

Marine Engineering Technology (MARE) Strategic Plan & Vision

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Marine Engineering Technology



Marine Engineering Technology (MARE)

What is Marine Engineering Technology?

The Marine Engineering Technology Curriculum is an Inter-Disciplinary Engineering Program.

Focuses on Practical Shipboard Systems with additional courses in:

- ❑ Mechanics
- ❑ Naval Architecture
- ❑ Automation and Controls
- ❑ Electrical Power
- ❑ Thermal and Fluid Sciences
- ❑ Practical Labs – Welding & Machine Shop



MARE Program Options - LO & NLO

License Option - 137 SH

- ❑ Qualified to sit for USCG license exam as 3rd Assistant Engineer
- ❑ Must be member of the Corps of Cadets of the Texas Maritime Academy
- ❑ Participate in summer training cruises
- ❑ Complete specialized training in First Aid, CPR, Survival and Fire Fighting

Non-License Option - 123 SH

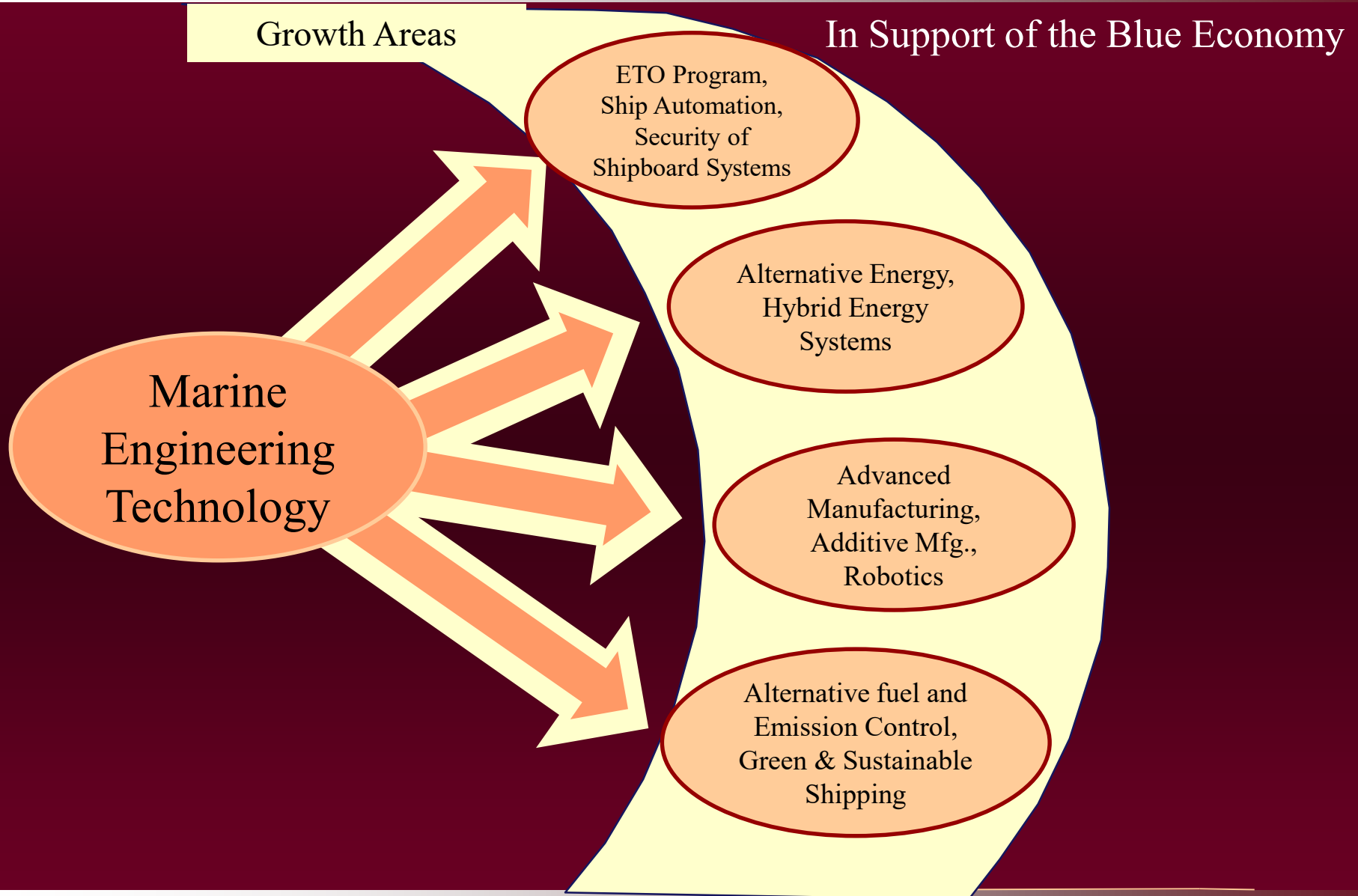
- ❑ Similar curriculum as LO without sea term
- ❑ Maritime related applied engineering
- ❑ Graduates Employed by: Shipyards, Stationary power plants, Marine support industry, Petro-chemical plants, Offshore structures
- ❑ Graduates are encouraged to take the FE (Fundamentals of Engineering) exam.

