data Display†	(2-2)	3
or CPSC 203	Introduction to Computing † (3-0) Credit 3		
MART 302	Marine Cargo Operations	(3-3)	4
NAUT 305	Ship Construction and Stability*	(3-3)	4
NAUT 306	Radar/ARPA*	(3-3)	4
OCNG 251	Oceanography †	(3-0)	3
	Total		18

Spring Semester

MARS	Option †§		3
MART 321	Admiralty Law I †	(2-0)	2
MART 406	Marine Cargo Operations II †	(3-2)	4
NAUT 304	Electronic Navigation*	(2-2)	3
NAUT 307	Global Maritime Distress Safety System*	(3-3)	4
Elective in Humanities			3
	Total		19

SUMMER SESSION - Ten weeks aboard the University Training Ship

NAUT 400	Advanced Communications, Navigation and Seamanship*		4

SENIOR YEAR

Fall Semester

ENGL 301	Technical Writing	(3-0)	3
HIST	American History Requirement‡	(3-0)	3
MARS	Option †§		3
MARS 481	Seminar†	(1-0)	1
METR 302	Weather Reports and Forecasting	(3-0)	3
NAUT 406	Bridge Watchstanding*	(1-3)	2
	Total		15

Spring Semester

HIST	American History Requirement‡	(3-0)	3
MARS 310	Field Methods in Marine Sciences †	(1-6)	3
MARS	Option†§		3
POLS 207	State and Local Government	(3-0)	3
Elective in Humanities			3
	Total		15
	Total Curriculum Hours ¤		**143**

Note: All electives must be chosen in consultation with, and approved by, the student's academic advisor. See University Core Curriculum for a listing of course options for humanities and social sciences electives. The 6-hour University Core Curriculum requirement for international and cultural diversity may be met with courses used to satisfy other degree requirements. Please consult with your academic advisor.

* - Indicates license courses leading to a USCG license endorsement or sea time credit accrual which require a minimum grade of C (70%) or better to earn the endorsement or accrual. Cadets will be required to repeat the course until they earn a grade of C (70%) or better. NAUT 307 GMDSS requires a score of 75% or better.

** - Must be taken S/U.

†-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 be fulfilled by American history courses offered at TAMUG, including HIST 370, 442 or 444. See Core Curriculum.

§-MARS option courses must be chosen from MARS 410, 430, 440, or 450, or OCNG 420.

¤-The total hours may be increased if the student is required to take remedial math, remedial English, foreign language or international and diverse cultures courses.

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 and issuance of Standards of Training, Certification and Watchkeeping (STCW) credentials. Cadets are also provided with solid fundamentals in business topics related to the maritime industry, ashore and afloat. Cadets who enroll in and apply to graduate in Marine Transportation must successfully complete the license examination for Third Mate in order to graduate from Texas A&M University. Courses earning USCG or STCW qualifications, sea time remission or STCW competency certification require a minimum grade of C (70%). In addition, all STCW proficiencies must be satisfactorily completed with a grade of 70% or better (See applicable course outlines available through the department).

FRESHMAN YEAR

Fall Semester		**(Th-Pr)**	**Cr**
ENGL 104	Composition and Rhetoric	(3-0)	3
KINE 199	Required Physical Activity *	(0-2)	1
MARS 250	Computer Applications	(2-2)	3
MATH 106	Plane and Spherical Trigonometry	(4-0)	4
NAUT 103	Maritime Orientation and Lifesaving †**	(2-3)	3
	Total		14
Spring Semester			
KINE 198	Health and Fitness Activity	(0-2)	1
HIST	American History Requirement‡	(3-0)	3
MATH 151	Engineering Mathematics I	(3-2)	4
MARE 100	Marine Engineering Fundamentals	(2-3)	3
NAUT 203	Seamanship I †**	(2-3)	3
NAUT 204	Terrestrial Navigation †**	(2-2)	3
	Total		17

SUMMER SESSION-Ten weeks aboard the University Training Ship

NAUT 200 Basic Communications, Navigation and Seamanship †** 4

SOPHOMORE YEAR

Fall Semester			
CHEM 101	Fundamentals of Chemistry I	(3-0)	3
CHEM 111	Fundamentals of Chemistry Laboratory I	(0-3)	1
ECON 202	Principles of Economics	(3-0)	3
PHYS 201	College Physics	(3-3)	4
POLS 206	American National Government	(3-0)	3
NVSC 200	Merchant Marine Officer I	(3-0)	3
	Total		17
Spring Semester			
ECON 203	Principles of Economics	(3-0)	3
HIST	American History Requirement‡	(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 aboard the University Training Ship

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

JUNIOR YEAR

Fall Semester

MARA 301	Ocean Transportation I†	(3-0)	3
MART 302	Marine Cargo Operations I†	(3-3)	4
NAUT 305	Ship Construction and Stability †**	(3-3)	4
NAUT 306	Radar/ARPA †**	(3-3)	4
	Total		15

Spring Semester

MART 321	Maritime Law I† **	(2-0)	2
MART 406	Marine Cargo Operations II† **	(3-2)	4
MGMT 211	Legal and Social Environment of Business	(3-0)	3
NAUT 304	Electronic Navigation †**	(2-2)	3
NAUT 307	Global Maritime Distress Safety System †**	(3-3)	4
	Total		16

SUMMER SESSION-Ten weeks aboard the University Training Ship

NAUT 400	Advanced Communications, Navigation and Seamanship †**		4

SENIOR YEAR

Fall Semester

ECON 452	International Trade Theory and Policy	(3-0)	3
MARA 421	Admiralty Law †	(3-0)	3
NAUT 406	Bridge Watchstanding †**	(1-3)	2
POLS 207	State and Local Government	(3-0)	3
Elective in Humanities			3
Elective in Math/Logical Reasoning §			3
	Total		17

Spring Semester

ENGL 301	Technical Writing	(3-0)	3
MARA 416	Port Operations Administration and Economics†	(3-0)	3
METR 302	Weather Reports and Forecasting	(3-0)	3
Elective in Humanities			3
Elective#			3
	Total		15
	Total Hours¤		**139**

Note: All electives must be chosen in consultation with, and approved by, the student's academic advisor. The 6-hour University Core Curriculum requirement for international and cultural diversity may be met with courses used to satisfy other degree requirements. Please consult with your academic advisor.

- Approved electives include but are not limited to MART 304, 489; MARA 212, 363, 401, 402, 435; MARS 405, METR 302, NAUT404. See University Core Curriculum for a listing of course options for humanities and social sciences electives.

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

* - Must be taken S/U.

** - Indicates license courses leading to a USCG/STCW license endorsement or sea time credit accrual which require a minimumgrade of C (70%) or better to earn the endorsement or accrual. Cadets will be required to repeat the course until they earn a grade of C (70%) or better. NAUT 307 GMDSS requires a score of 75% or better.

‡-The American history requirement may be fulfilled by American history courses offered at TAMUG, including HIST 370, 442 or 444. See Core Curriculum.

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

¤-The total hours may be increased if the student is required to take remedial math, remedial English, foreign language or international and diverse cultures courses.

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.

Students may elect to choose courses to obtain a Financial Management or Operations Management track. A minor in economics may be obtained (see electives).

