

Academic Departments, Faculty and Course Descriptions

Note: For all faculty listings in this section of the catalog, the year when a faculty member joined the Academy staff follows each name. Other information includes the individual's faculty rank, degrees earned, where obtained, professional licenses held, and military affiliation. In a department that includes more than one discipline, the faculty member's area of specialization is indicated.

Superscripts used in this listing are:

¹faculty member has received the Academy's Sue Alice McNulty Award for Distinguished Teaching.

²faculty member has received the Captain C.A. Prosser Award for Student Service.

³faculty member has held command at sea of an unlimited tonnage vessel.

This list is current as of September 30, 2007.

The courses and descriptions in this section are subject to change.

Index to This Section

Engineering/Pg. 65

Humanities/Pg. 77

Marine Transportation/Pg. 81

Mathematics and Science/Pg. 91

Naval Science/Pg. 95

Physical Education and Athletics/Pg. 96

Office of Professional Development and Career Services/Pg. 98

- Department of Shipboard Training
- Department of Career Services

Global Maritime and Transportation School/Pg. 101



Department of Engineering

This department provides the faculty and facilities required to teach the programs in Marine Engineering, Marine Engineering Systems, and Marine Engineering and Shipyard Management, as well as engineering courses in the Maritime Operations and Technology curriculum and the engineering portion of the Dual License program. The department's chief responsibility is to prepare midshipmen for the U.S. Coast Guard license examination in engineering and to educate them as well-prepared marine engineers.

The Engineering Department faculty offices are in Fulton Hall, with

classrooms and laboratories in both Fulton and Gibbs Halls. All laboratories are high quality and house modern equipment and instrumentation. There are laboratories for diesel and steam engineering, refrigeration, marine engineering, thermodynamics, materials testing, machine shop, mechanical engineering, welding, electrical machinery, control systems, electric circuits, engine room simulators and graphics.

The engineering curriculum reflects the integration of computers, especially personal computers, into the program.

Department Head

David J. Palmer (1995)

B.S., U.S. Merchant Marine Academy
M.S., Polytechnic University
Ph.D., Polytechnic University

License: STCW-95 Certified Third Assistant Engineer of Steam, Motor and Gas Turbine Vessels, Unlimited Horsepower; Senior Nuclear Engineering Officer of the Watch, Senior Engineering Duty Officer, Navy Nuclear Program.

Military: CDR, USNR

Professors:

CAPT Douglas B. Brown, USMS (1991)

B.S., U.S. Coast Guard Academy
M.S., C.A.S., New York Institute of Technology
C.A.S., Harvard University

Licenses: Chief Engineer of Diesel Vessels Unlimited Horsepower; First Assistant Engineer of Steam Vessels, Unlimited Horsepower.

Boris Butman (1987)

M.S., Leningrad Shipbuilding College
Ph.D., Leningrad Water Transport Institute of Technology

Gabriel-Dumitru Colef (1991)

B.E., CCNY
M.E.E.E., CCNY
Ph.D., CCNY
Registered Professional Engineer - State of New York

Jose Femenia (1995)

Director, Master of Marine Engineering Program
B.E. (Marine), SUNY Maritime College
M.S.M.E., CUNY City College
License: Third Assistant Engineer of Steam and Motor Vessels, Unlimited Horsepower; Registered Professional Engineer - State of New York

CDR James A. Harbach, USMS (1978)

B.S., U.S. Merchant Marine Academy
M.E., Cornell
Engineer, Polytechnic University
Licenses: First Assistant Engineer (Steam), Unlimited Horsepower; Third Assistant Engineer (Diesel), Unlimited Horsepower. Registered Professional Engineer - State of New Jersey

Mukund R. Patel (1997)

B.E.E., Sardar University
M.E., Gujarat University
M.S. (I.E.), University of Pittsburgh
Ph.D., Rensselaer Polytechnic Institute
Registered Professional Engineer - State of Pennsylvania,
Chartered Engineer, United Kingdom

Sergio E. Perez (1993) ¹

B.S., Villanova
M.S., SUNY Stony Brook
Ph.D., SUNY Stony Brook

CAPT William J. Sembler, USMS (1991)

B.S., U.S. Merchant Marine Academy
M.E. Stevens Institute of Technology
Licenses: Chief Engineer of Steam, Motor and Gas Turbine Vessels of Any Horsepower; Third Mate, Ocean Vessels of Any Gross Tons. Registered Professional Engineer - State of New Jersey and New York

*Associate Professors:***CAPT Elwood C. Baumgart, USMS (2002)**

B.S., SUNY Maritime College
 M.E., Stevens Institute of Technology
License: Chief Engineer, Steam, Motor and Gas Turbine Vessels, Unlimited Horsepower.