Graduates Can Receive:

- USCG License – Steam, Diesel and Gas Turbine
- Firefighting Training
- Lifeboat Training
- Eligible for the Part 1 – Professional Engineer's License - State of Texas
- Commission as an Officer in the Armed Forces
- Texas A&M Aggie Ring
- Leadership Training



Strategic Growth Areas for the Marine Engineering Technology



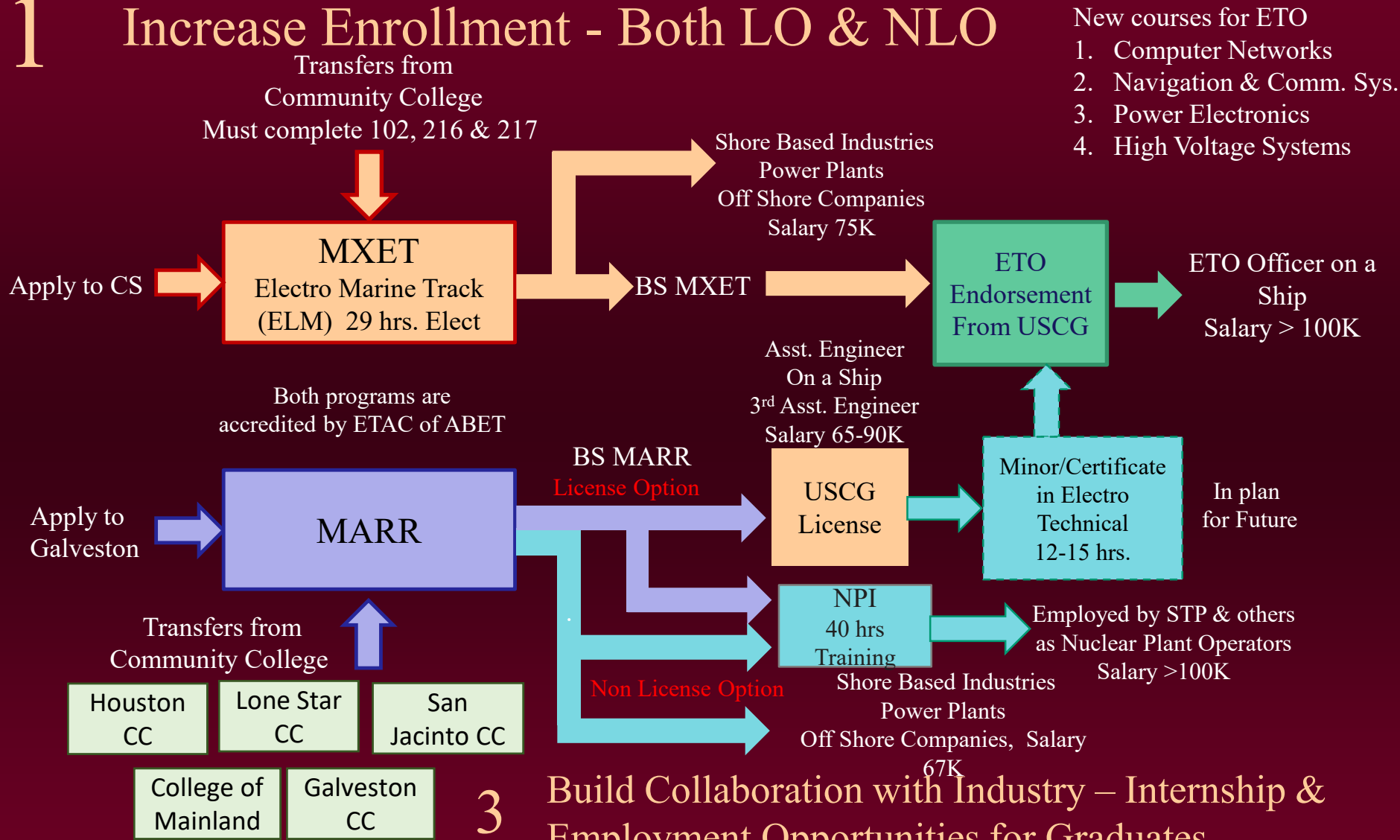
MARE - Strategic Goals

- 1 Increase Enrollment - Both LO&NLO
- 2 Build the Pipeline – K-12 → TAMUG
- 3 Build Collaboration with Industry – Internship & Employment Opportunities for Graduates