FRESHMAN YEAR			
Fall Semester		**(Th-Pr)**	**Cr**
HIST	American History Requirement‡	(3-0)	3
KINE 198	Health and Fitness Activity	(0-2)	1
MARA 205	Introduction to Ships and Shipping †	(3-2)	4
MATH 141	Business Math I	(3-0)	3
POLS 206	American National Government	(3-0)	3
	Total		14
Spring Semester			
ENGL 104	Composition and Rhetoric	(3-0)	3
HIST	American History Requirement‡	(3-0)	3
MARA 250	Management Information Systems†	(2-0)	2
MATH 142	Business Math II	(3-0)	3
Elective in Science §			4
	Total		15
SOPHOMORE YEAR			
Fall Semester			
ACCT 229	Introduction to Accounting †	(3-0)	3
ECON 202	Principles of Economics †	(3-0)	3
ENGL 203	Introduction to Literature	(3-0)	3
MARA 301	Ocean Transportation I †	(3-0)	3
Elective in Science §			4
	Total		16
Spring Semester			
ACCT 230	Introduction to Accounting †	(3-0)	3
ECON 203	Principles of Economics†	(3-0)	3
MARA 212	Business Law †	(3-0)	3
MARA 281	Seminar in Undergraduate Research Methods†	(1-0)	1
MARA 304	Ocean Transportation II †	(3-0)	3
POLS 207	State and Local Government	(3-0)	3
	Total		16
JUNIOR YEAR			
Fall Semester			
INFO 303	Statistical Methods †	(3-0)	3
MARA 363	Management Process †	(3-0)	3
MKTG 321	Marketing †	(3-0)	3
Elective in MARA †∇			3
Elective in MARA †∇			3
	Total		15

Spring Semester

ENGL 301	Technical Writing	(3-0)	3
FINC 341	Business Finance †	(3-0)	3
INFO 364	Operations Management †	(3-0)	3
Elective in Humanities			3
Elective in MARA †∇			3
	Total		15

SENIOR YEAR

Fall Semester

MARA 373	Human Resource Management †	(3-0)	3
MARA 421	Admiralty Law †	(3-0)	3
MARA 440	Global Economy and Enterprise Management †		3
Elective in MARA †∇			3
Elective (General)			3
	Total		15

Spring Semester

KINE 199	Required Physical Activity *	(0-2)	1
MARA 466	Strategic Management †	(3-0)	3
MGMT 481	Seminar in Management †	(1-0)	1
Elective in MARA †∇			3
Elective in MARA †∇			3
Elective (General)			3
	Total		14
	Total Hours¤		**120**

Note: All electives must be chosen in consultation with, and approved by, the student's academic advisor. See University Core Curriculum for a listing of course options for humanities and social sciences electives. Students are advised that 6 credits in the degree must represent courses that satisfy University Core Curriculum requirements in international and cultural diversity. ENGL 222, ENGL 251, ENGL 339 and ENGL 374 may be taken in substitution for ENGL 203 (which is required in the curriculum) and also satisfies the international and cultural diversity requirement. All electives should be chosen in consultation with a student's advisor.

* - Must be taken S/U.

†-Indicates required courses in the Maritime Administration major. These courses will be used to compute the major GPR. At the time of graduation, a MARA major must have a GPR of ≥ 2.25 in their major. A MARA major must achieve a grade of "C" or better in ECON 202, ECON 203, ACCT 229, ACCT 230 and INFO 303 as a graduation requirement. These courses may be repeated as necessary to meet this requirement, and the requirement applies to courses taken at TAMUG or offered for transfer from other institutions.

‡-The American history requirement may be fulfilled by American history courses offered at TAMUG, including HIST 370, 442 or 444. See Core Curriculum.

§-Four credit hours in introductory biology, chemistry, physics, oceanography or geology, one credit hour which must be a laboratory.

¤-The total hours may be increased if the student is required to take remedial math, remedial English, foreign language or international and diverse cultures courses.

∇ - MARA Electives: Students are required to complete 18 credit hours of MARA electives and may elect a financial management or operations management track:

Financial Management Track - Students electing a Financial Management Track should choose 6 from the following 7 courses: ACCT 315, ACCT 316, ECON 311, ECON 323, ECON 452, MARA 342 or MARA 424.

Operations Management Track - Students electing on Operations Management Track should register for all of the following 6 courses: INFO 336, MARA 401, MARA 402, MARA 416, MARA 450 and MARA 460. Students not interested in either track should choose any 6 courses from either track giving consideration to required prerequisites.

To earn the economics minor, the student's elective hours must include ECON 311, ECON 323 and ECON 452. For additional requirements of the economics minor, please see the section below.

Minor in Economics

Students may elect a major in Maritime Administration with an Economics minor. To receive the Economics minor, the student must earn a "C" or better in 15 credit hours of economic study. Courses available in the MARA curriculum that satisfy this requirement are ECON 202, ECON 203, ECON 311, ECON 323 and ECON 452.

Minor in Maritime Administration

Students in other majors may establish a minor field of study in Maritime Administration through completing 18 credits in the follow courses. A minimum GPR of 2.25 for the 18 credit hours is required.

Required Courses (total 9 required credits):

ACCT 229	Introduction to Accounting
MARA 363	Managerial Process
MARA 416	Port Operations, Administration and Economics

Elective Courses (total 9 required credits):

ACCT 230	Introduction to Accounting
ECON 452	International Trade Theory and Policy
FINC 341	Business Finance
INFO 336	Decision Support Systems
INFO 364	Operations Management
MARA 342	Managerial Maritime Finance
MARA 401	Brokerage and Chartering
MARA 402	Inland Waterways
MARA 424	Economics of Transportation
MARA 450	Maritime Supply Chain Management
MARA 460	Management Systems and Control
MARA 466	Strategic Management
MKTG 321	Marketing

Substitutions may be authorized by the Head, Department of Maritime Administration.

Curriculum in Maritime Studies (MAST)

Maritime Studies, the only Bachelor of Arts program offered at TAMUG, offers students a unique opportunity to look at the ocean through a series of broad-based interdisciplinary courses. The principle objective of a liberal arts education is to achieve a fundamental knowledge of the forces that have shaped and continue to direct our cultural identity. Maritime Studies students have interests that are not restricted to science, business or technology. The program focuses on the human aspects of the coastal and maritime environment. Nearly half of the nation's population lives within 50 miles of a coastline; and within 10 years that percentage is expected to grow significantly.

Tracks are offered in Archaeology, Public Policy, Cultural Studies and General Studies. Students tailor the program to meet their interests by selecting advanced courses from the fields of tourism, environmental management and anthropology/archaeology. Graduates are prepared for fields of environmental management, tourism, public service, pre-law or graduate studies in related fields.

Courses are offered in ethics, public administration and politics, anthropology, nautical archaeology, literature, statistics, maritime law and the history of the sea.

Elective courses allow students to design an important part of their curriculum. They might pursue a minor, study abroad for a semester, enroll in an internship, participate in field studies or concentrate on a particular topic.