CDR Raymond F. Gardner, USMS (1998)

B.S., U.S. Merchant Marine Academy
 M.S., (M.E.), Polytechnic University
Licenses: Chief Engineer, Steam and Gas Turbines, Unlimited Horsepower; Third Assistant Engineer, Motor, Unlimited Horsepower.
 Registered Professional Engineer - States of New York and Connecticut

James Mandato (2007)

B.S., U.S. Merchant Marine Academy
 M.S., University of Rhode Island, Kingston
 Associate Degree, Marine Biology, Nassau Community College
Licenses: Chief Engineer of Steam, Motor and Gas Turbine Vessels, Unlimited Horsepower.
 Registered Professional Engineer - New York State

Raymond L. Mathewson (2006)

B.E., SUNY Maritime College
 M.S., Massachusetts Institute of Technology
 Engineers Degree, Ocean Engineering, MIT.

CAPT Joseph Polisenio, USMS (1990)

Assistant Department Head
 B.S., U.S. Merchant Marine Academy
 M.S., (M.E.), Polytechnic University
License: Chief Engineer of Steam, Motor and Gas Turbine Vessels, Unlimited Horsepower.

Paul Santamauro (2001)

B.S., U.S. Merchant Marine Academy
 J.D., New England School of Law
License: First Assistant Engineer, Unlimited Horsepower, Motor Vessels; Third Mate, Steam and Motor Vessels of Any Gross Tons, Oceans.

Hesham Shaalan, (2005)

B.S.E.E., University of Houston
 M.E.E., University of Houston
 Ph.D., Virginia Tech
 Registered Professional Engineer - State of Texas

CDR John G. Tuttle, USMS (1996)

B.E., SUNY Maritime College
 S.M., Massachusetts Institute of Technology
 Charter Engineer, Professional Engineers Council, United Kingdom

Yvonne Traynham (2000)

B.S., University of Florida
 M.S., University of New Orleans
 Ph.D., University of New Orleans
 Registered Professional Engineer - States of Louisiana and Mississippi

John McWilliams (2007)

B.S., U.S. Merchant Marine Academy
 M.S., Columbia University
Licenses: Chief Engineer of Steam, Motor and Gas Turbine Vessels of Any Horsepower; Master, 1600 GT, Oceans; Second Mate, Any Gross Tons, Oceans; Radar, ARPA, GMDSS Certified

*Assistant Professors:***Michael R. Ales (2002)**

B.S., U.S. Naval Academy
 M.S., Virginia Polytechnic Institute & State University
 M.B.A., University of Southern Mississippi
Licenses: Chief Engineer, Stationery Power Plants, NIULPE (Illinois)
 Registered Professional Engineer - State of Wisconsin
Military: LT, USN

LCDR Paul Baham, USMS (1983)

B.S.M.E., Newark College of Engineering
 M.E., Stevens Institute of Technology
Military: LCDR, USNR (Ret.)

William Caliendo (2005)

B.E., SUNY Maritime College
 M.E., Stevens Institute of Technology
License: Third Assistant Engineer of Steam, Motor or Gas Turbine Vessels, Unlimited Horsepower.
 Registered Professional Engineer - State of New York

Nagy Hussein (2007)

B.E., Suez Canal University
 M.S., Howard University
 Ph.D., Catholic University of America
Licenses: FAA Commercial Pilot Multi-Engine Third Assistant Engineer; FAA Ground Instructor

Brian Leonard (1990)

A.A., Mohegan Community College
 B.S., Southern Illinois University
 M.S., New York Institute of Technology
 Senior Reactor Operator, Certified SRO, General Electric Co.
Military: MM1 (SS), USN

*Technicians:***Nicholas Abate (2006)**

U.S. Air Force, Jet Engine Mechanic, F-15 Aircraft
 Electronic Technician, Federal Aviation Administration
 Certified Navigational Aids Technician

CWO2 Thomas Bussi, USMS (1992)

Military: MMC, USNR. Enlisted Surface Warfare Specialist.