- 4 Develop ETO Program & Security of Shipboard Systems – MXET Program
- 5 Develop Green & Sustainable Shipping, Alternative Fuel & Emission Control
- 6 Develop Alternative Energy Generation – Wind and Wave
- 7 Develop Advanced Manufacturing, Marine Robotics



Pathways to Electro Technical Officer at TAMU-Galveston

1 Increase Enrollment - Both LO & NLO



Scholarships - NSF SSTM Proposal - BlueSTEM

1 Increase Enrollment - Both LO & NLO

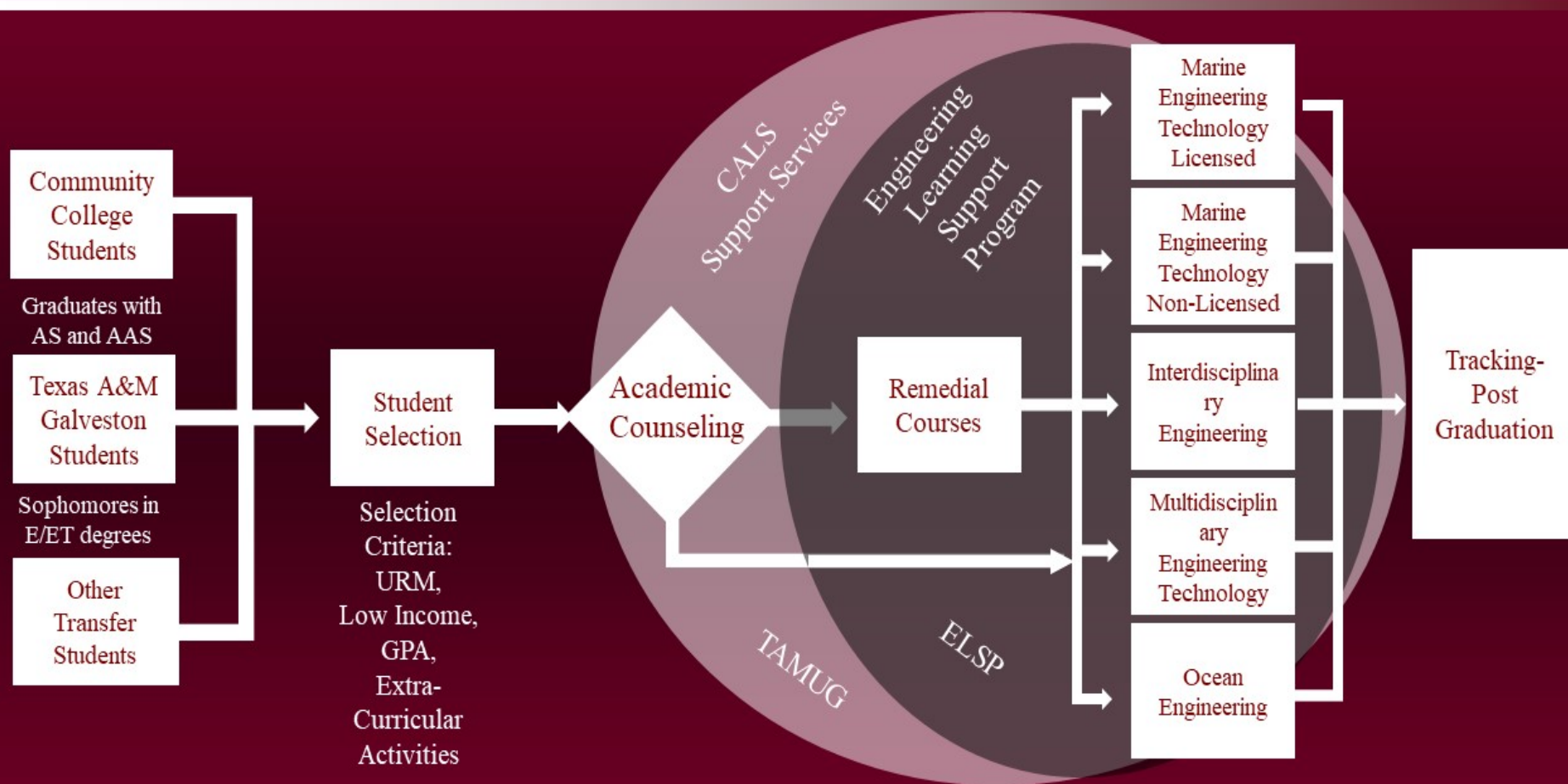
BlueSTEM Key Features:

