MARINE ENGINEERING TECHNOLOGY - BS, LICENSE OPTION

The purpose of the Marine Engineering Technology License Option (MARR LO) program is to train students to serve as engineering officers aboard sea-going vessels. The MARR curriculum is a power-oriented specialization of a classical Mechanical Engineering Technology program. A thorough preparation in mathematics, science, and engineering courses is the foundation for further study in ship propulsion plants, electrical power generation and distribution equipment. Marine Engineering Technology focuses on power cycles, principles, and methods used to convert various forms of energy into useful power. The Maritime industry is moving toward clean energy production onboard its vessels. The use of alternative fuels and Hybrid Energy Storage Systems (HESS) are common. The curriculum explores the selection and operation of the major components and support systems in the power cycle. Courses in marine engineering are supplemented with studies in automation and control systems, naval architecture and the 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. Marine Engineering Technology (MARR) is accredited by the Engineering Technology Accreditation Commission of ABET, https://www.abet.org/.

In addition to the degree requirements for the Marine Engineering Technology Degree, MARR LO Cadets must complete the requirements to achieve a Merchant Mariner Credential (MMC) issued by the USCG. The requirements for the MMC are determined by International conventions, Federal law and regulations, and policies established by the USCG and the Maritime Administration (MARAD). The requirements for an MMC are subject to change according to developments at the International Maritime Organization (IMO), Congressional action, the Federal rulemaking process, and consultations between the USCG, MARAD, and the Maritime Academies. The student who successfully completes the program will be qualified to sit for the U. S. Coast Guard license examination as a Third Assistant Engineer of any gross tonnage upon oceans, steam and motor vessels and issuance of Standards of Training, Certification and Watchkeeping (STCW) international endorsement as Officer-In-Charge of an Engineering Watch (OICEW). Unlimited tonnage gas turbine endorsement also available.

MARR LO students must also complete all the requirements as a cadet in the Texas A&M Maritime Academy, described previously in this catalog, in order to receive the degree. Cadets who enroll in and apply to graduate in Marine Engineering Technology must successfully complete the license examination for Third Assistant Engineer 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).

Program Requirements

First Year		
Fall		**Semester Credit Hours**
CHEM 107	General Chemistry for Engineering Students	3
CHEM 117	General Chemistry for Engineering Students Laboratory	1
ENGL 104	Composition and Rhetoric	3
MARR 101	Marine Engineering Fundamentals [1, 2]	2
MART 103	Basic Safety and Lifeboatman Training [2]	3
MATH 151	Engineering Mathematics I [3]	4
	Semester Credit Hours	**16**
Spring		
MARE 111	Methods in Engineering Technology [1]	2
MARE 242	Manufacturing Methods I [1,2]	2
MARR 102	Engine Room Resource Management and Dynamics [2]	1
MATH 152	Engineering Mathematics II	4
PHYS 206 & PHYS 226	Newtonian Mechanics for Engineering and Science and Physics of Motion Laboratory for the Sciences	4
American history (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history)		3
	Semester Credit Hours	**16**
Summer		
MARE 200 or MARR 200	Basic Operations [1,2] or Basic Operations	4
	Semester Credit Hours	**4**
Second Year		
Fall		
MARE 112	Graphics for Engineering Technology [1]	2
MARE 202	Marine Thermodynamics [1 3]	3
MARE 205	Engineering Mechanics I [1,3]	3
MARE 243	Manufacturing Methods II [1 2]	1
PHYS 207 & PHYS 227	Electricity and Magnetism for Engineering and Science and Electricity and Magnetism Laboratory for the Sciences	4
Communication (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#communication)		3
	Semester Credit Hours	**16**
Spring		
MARE 206	Engineering Mechanics II [1,3]	3
MARE 209	Mechanics of Materials [1]	3
MARE 211	Steam Propulsion Plants [1,2]	3
MARE 261	Engineering Analysis [1]	3