Degree Requirements (120 hours must be completed from the following):

Maritime Studies. The student must complete 39 hours of courses in the major field as listed below. A grade of C or higher is required if the course is to be counted in the major field:

Credits	Course
3	ANTH 210 (Cultural Anthropology)
3	ANTH 316 (Nautical Archaeology)
3	ENGL 335 (Literature of the Sea)
3	HIST 232 (History of American Seapower)
3	MAST 411 (International Maritime Culture)
3	MAST 425 (Writing in Maritime Studies)
21	Selected from track sequences as defined below

Tracks (choose one of the following four tracks)

Archaeology Track

3	ANTH 202 (Introduction to Archaeology)
3	ANTH 318 (Nautical Archaeology of the Americas)
3	MAST 350 (History of Wooden Ship Building)
3	MAST 371 (Archaeology of the Pacific)
9	Directed Electives
	Minor in Anthropology

Public Policy Track

3	MARA 470 (Environmental Law)
3	PHIL 314 (Environmental Ethics)
3	POLS 331 (Introduction to World Politics)
3	POLS 347 (Politics of Energy and the Environment)
9	Directed Electives
	Minor in Economics, History or Maritime Administration

Cultural Studies Track

3	CLAS 371 (Homer and the Trojan War)
3	ENGL 415 (Studies in a Major Author)
3	MAST 320 (Introduction to Museums)
3	Philosophy (300- or 400-level, approved by advisor)
9	Directed Electives
	Minor in Anthropology, English or History

General Studies Track

21	Directed Electives selected from below (no minor needed): ANTH 318, CLAS 371, MARA 470, MAST prefix courses 300-level and higher (no more than 3 hours of MAST 484 or 485); PHIL 314, POLS 331, POLS 347

Directed Electives

3	ANTH 202 Introduction to Archaeology
3	ANTH 318 Nautical Archaeology of the Americas
3	ENGL 415 Studies in a Major Author
3	MARA 470 Environmental Law
3	MAST 320 Introduction to Museums
3	MAST 350 History of Wooden Ship Building
3	MAST 371 Archaeology of the Pacific
1-6	MAST 484 Undergraduate Internship
1-6	MAST 485 Independent Study*
1-4	MAST 489 Special Topics
1-4	MAST 491 Undergraduate Research*
3	PHIL 314 Environmental Ethics
3	POLS 331 World Politics
3	POLS 347 Politics of Energy and the Environment

* Only 3 hours of MAST 484-491 may be used to satisfy the requirements of the track sequence. Additional hours may be used to satisfy free electives.

Core Curriculum and other Program Requirements

Credits	Course
3	ENGL 104 Composition and Rhetoric
3	Communication (3 hours): To be selected from ENGL 203, 210, 301, 235, 236 or 241; COMM 203 or 243.
6	Mathematics: MATH 131-467 (excluding 150, 165, 365, and 366). Three hours also may be in logic (PHIL 240, 341, 342).
8	Natural Sciences: Two or more courses which deal with the fundamental principles and in which a critical evaluation and analysis of data and processes are required. A minimum of one course shall include a corresponding laboratory. See approved list in the University Core Curriculum section of this catalog.
9	Humanities: To be selected from areas such as archaeology, history, philosophy, literature, the arts, culture, and language. See approved list in the University Core Curriculum section of this catalog.
3	Social and Behavioral Sciences: To be selected from areas such as anthropology, economics, geography, psychology, and applied ethics. See approved list in the University Core Curriculum section in this catalog.
12	U.S. History and Political Science: POLS 206 and 207. 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.
2	Kinesiology: KINE 198 Health and Fitness Activity and KINE 199 Required Physical Activity.
14	Foreign Language: Four-course sequence in French, German, Russian, Spanish, Italian, Japanese, Greek, or Latin.
(6)	International and Cultural diversity: To be selected from approved list. These courses may also be used to satisfy other requirements.
21	Free Electives: May be used to satisfy the Minor requirements.

Curriculum in Maritime Systems Engineering (MASE)

Texas A&M University at Galveston is a special purpose institution engaged in teaching, research, and public service pertaining to the general field of marine resources. Within this context, the goal of the Department of Maritime Systems Engineering is to prepare students for performing engineering work and advanced study in the offshore and coastal realm. Opportunities for such work abound in the vicinity of the University, which is located just south of the fourth largest metropolis in the U.S. The Houston/Galveston area is regarded as the international focus of the oil industry. As this industry ventures into ever-increasing water depths, it presents a wide array of engineering challenges. Similarly, the exposure of its coastline to the extremely energetic climatic regime of the Gulf of Mexico, as well as the impacts of a high level of urbanization and industrialization in the area, call for novel sustainable engineering approaches to deal with widespread coastal erosion and various environmental issues. Finally, the extensive port facilities in Galveston and Houston and the recreational and ship traffic on navigable waterways, afford opportunities to design and maintain a variety of associated engineered structures.

The educational objectives of the program are to produce students who practice engineering pertaining to offshore and coastal structures and associated marine systems (e.g. platforms, pipelines, harbors, terminals, etc.) in support of local industry and government agencies, in particular, to plan, design, construct, and maintain engineering works intended to: advance the extraction and transport of oil and gas products, protect the coastal environment from natural hazards as well as human/industrial influences, and to develop facilities for marine transportation; and are well-prepared to engage in lifelong education and professional development, including advanced study.

The program is accredited by the Accreditation Board for Engineering and Technology (ABET).

FRESHMAN YEAR

Fall Semester		**(Th-Pr)**	**Cr**
ENGR 111	Fundamentals in Engineering I∇	(1-3)	2
ENGL 104	Composition and Rhetoric ∇	(3-0)	3
KINE 199	Required Physical Activity*	(0-2)	1
MATH 151	Engineering Mathematics I ∇	(3-2)	4
PHYS 218	Mechanics ∇	(3-3)	4
	Total		14
Spring Semester			
CHEM 107	General Chemistry for Engineering Students ∇	(3-3)	4
ENGR 112	Fundamentals in Engineering II ∇	(1-3)	2
MATH 152	Engineering Mathematics II ∇	(3-2)	4
PHYS 208	Electricity and Optics ∇	(3-3)	4
Social Science Elective			3
	Total		17

SOPHOMORE YEAR

Fall Semester			
ENGL 203	Introduction to Literature	(3-0)	3
ENGR 221	Statics and Particle Dynamics ∇	(2-2)	3
HIST	American History Requirement‡	(3-0)	3
MASE 212	Engineering Science in Thermodynamics	(2-3)	3
MATH 251	Engineering Mathematics III	(3-0)	3
POLS 206	American National Government	(3-0)	3
	Total		18
Spring Semester			
CVEN 365	Intro. to Geotechnical Engineering	(2-2)	3
MASE 210	Properties of Engineering Materials	(0-3)	1
MASE 214	Mechanics of Deformable Bodies	(3-0)	3
MASE 215	Principles of Electrical Engineering	(2-2)	3
MATH 308	Differential Equations ∇	(3-0)	3
Humanities Elective			3
	Total		16

SUMMER SESSION AT THE MITCHELL CAMPUS

ENGL 301	Technical Writing	(3-0)	3
KINE 198	Health and Fitness Activity	(0-2)	1

JUNIOR YEAR

Fall Semester

CVEN 311	Fluid Dynamics†∇	(3-0)	3
CVEN 345	Theory of Structures†∇	(3-0)	3
MASE 310	Engineering Analysis†	(3-0)	3
MASE 336	Flow Measurement Fundamentals†	(2-2)	3
MASE 459	Mechanical Vibrations†	(3-0)	3
	Total		15

Spring Semester

CVEN 446	Structural Steel Design †	(3-0)	3
MASE 301	Hydrodynamics of Offshore Structures†	(3-0)	3
MASE 344	Reinforced Concrete Structures†	(2-3)	3
OCEN 300	Ocean Engineering Wave Mechanics†∇	(3-0)	3
Technical Electives §†			3
	Total		15

SUMMER SESSION AT THE MITCHELL CAMPUS

MASE 405	Finite Element Analysis in Engineering Design†	(3-0)	3

SENIOR YEAR

Fall Semester

HIST	American History Requirement‡	(3-0)	3
MASE 415	Marine Structures Design†	(3-0)	3
MASE 400	Introduction to Coastal Engineering†	(3-0)	3
MASE 406	Capstone Design I †	(1-0)	1
Technical Electives §§†			6
	Total		16

Spring Semester

MASE 401	Underwater Acoustics†	(3-0)	3
MASE 407	Capstone Design II†	(0-6)	3
MASE 410	Measurements in the Ocean Laboratory†	(0-3)	1
MASE 482	Seminar	(1-0)	1
POLS 207	State and Local Government	(3-0)	3
General Science Elective**		(3-0)	3
	Total		14
		Total Hours¤	**132**

∇ - Indicated courses in which the student must achieve a grade of C or better.