1. Improve workforce for the Blue Economy
2. Term Six Years -2021-2027
3. Four Community College Partners (Galveston, HCC, COM and Lone Star)
4. \$4,959,506.00
5. 120 scholarships of \$10,000/yr.
6. Recipients: Students from CC and Rising Sophomores on Galveston Campus

Scholarships - NSF SSTM Proposal - BlueSTEM

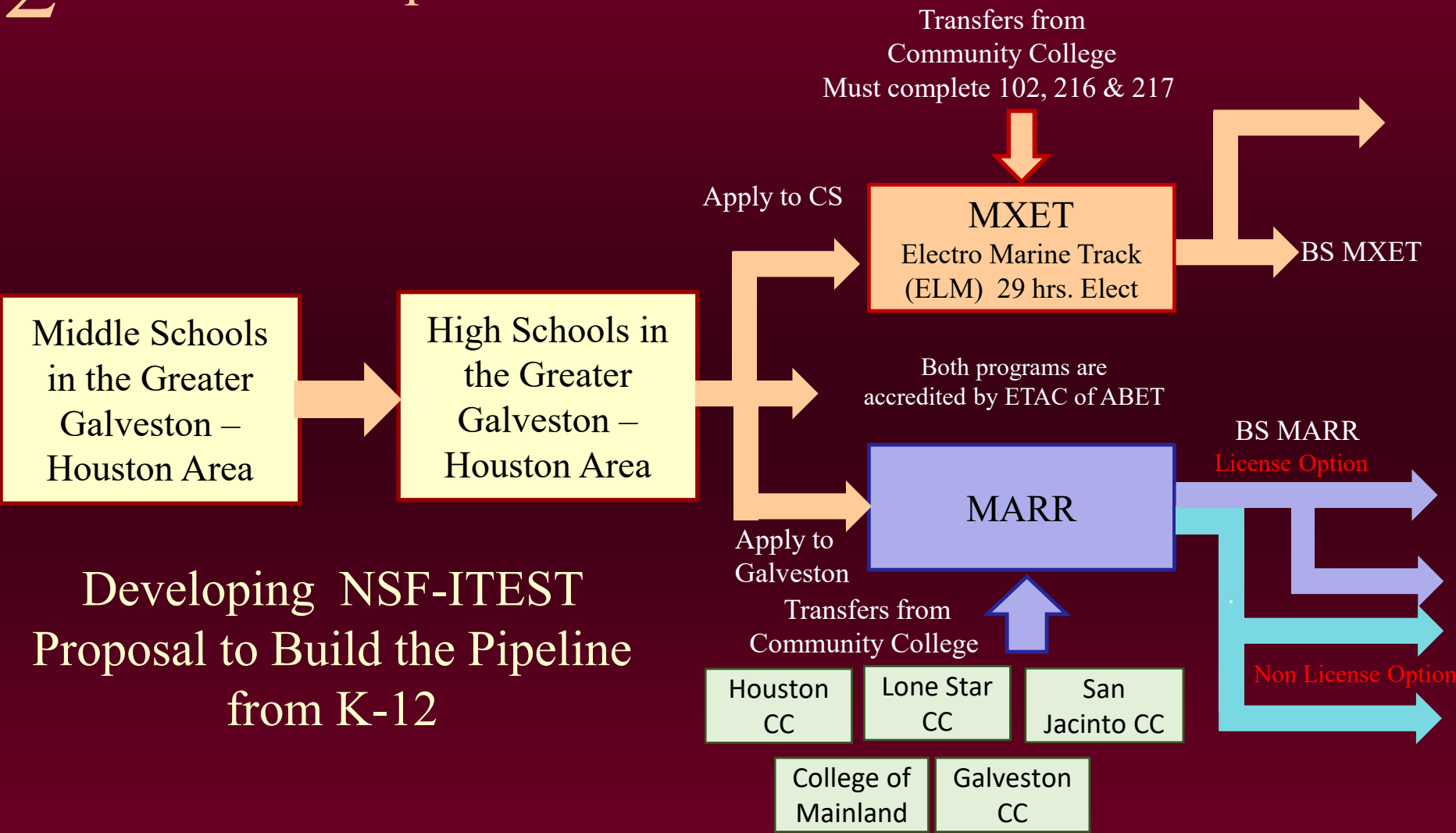
1 Increase Enrollment - Both LO&NLO

Recruitment & Selection - BlueSTEM



Pathways to Electro Technical Officer at TAMU-Galveston

2 Build the Pipeline – K-12 → TAMUG



Developing NSF-ITEST Proposal to Build the Pipeline from K-12

MXET - Marine Electrotechnology

4 Develop ETO Program & Security of Shipboard Systems – MXET Program



Today's Ships are Highly Automated

Increasing Demands for Marine Electrical Engineers in Workforce

Developed Marine Electrotechnology Program in collaboration with the Engineering Technology & Industrial Distribution (ETID) Department at College Station



