

# MARINE SCIENCES - BS, LICENSE OPTION

The license option (LO) in the Marine Sciences (MARS) program leads toward a license as a deck officer in the United States Merchant Marine. This program retains the physical science core of the MARS curriculum and adds coursework that prepares the student to sit for the U.S. Coast Guard (USCG) 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 three oceanography courses. 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 as well as licensing requirements outlined in the program requirements. Certain license option courses require a minimum grade of C (70%).

## Program Requirements

### First Year

Fall		Semester Credit Hours
ENGL 104	Composition and Rhetoric	3
MARS 102	Earth and Ocean Science <sup>1</sup>	4
MART 103	Basic Safety and Lifeboatman Training <sup>2</sup>	3
MART 115	Seamanship I <sup>2</sup>	3
MATH 147 or MATH 151	Calculus I for Biological Sciences or Engineering Mathematics I	4
<b>Semester Credit Hours</b>		<b>17</b>
Spring		
MARB 101	Succeeding in Science <sup>1</sup>	3
MART 201	Vessel Structure and Ship Knowledge <sup>2</sup>	3
MART 204	Terrestrial Navigation <sup>2</sup>	3
Select one of the following:		4
MATH 148	Calculus II for Biological Sciences	
MATH 150	Functions, Trigonometry and Linear Systems	
MATH 152	Engineering Mathematics II	
Communication ( <a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#communication">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#communication</a> )		3
<b>Semester Credit Hours</b>		<b>16</b>

### Summer

MART 200	Deck Sea Training I: Basic Communications, Navigation and Seamanship <sup>2</sup>	4
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**Semester Credit Hours 4**

### Second Year

#### Fall

CHEM 119	Fundamentals of Chemistry I	4
MARS 210	Marine Geography	3
MARS 281	Sophomore Seminar in Marine Sciences <sup>1,3</sup>	1
MART 212	Marine Dry Cargo Operations <sup>2</sup>	3
MART 215	Seamanship II <sup>2,3</sup>	3
MART 303	Celestial Navigation <sup>2</sup>	3

**Semester Credit Hours 17**

#### Spring

CHEM 120	Fundamentals of Chemistry II	4
MARS 303	Computing and Data Display <sup>1</sup>	3
MART 202	Ship Stability and Trim <sup>2</sup>	3
MART 210	Integrated Navigation I: RADAR/ARPA/ECDIS <sup>2</sup>	4
MART 321	Navigation Rules, International and Inland <sup>2</sup>	2

**Semester Credit Hours 16**

### Summer

MART 300	Deck Sea Training II: Intermediate Communications, Navigation and Seamanship <sup>2</sup>	4
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**Semester Credit Hours 4**

### Third Year

#### Fall

MART 307	Global Maritime Distress Safety System <sup>2</sup>	3
NVSC 200	Naval Science for the Merchant Marine Officer <sup>2</sup>	3
POLS 206	American National Government	3
Select one of the following:		4

PHYS 201	College Physics	
PHYS 206 & PHYS 226	Newtonian Mechanics for Engineering and Science and Physics of Motion Laboratory for the Sciences	

American history ( <a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history</a> )		3
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**Semester Credit Hours 16**

#### Spring

MARS 430	Marine Geology <sup>1,3</sup>	4
MART 310	Integrated Navigation II: Electronic Navigation <sup>2</sup>	2
MART 313	Marine Liquid Cargo Operations <sup>2</sup>	3

Select one of the following: 4

PHYS 202	College Physics	
PHYS 207 & PHYS 227	Electricity and Magnetism for Engineering and Science and Electricity and Magnetism Laboratory for the Sciences	

Language, philosophy & culture (<http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#language-philosophy-culture>)

Semester Credit Hours		16
<b>Summer</b>		
MART 400	Deck Sea Training III: Advanced Communications, Navigation and Seamanship <sup>2</sup>	4
Semester Credit Hours		4
<b>Fourth Year</b>		
<b>Fall</b>		
MARS 325	Introduction to GIS for Marine Sciences <sup>1</sup>	3
MARS 410	Physical Oceanography <sup>1</sup>	3
MARS 481	Seminar <sup>1</sup>	1
MART 208	Maritime Meteorology <sup>2</sup>	3
MART 410	Integrated Navigation III: Bridge Watchstanding <sup>2</sup>	2
MART 498	Maritime Medical Care <sup>2</sup>	2
Semester Credit Hours		14
<b>Spring</b>		
MARS 420	Biological Oceanography	3
MARS 440 or MARS 340	Chemical Oceanography <sup>1</sup> or Global Biogeochemical Cycles	3
MARS 491	Research in Marine Sciences <sup>1</sup>	1
POLS 207	State and Local Government	3
American history ( <a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history</a> )		3
Creative arts ( <a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#creative-arts">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#creative-arts</a> )		3
Semester Credit Hours		16
<b>Total Semester Credit Hours</b>		<b>140</b>

<sup>1</sup> Indicates required courses in the Marine Sciences License Option major. These courses will be used to compute the major GPA. Also, if any upper level MARS or OCNG elective courses are taken, they will be used in the major GPA.

<sup>2</sup> 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. Midshipmen will be required to repeat the course until they earn a grade of C (70%) or better. MART 307 GMDSS requires a score of 75% or better.

<sup>3</sup> Designated writing intensive course. MARS-LO majors must take two writing intensive courses. One of them is required MART 215. The other course may be chosen from MARS 281 or MARS 430 .

All electives must be chosen in consultation with, and approved by, the student's academic advisor. Unless courses are specifically listed, see University Core Curriculum for a listing of course options for Communication; Mathematics; Life and Physical Sciences; Language, Philosophy and Culture; Creative Arts; American History; Government and Political Sciences; and Social and Behavioral Sciences. The 3-hour University Core Curriculum requirement for International and Cultural Diversity and 3-hour requirement for Cultural Discourse may be met with courses used to satisfy other degree requirements.

<sup>3</sup> The total hours may be increased if the student is required to take remedial math, remedial English, foreign language, International and Cultural Diversity, or Cultural Discourse courses, or any of the six-hour cruise options. The six-hour cruise options (NAUT 200, NAUT 300 and NAUT 400 or MARR 200, MARR 300 and MARR 400) do not add any required hours to the degree plan.

This degree requires full participation in the Texas A&M University Maritime Academy Corps of Cadets as a qualified License Option cadet. Refer to the University catalog section for the Texas A&M Maritime Academy for additional information. In addition to the academic requirements outlined here, the cadet must also complete the following requirements to receive the degree:

- Successfully complete required sea service and minimum training cruise requirements
- Pass a comprehensive professional examination (either the Third Mate Unlimited-Oceans or Third Assistant Engineering Unlimited) administered by the U.S. Coast Guard (USCG).
- Successfully complete all competencies required by the International Convention on Standards for Training, Certification and Watchkeeping (STCW).

Note: STCW competency certifications expire 5 years after completion. If the cadet does not complete the degree within that time period, the cadet will be required to revalidate the expired competency prior to graduation.