†-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 American history courses offered at TAMUG, including HIST 370, 442 or 444. See Core Curriculum.

¤-The total hours may be increased if the student is required to take remedial math, remedial English, foreign language or international and diverse cultures courses.

§ - To be selected from MASE 319, MASE 485 and MASE 489.

§§ - To be selected from MASE 411, MASE 421, MASE 483, MASE 485 and MASE 489.

* - Must be taken S/U.

** - To be chosen from MARS 306, MARS 370, MARS 410, MARS 430, or MARS 435; or by approval of the MASE Department Head.

Note 1: All electives must be chosen in consultation with, and approved by, the student's academic advisor. See University Core Curriculum for a listing of course options for humanities and social sciences electives. The 6-hour University Core Curriculum requirement for international and cultural diversity may be met with courses used to satisfy other degree requirements. Please consult with your academic advisor.

Note 2: A grade of C or better will be required for the Common Body of Knowledge (CKB) Courses (MATH 151, MATH 152; PHYS 208, PHYS 218; CHEM 107; ENGL 104; ENGR 111 and 112). Failure to meet this requirement will prevent the student from continuing any sequence in which the course is a prerequisite.

Note 3: MASE students are required to earn a grade of C or better in ENGR 211/221, CVEN 311, CVEN 345, OCEN 300 and MATH 308. Failure to meet this requirement will prevent the student from continuing any sequence in which the course is a prerequisite.

Note 4: MASE students must complete all mathematics courses (MATH 151, 152, 251 and 308) before taking MASE 310 and MASE 405.

Note 5: MASE 407 cannot be taken prior to the last semester before graduation.

Curriculum in Ocean and Coastal Resources (OCRE)

Ocean and Coastal Resources (OCRE) will educate students with regard to the economic, environmental and social issues related to the development of marine resources, while providing them with the scientific background needed to understand these issues. These resources include fisheries, oil and gas, ocean mining and others. The OCRE degree differs considerably in content from the Marine Sciences (MARS) curriculum through increased focus on geological and biological sciences, along with economics, political science and law. While the present MARS program is designed to produce well-rounded physical scientists, the OCRE curriculum is oriented more to societal and environmental impacts of ocean science.

Many of the resource development issues in today's world center around environmental pollution, sustainable development, biological diversity, fisheries and mariculture and oil and gas development. Every aspect of marine resources development is undergoing rapid growth. From fisheries management to ocean mining and offshore oil and gas development, the demand for trained entry-level personnel from both government and industry is extremely high. There is also a strong demand for individuals who understand and can use scientific information in the planning and management process, but who are not themselves bench or field scientists.

Student in OCRE may establish a minor field of study in Maritime Administration through completing 18 credits as outlined in the Maritime Administration curriculum pages. A minor in Ocean and Coastal Resources is available for students of other University disciplines.

Students majoring in Ocean and Coastal Resources can be eligible for a secondary teaching field in Physical Sciences, pending a passing score on the state certification test (ExCET). See the Teacher Certification section of this catalog.

FRESHMAN YEAR

Fall Semester		**(Th-Pr)**	**Cr**
BIOL 111	Introductory Biology I	(3-3)	4
ENGL 104	Composition and Rhetoric	(3-0)	3
GEOL 104	Physical Geology	(3-3)	4
KINE 198	Health and Fitness Activity	(0-2)	1
MATH 151	Engineering Mathematics I	(3-2)	4
	Total Hours		16
Spring Semester			
BIOL 112	Introductory Biology II	(3-3)	4
KINE 199	Required Physical Activity*	(0-2)	1
MATH 161	Engineering Mathematics II	(3-0)	3
or MATH 166	Topics in Contemporary Mathematics II		
OCNG 251	Oceanography†	(3-0)	3
OCNG 252	Oceanography Laboratory†	(0-3)	1
POLS 206	American National Government	(3-0)	3
	Total Hours		15

SOPHOMORE YEAR

Fall Semester			
CHEM 101	Fundamentals of Chemistry I	(3-0)	3
CHEM 111	Fundamentals of Chemistry Laboratory I	(0-3)	1
MARS 210	Marine Geography	(3-0)	3
MARS 250	Computer Applications	(2-2)	3
PHYS 218	Mechanics	(3-3)	4
or PHYS 201	College Physics		
POLS 207	State and Local Government	(3-0)	3
	Total Hours		17
Spring Semester			
CHEM 102	Fundamentals of Chemistry II	(3-0)	3
CHEM 112	Fundamentals of Chemistry Laboratory II	(0-3)	1
ECON 202	Principles of Economics	(3-0)	3
MARS 280	Coastal and Ocean Resources †	(3-0)	3
MGMT 211	Legal and Social Environment of Business	(3-0)	3
STAT 201	Elementary Statistical Inference	(3-0)	3
	Total Hours		16

JUNIOR YEAR

Fall Semester

COMM 203	Public Speaking	(3-0)	3
ECON 323	Microeconomic Theory	(3-0)	3
or AGEC 350	Environmental and Natural Resource Economics	(3-0)	
HIST	American History Requirement **	(3-0)	3
OCNG 420	Introduction to Biological Oceanography†	(3-0)	3
Professional Elective ‡			3
	Total Hours		15

Spring Semester

MARB 431	Wetlands Ecology †	(2-6)	4
or MARB 430	Coastal Plant Ecology †	(3-3)	
HIST	American History Requirement**	(3-0)	3
MARS 310	Field Methods in Marine Sciences§†∇	(1-6)	3
Professional Elective ‡			3
Elective			4
	Total Hours		17

SENIOR YEAR

Fall Semester

GEOL 301	Mineral Resources †	(2-3)	3
or MARS 330	Petroleum Geology †	(3-0)	
MARS 481	Seminar†	(1-0)	1
POLS 347	Politics of Energy and the Environment	(3-0)	3
Professional Elective ‡			3
Elective			4
	Total Hours		14

Spring Semester

ENGL 301	Technical Writing	(3-0)	3
MARS 430	Introduction to Geological Oceanography †	(3-0)	3
PHIL 314	Environmental Ethics	(3-0)	3
Professional Elective ‡			3
Humanities Elective			3
Elective			3
	Total Hours		18

Total Curriculum Hours¤ 128

* - Must be taken S/U.

** The American history requirement may be fulfilled by American history courses offered at TAMUG, including HIST 370, 442 or 444. See Core Curriculum.

†-Indicates required courses in the Ocean and Coastal Resources 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.

‡ Recommended professional electives are:

CHEM 316 Quantitative Analysis
CHEM 318 Quantitative Analysis Laboratory
CHEM 383 Chemistry of Environmental Pollution
MARA 470 Environmental Law
MARB 320 Fisheries Techniques
MARB 340 Tropical Marine Ecology
MARB 345 Introduction to Scientific Diving
MARB 423 Mariculture
MARB 432 GIS Use in Coastal Resources.
MARB 438 Field Ornithology
MARB 445 Marine Fisheries Management
MARS 305 Paleontology
MARS 325 Introduction to GIS for Marine Sciences
MARS 330 Petroleum Geology
MARS 370 Coastal Processes
MARS 410 Introduction to Physical Oceanography
MARS 415 Remote Sensing Technology
MARS 435 Exploration Geophysics
MARS 440 Introduction to Chemical Oceanography
MARS 484 Undergraduate Internship
MARS 485 Problems in Marine Sciences
MARS 488 Writing Intensive Directed Studies in Marine Sciences.