American history (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history)		3
	Semester Credit Hours	**15**
Summer		
Select from one of the following: [1,2]		4
MARE 300	Intermediate Operations	
MARE 350	Commercial Cruise Internship	
MARR 300	Intermediate Operations	
	Semester Credit Hours	**4**
Third Year		
Fall		
MARE 207	Electrical Power I [1,2,3]	3
MARE 305	Fluid Mechanics Theory [1,2]	4
MARE 313	Heat Transfer [1]	3
NVSC 200	Naval Science for the Merchant Marine Officer [1]	3
Creative arts (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#creative-arts)		3
	Semester Credit Hours	**16**
Spring		
MARE 309	Marine Construction Materials [1]	3
MARE 312	Diesel Propulsion Plants [1,2]	3
MARE 306	Electrical Power II [1,2]	3
MARE 399	High Impact Experience in Marine Engineering Technology	0
MARE 401	Marine Auxiliary Systems [1,2]	3
Language, philosophy and culture (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#language-philosophy-culture)		3
	Semester Credit Hours	**15**
Summer		
MARE 400 or MARR 400	Advanced Operations [1,2] or Advanced Operations	4
	Semester Credit Hours	**4**
Fourth Year		
Fall		
MARE 307	Marine Electronics [1,2]	3
MARE 405	Fundamentals of Naval Architecture [1,2]	3
MARE 451	Senior Design Project I [1]	2
MARR 481	Seminar	1
POLS 206	American National Government	3
Social and behavioral sciences (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#social-behavioral-sciences)		3
	Semester Credit Hours	**15**
Spring		
MARE 402	Shipboard Automation and Control [1,2]	3
MARE 441	Engineering Economics and Project Management	3
MARE 452	Senior Design Project II [1]	2
MART 498	Maritime Medical Care [2]	2
POLS 207	State and Local Government	3
Technical elective [1,5]		3
	Semester Credit Hours	**16**
	Total Semester Credit Hours	**137**

1. Indicates required courses in the Marine Engineering Technology License Option major. These courses will be used to compute the major GPA.
2. Indicates license courses leading to a USCG/STCW license endorsement or sea time or workshops skills credit accrual which require a minimum grade of C (70%) or better to earn the endorsement or workshop skills accrual. Cadets will be required to repeat the course until they earn a grade of C (70%) or better. Failure to meet this requirement will prevent the student from continuing any sequence in which the course is a prerequisite.
3. MARR students are required to earn a grade of C or better in MATH 151, PHYS 206, PHYS 207, MARE 202, MARE 205, MARE 206, and MARE 207. Failure to meet this requirement will prevent the student from continuing any sequence in which the course is a prerequisite.
4. Designated Writing intensive course.
5. Technical electives may be any course with the following prefixes: MARE (http://catalog.tamu.edu/undergraduate/course-descriptions/mare/), MARR (http://catalog.tamu.edu/undergraduate/course-descriptions/marr/), MART (http://catalog.tamu.edu/undergraduate/course-descriptions/mart/), MASE (http://catalog.tamu.edu/undergraduate/course-descriptions/mase/), OCEN (http://catalog.tamu.edu/undergraduate/course-descriptions/ocen/), CVEN (http://catalog.tamu.edu/undergraduate/course-descriptions/cven/), MATH (http://catalog.tamu.edu/undergraduate/course-descriptions/math/), PHYS (http://catalog.tamu.edu/undergraduate/course-descriptions/phys/), MARS (http://catalog.tamu.edu/undergraduate/course-descriptions/mars/), or OCNG (http://catalog.tamu.edu/undergraduate/course-descriptions/ocng/) at the 300 or 400 level in consultation with the student's advisor.

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 at http://core.tamu.edu/ 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 the 3-hour University Core Curriculum requirement for Cultural Discourse may be met with courses used to satisfy other degree requirements. Although they may count for university credit, grades from an other institution below a C in engineering, mathematics and physics will not be accepted by the TAMUG engineering programs toward the degree.

The total hours may be increased if the student is required to take remedial math, remedial English, foreign language or International and Cultural Diversity courses, or any of the six hour cruise options. The 6-hour cruise options (MART 200, MART 300, and MART 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.