Howard Cohen (1978)

RCA Electrical Engineering Technology School
License: FCC Amateur Radio

Joseph Kass (1982)

A.S., CUNY
Licenses: Second Class Power Engineer - State of New York; Certified Welder; Certified Welding Instructor; Certified Welding Inspector.

Professors Emeriti:

CAPT Moses W. Hirschowitz, USMS (Ret.)
 (Engineering: 1949-1995)
 B.M.E., Clarkson
 M.E.E., New York University
Licenses: Chief Engineer of Steam and Motor
 Vessels, Unlimited Horsepower; Nuclear Reactor
 Operator -N/S SAVANNAH.
 Registered Professional Engineer -
 State of New York

Walter M. Maclean
 (Engineering: 1987-1995)
 Diploma, U.S. Merchant Marine Academy
 B.S.M.E., M.E., D.E., California (Berkeley)
Licenses: Chief Engineer of Steam Vessels,
 Unlimited Horsepower.
 Registered Professional Engineer -
 State of California

CAPT Robert T. Madden, USMS (Ret.)
 (Engineering: 1970-2001)
 B.S., U.S. Merchant Marine Academy
 M.S., Stevens Institute of Technology
License: Chief Engineer of Steam and Motor
 Vessels, Unlimited Horsepower
Military: CDR, USNR (Ret.)

Note: Sea Year courses (with EC
 prefix) appear at the end of this
 course listing

**KP100 Maritime Professional
 Studies Credits: 4**

This course has two objectives: to
 introduce the midshipman to the
 basic knowledge and skills of nautical
 science and marine engineering that
 are required of all officers in the mer-
 chant marine; and to expose the mid-
 shipman to enough of the basics of
 the two professional disciplines to
 allow an informed decision on which
 major to select. Topics covered in
 nautical science include the economic
 role of the merchant marine, mer-
 chant ship types, shipboard terms,
 dimensions, personnel organization,
 ship construction nomenclature,
 mooring with lines, mooring with
 ground tackle, and practical labs in
 knots, splices, and hitches for the
 bosun chair and stage. Topics cov-
 ered in marine engineering include
 main propulsion shafting and bearing,
 types of propellers, energy conver-

sion, heat transfer, components and
 cycle of steam plants, gas turbines,
 cycles of internal combustion
 engines, components of diesel
 propulsion, comparison of propulsion
 plants, components of hydraulic
 steering gear, and practical labs in
 the use of basic hand tools and pipe
 fitting.

Prerequisite: none
3 class hours a week
2 laboratory hours a week

**EE120 Introduction to Electrical
 Engineering Credits: 2.5**

This course covers the electrical prin-
 ciples necessary for understanding
 the electrical power system operation,
 testing, maintenance and trouble
 shooting procedures practiced aboard
 ships. It develops the basic under-
 standing of electrical machines, bat-
 teries, controls, protection and safety.

**Prerequisite: KP100 (Maritime and
 Professional Studies**
2 class hours a week
2 laboratory hours every other week

EE300 Electric Circuits Credits: 2.5

This course covers the concept of
 resistance, Ohm's Law, power, DC
 circuit analysis, Kirchoff's Voltage
 Law, Kirchoff's Current Law mesh and
 nodal analysis, network
 theorems, transient RC, RL and RCL
 circuits, resonance, AC circuit anal-
 ysis, Ac power, power factor, power
 factor corrections, linear transformer,
 three-phase circuits.

**Prerequisites: MM232 or
 MM230 (Engineering Mathematics)**
2 class hours a week
**2 laboratory hours every other
 week**

**EE400 Electric Machines Credits:
 3.5**

Theory, analysis, and applications of
 motors and generator actions, trans-
 formers and their operation, AC
 motors (three-phase and single
 phase), stepper motors, synchronous
 motors and generators, DC motors
 and generators, control systems, dis-
 crete process control, PLC's, power

electronic converters, and AC and
 DC motor drives. Correct procedures
 for the operation of marine electric
 plant and electric machinery design
 considerations are stressed,

Prerequisite:
EE300 (Electric Circuits)
3 class hours a week
**2 laboratory hours every other
 week**

EE401 Electronics Credits: 2.5

Theory, analysis, and applications of
 electronic circuits. Diodes and diode
 circuits, BJT and FET transistors, DC
 biasing and AC analysis. Logic gates,
 Boolean algebra, Karnaugh maps,
 flip-flops, counters, registers. Com-
 puter construction and operation. Ele-
 ments of feedback, operational ampli-
 fiers, active filters. Design of electronic
 devices and systems.