Note: For this elective credit both CHEM 316 and CHEM 318 are required.

§- Field Experience may also be met with MARB 300 plus one credit hour of a field oriented lab course.

¤-The total hours may be increased if the student is required to take remedial math, remedial English, foreign language or international and diverse cultures courses.

∇ - Students may choose to take MARS 460 and gain credit for MARS 310 and one 3-hour Professional Elective.

Note: The 6-hour University Core Curriculum requirement for international and cultural diversity may be met with courses used to satisfy other degree requirements. Please consult with your academic advisor.

Minor in Ocean and Coastal Resources

Students in other majors may establish a minor field of study in Ocean and Coastal Resources through the completion of at least 16 hours of the following courses:

Required Courses (total 7 required credits):

MARS 280	Coastal and Ocean Resources
GEOL 104	Physical Geology
or OCNG 251/252	Oceanography/Oceanography Laboratory

Select 3-6 hours from the following courses:

MARS 410	Introduction to Physical Oceanography
MARS 430	Introduction to Geological Oceanography
MARS 440	Introduction to Chemical Oceanography
OCNG 420	Introduction to Biological Oceanography

Select 3-6 hours from the following courses:

POLS 347	Politics of Energy and the Environment
PHIL 314	Environmental Ethics
MARA 470	Environmental Law

Curriculum in University Studies

Students who are currently enrolled at Texas A&M University or Texas A&M University at Galveston may submit proposals to enroll as University Studies majors. The University Studies Degree format was created to provide students the flexibility to combine areas of study within either or both campuses that are of special interest.

The combination of courses may not be possible through existing degree plans. This flexibility may be attractive to students who have particular career paths or post-baccalaureate degree paths in mind.

All University Studies degree plans require at least 120 hours for completion. A University Studies Degree consists of a concentration of 21-24 hours and two minors of 15-18 hours each. Specific courses may be required for the completion of the hours in the concentrations and minors. Some concentrations and minors contain required courses that have additional prerequisites. One of the two minors must be completed in a college outside of the college that provides the concentration for the student's degree.

Students must submit a Proposed Course Form that lists the courses for the individual degree plan the student hopes to complete to the University Studies admissions committee. The application includes a required 2-3 page essay in which the student can explain how the degree will help the student meet the desired educational and personal goals. Once it is determined that the Proposed Course Form has been completed with appropriate information, it will be reviewed by the department that offers the concentration. Students must be in good academic standing, and they must have good academic standing in previous courses that count toward the area of concentration or minors.

A University Studies major will be considered a student in the department that offers the concentration. The student's diploma will list Bachelor of Arts or Bachelor of Science in the same place it is currently listed, and University Studies will be listed in the place the major is currently listed. The student's area of concentration and the two minors will be indicated on the student's transcript.

Concentration in Marine Environmental Law and Policy

The student must complete a minimum of 6 hours at the 400-level and 36 hours of 300-400 level coursework in residence at Texas A&M University at Galveston.

A. The student must select 21-24 hours from among the following courses for the area of concentration. If there will be more than 24 hours in the area of concentration, the student should include a justification.

Two approved writing courses will be required for the University Studies degree. The writing courses may be in the area of concentration or the minors. Please indicate writing courses in the area of concentration, if any, with a W following the course number (TAMU 400 W). If courses required for the area of concentration include a course or courses from outside the department of the area of concentration, please include a letter of support from the department(s) offering the course(s). Courses listed as part of the University Core Curriculum do not need a letter of support.

1. The following 15 hours of coursework are required:*

MARA 212	Business Law	3 credit hours
MARA 421	Admiralty Law	3 credit hours
MARA 470	Environmental Law	3 credit hours
PHIL 314	Environmental Ethics	3 credit hours
POLS 347	Politics of Energy and the Environment	3 credit hours

2. Select 6-9 hours from the following courses:*

MARA 304	Ocean Transportation II	3 credit hours
MARA 435	Labor Law and Policy	3 credit hours
MARS 491	Research in Marine Sciences	1-4 credit hours
MGMT 211 or MARA 363	Legal and Social Environment of Business or The Management Process	3 credit hours
RPTS 340	Recreation, Parks and Diverse Populations	3 credit hours
WFSC 303	Fish and Wildlife Laws and Administration	3 credit hours
WFSC 420	Ecology for Teachers	3 credit hours

* If the area of concentration requires students to select courses from a list of pre-selected combinations, please duplicate this table; e.g. two courses from column A, two courses from column B.

B. Students will select two minors (30-36 hours). One must be from outside the college offering the area of concentration.

C. Free electives (17-26 hours). If there will be fewer than 17 hours of free electives, please include a justification in the preceding 2-3 page statement.

D. Courses in the University Core Curriculum will be required for this area of concentration (43 hours). There is a graduation requirement which includes 6 hours of international and cultural diversity courses. Refer to the International and Cultural Diversity table for a list of acceptable courses. A course satisfying a University Core Curriculum category, a college/departmental requirement, or a course used as a free elective may be used to satisfy this requirement.

E. Completion in high school of two units of the same foreign language or one year of college work is required for graduation.

TEACHER CERTIFICATION OPTIONS

Students may now complete teacher certification while attending Texas A&M University at Galveston through a collaborative program with Texas A&M University. Education courses will be offered via distance education. Student teaching will be completed at a Galveston secondary school.

Students majoring in Marine Biology can be eligible for a secondary teaching field in Life Sciences and students majoring in Marine Sciences or Ocean and Coastal Resources can be eligible for a secondary teaching field in Physical Sciences, pending a passing score on the state certification test (ExCET).

Students may begin one of two teacher certification programs offered by Texas A&M University-College Station during their final year at Texas A&M University at Galveston. These options include:

1. Accelerate Online, a No Child Left Behind approach program, provides those pursuing science, mathematics, social science, and language arts related degrees a highly structured online program followed by entry into a paid teaching position (internship) in a secondary (grades 8 – 12) classroom. This continuing education program can be completed in 12 – 18 months. For additional information on Accelerate Online, please visit the website: http://accelerate.tamu.edu

2. The Secondary Graduate Certification Program leads to initial secondary (grades 8 – 12) certification in the areas of science, mathematics, social science, language arts (including modern languages), computer science, theater arts and communication. The potential for a paid internship and the opportunity to apply all course work toward the Master of Education degree in Curriculum & Instruction are unique features of this program. For additional information on the Secondary Graduate Certification Program, please visit the website: http://post-bacc.coe.tamu.edu

Master of Education in Curriculum and Instruction | Online

Texas A&M University – College Station is offering a Master of Education in Curriculum and Instruction via Distance Education. This program will enable certification candidates in the Secondary Graduate Certification Program to complete their Master of Education degree at a distance.

This program enables educators in schools who cannot come to campus for classes, to complete their instruction while remaining employed. Because of the flexible degree program that the Master of Education in Curriculum and Instruction affords, this degree may be earned through residential courses, using a combination of residential and distance courses, or on-line distance education entirely.

This M.Ed. degree distance education option in Curriculum and Instruction provides a sound combination of theory, methodology, and a substantive content area, with some flexibility within the program emphasis, supporting areas. This 36-semester hour graduate degree option in Curriculum and Instruction is designed to assist teachers to develop effective teaching and research tools that increase educational opportunity and workplace access. For additional information contact Kerri Smith at ksmith@coe.tamu.edu

GRADUATE STUDIES

Texas A&M University System Graduate Faculty

The Texas A&M University System has established a System Graduate Faculty which enables and facilitates the collaborative research and teaching among faculty members of the nine universities and the Health Science Center within the System. By acquiring status through the System Graduate Faculty, a member of the Texas A&M University System Graduate Faculty may teach graduate courses and serve as member or co-chair (but not as chair) with a member of the Texas A&M University Graduate Faculty.