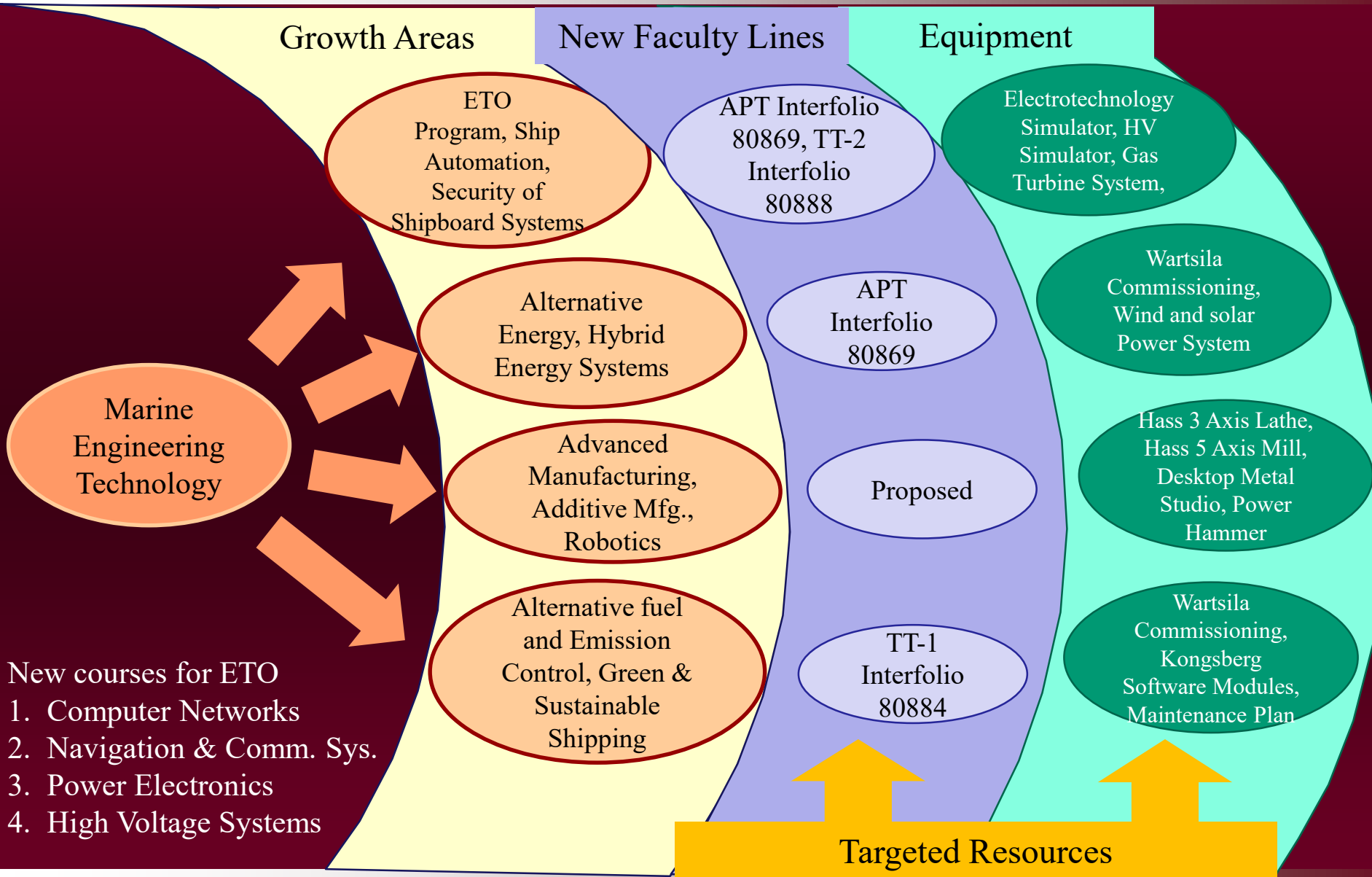
MXET - Marine Electrotechnology

- (1) Basic Electrical Circuits
- (2) Electro-mechanical Machinery
- (3) Electronics
- (4) Automation
- (5) Computer Networking