Prerequisite:
EE300 (Electric Circuits)
2 class hours a week
**2 laboratory hours every other
 week**

EE402 Automation and Control
Credits: 3

Introduction to various control criteria and methods of control. Control system analysis includes the study of : Laplace transforms; transfer functions; block diagrams; analysis of physical systems; computer modeling; system response; controllers; stability and tracking; error analysis; root locus analysis; design of feedback control systems; and frequency response.

Elective

Prerequisite: MM232 or MM230 (Engineering Mathematics) EE300 (Electrical Circuits)
3 class hours a week

EE403 Power Electronics **Credits: 3**

Fundamentals of modern power electronic switching devices and their uses for control of AC and DC systems. Rectifiers, phase-controlled rectifiers, inverters, converters, DC choppers, AC and DC machines drives.

Elective

Prerequisite: MM360 (Advanced Engineering Math)
3 class hours a week

EE404 Power System Design and Analysis **Credits: 3**

Application of the skills acquired in mathematics, physics and engineering sciences for the design of electrical power systems, incorporating the generation, distribution and utilization of electrical energy. Particular emphasis is given to developing the principles of designing the marine power system.

Elective

Prerequisite: EE300 (Electric Circuits) EE400 (Electrical Machines and Analog Electronics)
3 class hours a week

EE801 Guided Research in Electrical Engineering **Credits: 3**

Individual project in electrical engineering involving literature searches, analysis, design or application. Expected at the end of the project is a thesis-like report which can be published as a paper or presented to an interested audience.

Prerequisite: Enrollment in MES Program, EE Option Track.

EG100 Engineering Graphics **Credits: 2**

This course will cover drawings in the maritime industry, drafting instruments and equipment including AutoCad. Lettering and dimensioning. Geometric construction planes of projection; multiview drawings; developments, pictorial drawings and sketches; threads and fasteners. Auxiliary and sectional views. Metric and English systems of measurement and tolerances; machine elements including gears.

Prerequisite: None
1 class hour a week
2 laboratory hours a week

EG111 Engineering Shop 1 **Credits: 1**

An introduction to the principles and safe practices of basic machine tool operation and metals fitting and joining as found aboard merchant ships. The course treats the preparation and use of cutting tools used in drilling, turning, facing, shouldering, and threading of work pieces. The course also includes a basic introduction to common metal joining and cutting processes, including shielded metal arc oxyacetylene welding and

cutting, brazing and soldering, and welding/joining/cutting equipment and consumables. The course prepares midshipmen for the first sailing period and lays the basic foundation for more extensive development of metal cutting and joining.

Prerequisite: KP100
3 laboratory hours a week

EG211 Engineering Shop 2 **Credits: 1**

A continuation of metal cutting and joining theory and practice employed in merchant ship fabrication and repair operations. Emphasis is on the theory and safe practices of plasma; gas metal; and tungsten arc welding, oxyacetylene welding, brazing, cutting and flame spray metal surfacing. U.S. Coast Guard and American Bureau of Shipping technical standards are treated. The course also incorporates lathe and tool room machine practices including plain and taper turning, chucks and chucking, knurling, internal and external thread-ing and milling machine operations.

Prerequisite: EG111 (Engineering Shop 2)
3 laboratory hours a week

EM100 Introduction to Marine Engineering **Credits: 3.5**

A survey of merchant propulsion plants, i.e., fossil-fueled steam turbine, diesel engine and gas turbine. Basic engine construction, operating principles and support systems of each propulsion type are covered. Basic principles of pumps, steering gears and refrigeration systems are also presented. The course is offered in preparation for the first sailing

period and prepares midshipmen for their future concentration in the Marine Engineering curriculum.

Prerequisite: KP100
3 class hours a week
2 laboratory hours every other week

EM200 Marine Engineering 1 **Credits: 3.5**

This course will cover various topics related to marine engineering. An emphasis will be placed on the classification and construction of main and auxiliary boilers; pump performance; diesel engines; centrifugal, rotary, and reciprocating pumps; and air compressors.