System Graduate Faculty Guidelines

I. Purpose. The Texas A&M University System Graduate Faculty has been developed for the following purposes:

A. To facilitate participation in graduate education for a student in The Texas A&M University System.

B. To provide a graduate student access to the expertise of faculty members throughout the System.

C. To increase inter-institutional faculty collaboration throughout The Texas A&M University System.

D. To promote the development of multi-disciplinary educational and research programs and the capacity to study complex scientific and social issues.

II. Membership Background

Membership on The Texas A&M University System Graduate Faculty provides the opportunity to participate in graduate education at The Texas A&M University System universities through serving on graduate committees, advising a graduate student, and teaching graduate courses.

A. Appointment to membership on The Texas A&M University System Graduate Faculty is designed to assure rigor in the directing, counseling, and teaching of a graduate student.

B. All of The Texas A&M University System Graduate Faculty members can serve as members of any graduate committee.

C. The chair, or co-chair, of a graduate committee must be from the institution that is conferring the graduate degree.

III. Membership Qualifications. Consideration for membership on The Texas A&M University System Graduate Faculty requires meeting the following qualifications.

The individual must hold the terminal degree, usually an earned doctorate. Exceptions will be considered only if justified in accordance with the Commission on Colleges of the Southern Association of Colleges and Schools.

A. The individual must be a tenured or a tenure-track faculty member of a Texas A&M University System university and hold a professorial rank.

B. A person holding the title of instructor or lecturer may not be considered for membership on The Texas A&M University System Graduate Faculty.

C. Individuals holding professorial rank at an agency of The Texas A&M University System are eligible for membership.

D. The individual must be a member of the graduate faculty at his/her home institution.

E. The individual must be an active participant in his/her graduate program through teaching, directing or administering graduate work.

F. The individual must show evidence of active research and scholarly work within the past five years. This should include publication as primary author of scholarly works in peer-reviewed journals, publication of scholarly books, presentations at professional meetings, or creative works, such as performances, work in juried exhibitions, or other creative works appropriate to the individual's discipline.

G. A graduate student at any Texas A&M University System institution may not be a member of The Texas A&M University System Graduate Faculty. Membership on The Texas A&M University System Graduate Faculty is forfeited upon a faculty or staff member's admission to a graduate program at any institution in The Texas A&M University System.

IV. Nomination, Appointment and Review Process

Nomination for membership to The Texas A&M University System Graduate Faculty is made by submission of an official application by a faculty member and an accompanying letter of endorsement from the individual's department head or chair and college dean. The application and letter of endorsement are sent to the graduate dean, who certifies institutional graduate faculty appointment status, and forwards the nomination to the Texas A&M University System Council of Graduate Deans for consideration and action.

A. The application from the faculty member must identify the institutional graduate faculty of which he or she is a member, specify the graduate degree(s) that he or she is qualified to supervise under the conditions of the institutional appointment, and specify the graduate program(s) in which he or she wishes to participate as a System graduate faculty member. The application should be accompanied by a current curriculum vitae.

B. TH. Council of Graduate Deans will appoint faculty from member institutions as needed to a Graduate Faculty Review Advisory Committee to consider applications and reappointments and to make recommendations to the Council of Graduate Deans.

C. A Graduate Faculty member of The Texas A&M University System is appointed for a five-year term. At the end of the five-year term, the member will be re-evaluated for reappointment by the Council of Graduate Deans. Failure to maintain membership criteria will result in removal from The Texas A&M University System Graduate Faculty. The Council of Graduate Deans will notify by letter a faculty member who is non-voluntarily removed from membership on The Texas A&M University System Graduate Faculty. The faculty member's department head, dean, provost and graduate dean will also receive notification.

V. Graduate Faculty Membership List. A list of the current membership of The Texas A&M System Graduate Faculty will be maintained in the Office of the Vice Chancellor for Academic and Student Affairs, the graduate office at each System university and on The Texas A&M University System Graduate Education website at tamusystem.tamu.edu/graduate-education/graduate-faculty-membership.

Master of Marine Resources Management (MARM)

The Master of Marine Resources Management (MARM) provides students with a broad understanding of coastal and ocean policy and management. The demand for graduates from this program in industry, government, academia and non-governmental organizations (NGO's) has never been stronger. Federal agencies employing graduates include the U.S. Coast Guard, the U.S. Army Corps of Engineers, and the Environmental Protection Agency. State agencies include the Texas General Land Office and the Texas Commission on Environmental Quality. Industries employing graduates include oil and natural gas, environmental consulting companies, ports, and tourism. These organizations have identified the need for a degree which focuses on national and international ocean resource law and policy; coastal zone management; physical and geochemical marine resources management strategies; and fisheries management. This degree program views marine natural resources management and policy development from both an ecological and policy perspective.

The degree may be viewed as a degree comparable to an MBA as an alternative terminal degree for people working in marine/ocean/coastal organizations. In addition, the degree program may address the needs of some public school science teachers seeking a degree outside the field of education.

Students interested in applying for admission to this program should visit the website *www.applytexas.org* to obtain an online graduate admission application for Texas AM University at Galveston. Students interested in receiving additional information on this program should mail requests to Director of Graduate Programs, Research and Graduate Studies Office, Texas A&M University at Galveston, P. O. Box 1675, Galveston, Texas 77553-1675 or contact the Marine Sciences Graduate Advisor at 409-740-4518.

Residence

In partial fulfillment of the residence requirement for the degree of Master of Marine Resources Management, the student must complete 9 resident credit hours during one regular semester, one 10-week summer semester or in combination during the two five-week summer sessions (e.g., 3 hours first session, 6 hours second session.). Upon recommendation of the student's advisory committee and with approval of the Office of Graduate Studies, a student may be granted exemption from this requirement. However, such a petition must be approved prior to the student's registration for the final 9 credit hours of required course work. Full-time staff members of the University or of closely affiliated organizations stationed at the campus at Galveston or College Station may fulfill total residence requirements by completion of less-than-full course loads. Specific authorization for such programs must be granted in advance by the employing agency. Employees should submit verification of their employment at the time they submit their degree plan.

Student's Advisory Committee

After receiving admission to graduate studies and before enrolling for course work, the student will meet with the departmental graduate advisor regarding selecting a committee chair and developing the student's advisory committee. The student's advisory committee for the master's degree will consist of no fewer than three members and no more than five members of the graduate faculty representative of the student's fields of study and research. Two members must be members of the graduate faculty in Marine Sciences in Galveston, one of whom should be the chair of the student's advisory committee. At least one of the members must be from another department in Galveston or College Station. The chair, in consultation with the student, will select the remainder of the student's advisory committee. The chair will then notify the tentative members of the advisory committee, giving the student's name and field of study, and request that they consider serving on this student's advisory committee. The student will interview each prospective committee member to determine whether he or she is willing to serve. Only graduate faculty members may serve as chair of a student's advisory committee. The chair of the committee, who usually has immediate supervision of the student's degree program, has the responsibility for calling required meetings of the committee, and for calling meetings at any other time considered desirable.

If the chair of the student's advisory committee is unavailable for an extended time during any academic period during which the student is involved in activities relating to an internship or professional study and is registered for 684 or 693 courses, the student may request in writing that the program chair appoint an alternate advisory committee chair during the interim period. The duties of the student's advisory committee include responsibility for the proposed degree plan.