- (6) RF/MW Telecoms and Radar
- (7) GMDSS Operation and Repair
- (8) VDR and Repair

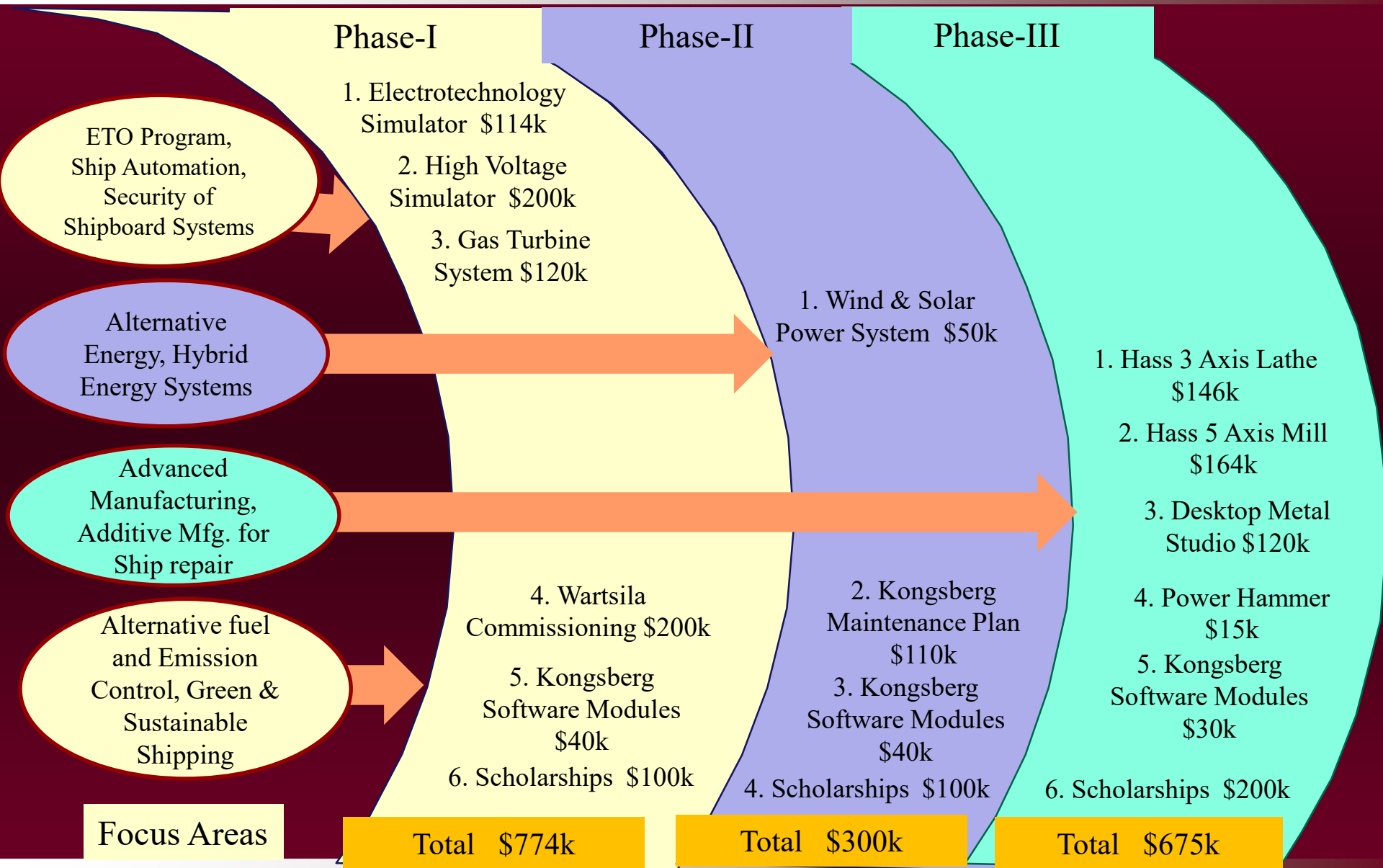
Both College Station and Galveston Engineering Technology Courses Included in the Curriculum