In addition, the committee as a group, and as individual members, is responsible for counseling the student on academic matters, and, in the case of academic deficiency, initiating recommendations to the Office of Graduate Studies. The committee members' signatures on the degree plan indicate their willingness to accept the responsibility for guiding and directing the entire academic program of the student and for initiating all academic actions concerning the student. Although individual committee members may be replaced by petition for valid reasons, a student's advisory committee cannot resign en masse.

Degree Plan

The student's advisory committee, in consultation with the student, will develop the proposed degree plan. The degree plan must be completed and filed with the Office of Graduate Studies following the deadline imposed by the student's college, and no later than the date announced in the Office of Graduate Studies Calendar for the student's semester of graduation. No exceptions are allowed. This proposed degree plan must be typed and submitted on the official form as it appears on the website at *http://ogs.tamu.edu/OGS/currentForms.htm* with endorsements by the student's advisory committee and the head of the student's major department. Additional course work may be added to the approved degree plan by petition if it is deemed necessary by the advisory committee to correct deficiencies in the student's academic preparation.

Credit Requirement

There is a credit requirement of a minimum of 36 credit hours of courses, as approved on the degree plan. Students may elect to pursue either a thesis or a non-thesis degree in Marine Resources Management. For the non-thesis degree 36 hours in the curriculum, 24 are required. The required courses include 6 hours of science, 8 hours of management, 2 hours of Geographic Information Systems (GIS) and 8 hours of law/policy courses. The student in the non-thesis option will choose electives for 12 credit hours, 3 hours of which will be additional science, and 3 hours of which will be additional law/policy/management. The remaining 6 hours can be in an appropriate supporting field, if desired. Students in the thesis-option degree will choose electives for 6 hours, 3 of which will be additional science and 3 hours of which will be additional law/policy/management. The remaining 6 hours will be in 691 research hours. Additional flexibility to replace required courses with courses targeted to their area of research is available to thesis option students upon recommendation and approval by their committee and the department.

Limitations on the Use of Transfer, Extension and Certain Other Courses

Some departments may have more restrictive requirements for transfer work. If otherwise acceptable, certain courses may be used toward meeting credit-hour requirements for the master's degree under the following limitations.

1. A total of any combination of a and b below may not exceed the greater of either 12 hours or one-third (1/3) of the total hours on the degree plan.

   a. The maximum number of credit hours which may be considered for transfer credit is the greater of 12 hours or one-third (1/3) of the total hours of a degree plan. The following restrictions apply. Courses taken in residence at an accredited U.S. institution, or approved international institution with a final grade of B or greater will be considered for transfer credit if, at the time the courses were completed, the student was in degree-seeking status at Texas A&M University, or the student was in degree-seeking status at the institution at which the courses were taken; and if the courses would be accepted for credit toward a similar degree for students in degree-seeking status at the host institution. Courses previously used for another degree are not acceptable for degree plan credit.

   b. A maximum of 12 credit hours of 489 and/or 689 (Special Topics).

   c. A total of any combination of a and b above may not exceed the greater of 12 hours or one-third (1/3) of the total hours on the degree plan.

2. A maximum of 8 hours of 691 (Research), 4 hours of 684 (Professional Internship), or 9 hours of 485 and/or 685 (Directed Studies), and up to 3 hours of 690 (Theory of Research) or 695 (Frontiers in Research)-any combination of 684, 685, 690, 691 and 695 may not exceed 25 percent of the total credit hour requirement shown on the individual degree plan.
3. A maximum of 2 hours of Seminar (481/681).
4. A maximum of 9 hours of advanced undergraduate courses (300- or 400-level).
5. No credit may be obtained by correspondence study.
6. For graduate courses of three weeks' duration or less, up to 1 hour of credit may be obtained for each five-day week of course work. Each week of course work must include at least 15 contact hours.
7. Continuing education courses may not be used for graduate credit.
8. Extension courses are not acceptable for credit.

Exceptions will be permitted only in unusual cases and when petitioned by the student's advisory committee and approved by the Office of Graduate Studies.

Transfer of Credit

Students may transfer a maximum of 12 hours of courses or one-third of the total hours of the degree plan, whichever number is greater, from an approved institution upon the advice of their advisory committee. Courses taken in residence at an accredited U.S. institution or approved international institution with a final grade of B or better might be considered for transfer credit if, at the time the courses were completed, the student was in degree-seeking status at Texas A&M University at Galveston or at the institution at which the courses were taken, and if the courses would be accepted for credit toward a similar degree for students in degree-seeking status at the host institution.

Course work in which no formal grades are given or in which grades other than letter grades (A, B, C, etc.) are given (for example, CR, P, S, U, H, etc.) is not accepted for transfer credit. Courses appearing on the degree plan with grades of D, F or U may not be absolved by transfer work. Credit for thesis research or the equivalent is not transferable. Credit for course work submitted for transfer from any college or university must be shown in semester credit hours or equated to semester credit hours. Students must have an official transcript sent directly from the university in which the transfer course work was taken to the Texas A&M at Galveston Office of Admissions and Records. Courses completed at other institutions are not included in computing the GPR.

Scholarship

Graduate students must maintain a grade point ratio (GPR) of 3.000 (B average based on a 4.000 scale) for all courses which are listed on the degree plan and for all graded graduate and advanced undergraduate course work (300- and 400-level) completed at Texas A&M University at College Station and/or Texas A&M University at Galveston and eligible to be applied toward a graduate degree. Graduate students will not receive graduate degree credit for undergraduate courses taken on a satisfactory/unsatisfactory (S/U) basis. Graduate students may not receive grades other than satisfactory (S) or unsatisfactory (U) in graduate courses bearing the numbers 681, 684, 690, 691, 692, 693 and 695. Any other graduate course taken on an S/U basis may not be used on a graduate degree plan. Graduate courses not on the degree plan may be taken on an S/U basis. Only grades of A, B, C and S are acceptable for graduate credit. Grades of D, F or Unsatisfactory (U) for courses on the degree plan must be absolved by repeating the courses at Texas A&M University at College Station and/or Texas A&M University at Galveston and achieving grades of C or above or Satisfactory (S). A course in which the final grade is C or lower may be repeated for a higher grade. The original grade will remain on the student's permanent record, and the most recent grade will be used in computing the cumulative and degree plan GPRs. The cumulative GPR for a graduate student is computed by using all graded graduate (600-level) and advanced undergraduate (300- and 400-level) course work completed at Texas A&M University at College Station and/or Texas A&M University at Galveston and eligible to be applied toward a graduate degree. Semester credit hours to which grades of Withdraw Failing (WF) are assigned shall be included in computing the GPR. Those involving grades of Withdraw Passing (WP), Satisfactory (S), Unsatisfactory (U) and Q-drop (Q) shall be excluded. If either of a student's cumulative GPR or the GPR for courses listed on the degree plan falls below the minimum of 3.000, he or she will be considered to be scholastically deficient. If the minimum cumulative GPR is not attained in a reasonable length of time, the student may be dropped from graduate studies. The procedures for dismissal are explained in the Texas A&M University Student Rules. Departments or colleges may adopt specific guidelines pertaining to scholastic deficiency or dismissal.

Continuous Registration

Students in the thesis option of the Master of Marine Resources Management program who have completed all course work on their degree plans other than 691 (Research) are required to be in continuous registration until all requirements for the degree have been completed. See Continuous Registration Requirements in the Texas A&M University-College Station Graduate Catalog.

Foreign Language

There is no specific language requirement for the Master of Marine Resources Management degree.

Non-thesis option

A thesis is not required for the Master of Marine Resources Management degree for students who select the non-thesis option program. Students pursuing the non-thesis option are not allowed to enroll in 691 (Research) for any reason and 691 may not be used for credit toward a non-thesis option Master of Marine Resources Management degree.

Thesis Proposal

For the thesis option Master of Marine Resources Management degree, the student must prepare a thesis proposal for approval by the advisory committee and the head of the major department or chair of the intercollegiate faculty, if applicable. This proposal must be submitted to the Office of Graduate Studies at least 15 working days prior to the submission of the request for the final examination.

There are compliance issues that must be addressed if graduate students are performing research involving human subjects, animals, infectious biohazards and recombinant DNA. Students involved in these types of research must check with the Office of Research Compliance, Office of the Vice President for Research at (979) 845-8585 to ensure that they have met all compliance responsibilities. Additional information can also be obtained on the website http://www.tamu.edu/admissions/catalogs/GRAD_catalog/degree_info.

Thesis Option

The thesis option is designed to allow the student to demonstrate research capabilities through developing an independent and thorough investigation of a particular problem of interest. This would also prepare the student for further graduate studies.

An acceptable thesis is required for the Master of Marine Resources Management degree for students who select the thesis option program. The finished work must reflect a comprehensive understanding of the pertinent literature and express in clear English, the problem(s) for study, the method, significance and results of the student's original research. Guidelines for the preparation of the thesis are available in the Thesis Manual which is available online at *http://thesis.tamu.edu/thesismanual.php*.

After successful defense (or exemption therefrom) and approval by the student's advisory committee and the head of the student's major department, students must submit their thesis to the Thesis Office. Students must submit their thesis in electronic format as a single PDF file. The PDF file must be uploaded to the Thesis Office website *http://thesis.tamu.edu*. Additionally, a signed approval page must be brought or mailed to the Thesis Office. Both the PDF file and the signed approval page are required by the deadline day.

Deadline dates for submitting are announced each semester or summer term in the Office of Graduate Studies Calendar (see Time Limit statement).

Before a student can be "cleared" by the Thesis Office, a processing fee must be paid at Financial Management Services. After commencement, theses are digitally stored and made available through the Texas A&M Libraries.

A thesis that, because of excessive corrections, is deemed unacceptable by the Thesis Office, will be returned to the student's department head. The manuscript must be resubmitted as a new document, and the entire review process must begin anew. All original submittal deadlines must be met during the resubmittal process in order to graduate that semester.

No credit hours of 684 (Professional Internship) may be used for the thesis option Master of Marine Resources Management degree. A maximum of 8 credit hours of 691 (Research) or 485 and/or 685 (Directed Studies), and up to 3 credit hours of 690 (Theory of Research) or 695 (Frontiers in Research) may be used toward the thesis option Master of Marine Resources Management degree. In addition, any combination of 685, 690, 691 and 695 may not exceed 12 credit hours.

Time Limit

All degree requirements for a master's degree must be completed within a period of seven consecutive years for the degree to be granted. A course will be considered valid until seven years after the end of the semester in which it is taken. Graduate credit for course work which is more than seven calendar years old may not be used to satisfy degree requirements.

Application for Degree

Graduate degrees are conferred at the close of each regular semester and 10-week summer semester. Candidates for advanced degrees who expect to complete their work at the end of a given semester must apply for graduation by submitting the electronic application for a degree to the Admissions and Records Office and by paying the required graduation fee at Financial Management Services no later than the Friday of the second week of the fall or spring semester or the Friday of the first week of the first summer term. The electronic application for degree can be accessed via the website *degreeapp.tamu.edu*.

Thesis Defense/Final Examination

The candidate must pass a final examination by dates announced each semester or summer term in the Office of Graduate Studies Calendar. To be eligible to take the final examination, a student's GPR must be at least 3.000 for courses on the degree plan and for all courses completed at Texas A&M which are eligible to be applied to a graduate degree, and there must be no unabsolved grades of D, F or U for any course listed on the degree plan.

To absolve a deficient grade, the student must have repeated the course at Texas A&M University and have achieved a grade of C or better. All course work on the degree plan must have been completed with the exception of those hours for which the student is registered. Additionally, all English Language Proficiency requirements must be satisfied prior to scheduling the examination. An approved thesis proposal must be on file in the Office of Graduate Studies according to published deadlines.

The final examination covers the thesis and all work taken on the degree plan and at the option of the committee may be written or oral or both. The final examination may not be administered before the thesis is available to all members of the student's advisory committee in substantially final form, and all members have had adequate time to review the document. The examination is conducted by the student's advisory committee as finally constituted. Thesis option students must be registered in the University in the semester or summer term in which the final examination is taken. Persons other than members of the graduate faculty may, with mutual consent of the candidate and the major professor, attend final examinations for advanced degrees. Upon completion of the questioning of the candidate, all visitors must excuse themselves from the proceedings. A positive vote by all members of the graduate committee with at most one dissension is required to pass a student on his or her exam. A department, or interdisciplinary degree program, may have a stricter requirement provided there is consistency within all degree programs within a department or interdisciplinary program.

A request for permission to hold and announce the final examination must be submitted to the Office of Graduate Studies a minimum of 10 working days in advance of the scheduled date for the examination. Examinations which are not completed and reported as satisfactory to the Office of Graduate Studies within 10 working days of the scheduled examination date will be recorded as failures. A student may be given only one opportunity to repeat the final examination for the master's degree and that must be within a time period that does not extend beyond the end of the next regular semester (summer terms are excluded).

Thesis option candidates may petition to be exempt from their final examination provided their degree plan GPR is 3.500 or greater and they have the approval of the advisory committee, the head of the student's major department, or intercollegiate faculty, if appropriate, and the Office of Graduate Studies. It is recommended that the petition for exemption be submitted the same semester the student intends to submit the thesis. Non-thesis option students cannot be exempted from their final examination. The Master of Science in Educational Human Resource Development, HRD option, and the Master of Science Program in the Mays Business School do not have final examination requirements.

Required Courses (24 hours required)

MARS 625	GIS Based Modeling for Coastal Resources
MARS 615	Physical and Geochemical Marine Resources
MARS 635	Environmental Impact Statements and NRDA
MARS 676	Environmental Policy
MARA 604	Marine Natural Resource Economics
MARB 620	Marine Biological Resources
MARS 675	Environmental Mgmt Strategies for Scientists
MARS 680	Integrative Analyses in Marine Resources
MARS 652	Sustainable Management of Coastal Margins

Optional Courses (12 hours required)

GEOG 666	Coastal Geomorphology*
MARS 610	Environmental Law
MARS 620	Int'l Env. Business Transactions
MARS 638	Avian Diversity and Habitats as Coastal Resources
MARS 640	Environmental Administrative Law
MARS 645	Wildlife Law and Ethics
MARS 650	Geochemical Marine Resources Management
MARS 655	Wetlands Management
MARS 660	Environmental Alternative Dispute Resolution
MARS 670	Eco-Environmental Modeling
MARS 684	Internship in Marine Resources Management
MARS 685	Directed Studies
MARS 689	Special Topics in Marine Resources Management
MARS 691	Research
OCNG 620	Biological Oceanography*
OCNG 627	Ecology of the Continental Shelf*
OCNG 630	Geological Oceanography*
OCNG 647	Chemical Contamination of the Marine Environment*
WFSC 628	Wetlands Ecology*
WFSC 640	Human Dimensions of Wildlife and Fisheries Management*

*Courses offered by Texas A&M University. Please refer to the respective academic department for complete course descriptions. In general, these courses are offered by distance education for students based at Galveston.