Strategic Growth Areas & Allocation of Resources



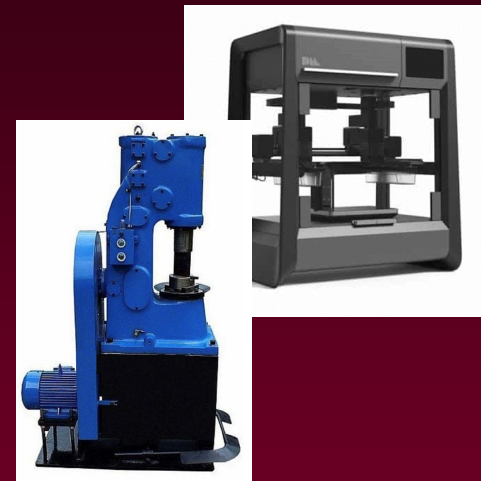
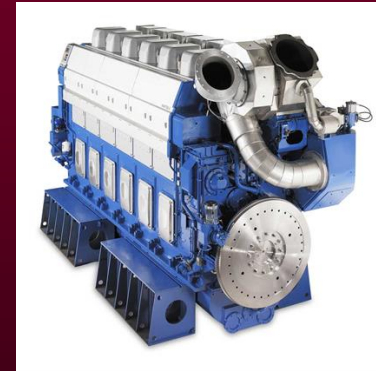
Proposed Phased Acquisition of Equipment & Resources



Equipment Upgrade in Support of Growth Areas:

Provide MARE students a world class education & training in:

- Electrotechnical Operations
- Diesel Engine operations, Maintenance and Emission Control
- Gas Turbine Operations and Maintenance
- Alternative Energy Generation and Maintenance
- Additive Manufacturing Application for Shipboard Maintenance
- Marine Materials and CNC Manufacturing Processes



Proposed Equipment Upgrade for World-Class Training

(1) Marine Electrotechnology Simulator	\$114k
(2) Wartsila Commissioning	\$200k
(3) Kongsberg Software Modules	\$50k
(4) Kongsberg Software Maintenance Plan	\$110k
(5) Kongsberg K-Sim Engine HV Trainer	\$200k
(6) Gas Turbine Electrical Generation System	\$120k
(7) Wind & Solar Power Learning System	\$50k
(8) Haas ST-30Y 3-Axis Lathe	\$146k
(9) Hass UMC-500 5-Axis Mill	\$164k
(10) Desktop Metal Studio	\$120k
(11) Power Hammer	\$15k
(12) Scholarships	\$200k/yr.

Total \$1,489K

Col. Fossum, Faculty and Students Aboard Vessels



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TEXAS A&M
UNIVERSITY *at* GALVESTON





**TEXAS A&M UNIVERSITY
GALVESTON CAMPUS.**

COL. MICHAEL E. FOSSUM '80

*Vice President, Texas A&M University
Chief Operating Officer, Texas A&M-Galveston
Superintendent, Texas A&M Maritime Academy*







A photograph of two maritime academy students in a control room. They are wearing dark blue uniforms and red hard hats. The student in the foreground is looking towards the right, while the one behind him is partially visible. The control room is filled with various instruments, including several analog gauges with white faces and black needles, digital displays, and numerous control knobs and buttons. A computer monitor is visible in the upper right corner, displaying a colorful interface. The overall atmosphere is professional and technical.

TEXAS A&M MARITIME ACADEMY



National Security Multi-Mission Vessels



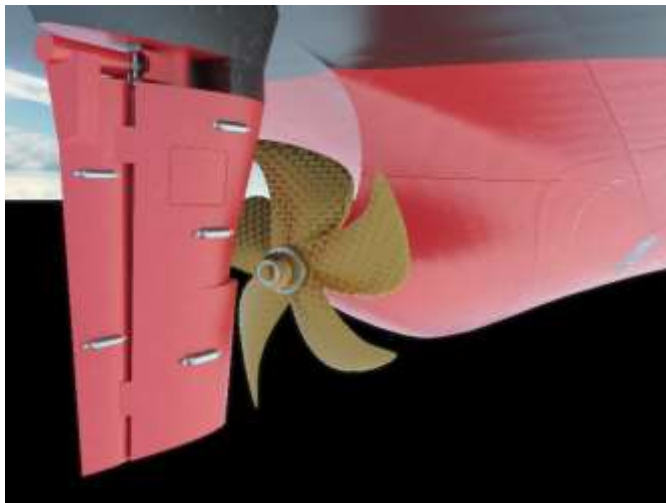
TEXAS A&M UNIVERSITY
GALVESTON CAMPUS.



A State-of-the-Art Training Platform



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USTS General Rudder

Length 224 ft.
Draft 16 ft.
Berths 48



USNS Sirius

Length 523 ft.
Draft 26 ft.
Berths N/A

Same size as NSMV



USNS Cape Gibson

Length 605 ft.
Draft 35 ft.
Berths N/A

About The Vessel



TEXAS A&M UNIVERSITY
GALVESTON CAMPUS

Disaster Response Support

Fresh Water (w/ Sanitary Water)

35 Gallon/day per person for 700 = 93 tons + 5 tons ship service FW = 98 tons/day

Food & Stores

60 Days food storage for 700 persons; 297 sq. m. (3,200 sq. ft.) reefer provisions, 240 sq. m. (2,580 sq. ft.) dry provisions

Electric Power

6,600V main power generation, 440V ship service electric power, 120V lighting and accommodations

RoRo Deck

RoRo space aft with a length of about 40 m. (130 ft.), width inside framing of 24 m. (80 ft.), clear height of at least 4.7 m. (15.3 ft.). The usable deck area is about 1,000 sq. m. (10,700 sq. ft.) Suitable for about 10x40 ft. trailers with 26 autos or about 49 autos/light trucks

RoRo Ramp

20 ft. wide watertight wide side ramp with 40-ton capacity

Hurricane Harvey Response



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Academy	Approx. Ship Capacity	Response Destination	Days To Arrive On Scene After Activation Orders
New York Maritime College	600	Key West, FL	17 Days
Massachusetts Maritime Academy	600	Corpus Christi, TX	15 Days
Texas A&M Maritime Academy	50	Galveston, TX	0 Days

Disaster Response Times



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Cities	Distance (NM)	Transit Time
New Orleans, LA	365	1 day
Biloxi, MS	480	1.5 days
Mobile, AL	500	1.5 days
Tampa, FL	659	2 days
Fort Meyers, FL	670	2 days
Key West, FL	725	2 days
San Juan, PR	1700	5 days

Voyage distances and times based on a National Defense Reserve Fleet Ship (of appropriate size, transit capabilities and speed of 15 knots) ported at the Texas A&M Maritime Academy in Galveston, Texas.



THANK YOU