Prerequisites: EM100 (Introduction to Marine Engineering)
3 class hours a week
2 laboratory hours every other week

EM300 Principles of Naval Architecture **Credits: 3**

This course will cover the engineering fundamentals required for a practical understanding of naval architecture, including statics, engineering materials and strength of materials; ship geometry and definitions; ship form, hydrostatic properties; initial and overall stability; trim; damage stability, floodable length, ship strength.

Prerequisites: MP120 (Physics) MM120 (Calculus for Deck Midshipmen)
3 class hours a week

EM301 Naval Architecture for Marine Engineers**Credits: 3**

This course will cover ship geometry and definitions: ship form, hydrostatic properties, initial and overall stability; trim; damage stability, floodable length, ship strength and structure, resistance and propulsion, ship control, and fundamentals of ship design.

Prerequisite:**ES301 (Strength of Materials)****Co Requisite:****ES310 (Transport Processes 2)****3 class hours a week****EM302 Mechanical Aspects of Marine Engineering****Credits: 3.5**

Application of engineering mechanics, materials engineering and strength of materials to the design and selection of machine elements as components of marine engineering systems. Fasteners, joint connections, springs, bearings, gears, shafts and power transmission systems components are some of the elements considered.

Prerequisites:**ES200 (Introduction to Materials Engineering)****ES301 (Strength of Materials)****3 class hours a week.****2 laboratory hours every other week****EM303 Ship Form and Stability****Credits: 3**

Coefficients of Form, lines, centers, capacities, hydrostatic calculations, trim intact stability, floodable length, damage stability, launching calculations, regulatory rules. Introduction to Application Software.

Elective**Prerequisites:****MM130 (CALCULUS 2E)****MP101 (Physics1)****2 class hours a week****2 laboratory hours a week****EM400 Marine Engineering 2****Credits: 3.5**

A core course which details operations and controls of pumps, boilers and turbines. Positive displacement and non-positive displacement pumps are investigated as to head versus capacity operating characteristics, shaft seals, and Net Positive Suction Head. The boilers are investigated with respect to regulations, design and operating procedures. Impulse and reaction turbines are investigated to the theory of operation and characteristic operating curves.

Prerequisites:**ES210 (Transport Processes 2)****ES100 (Engineering Mechanics)****EM200 (Marine Engineering 1)****3 class hour a week****3 laboratory hours every other week****EM401 Marine Engineering for Marine Engineering Systems****Credits: 3.5**

A core course which details design, operations and control of boilers, turbines and assorted marine auxiliary equipment. Piping system design is covered. The boiler auxiliaries are investigated with respect to regulations, design and operating procedures. Impulse and reaction turbines are investigated to the level of theory, design, operation and performance characteristic.

Prerequisites:**EM200 (Marine Engineering 1)****ES210 (Transport Processes 1)****ES301 (Strength of Materials)****ES310 (Transport Processes 2)****3 class hours a week****EM402 Marine Engineering 2 for Marine Engineering Systems****Credits: 3.5**

Design and Operation of evaporators, control valves, boiler fuel and combustion air systems, boiler combustion control and feedwater regulation, steam turbines, gas turbines and hydraulic steering gear systems. This is a required course for Marine Engineering Systems majors.

Prerequisites:**ES210 (Transport Processes 1)****ES100 (Engineering Mechanics)****EM200 (Marine Engineering 1)****3 class hours a week****EM403 Marine Engineering 2 for Marine Engineering and Shipyard Management****Credits: 3.5**

This course covers the design and operation of evaporators, pumps and piping systems, control valves and boiler fuel and combustion air systems, boiler combustion control and feedwater regulation, steam turbines and hydraulic steering gear systems. This is a required course for Marine Engineering and Shipyard management majors.

Prerequisites:**EM210 (Transport Processes 1)****ES100 (Engineering Mechanics)****EM200 (Marine Engineering 1)****3 class hours a week****EM410 Marine Refrigeration****Credits: 3.5**

This course will cover various topics related to marine refrigeration and air conditioning including cycle analysis, compressor construction and performance, heat exchange construction and performance, system controls, psychrometrics, refrigerant characteristics and recovery, and the calculation of heating and cooling loads.

Prerequisites:**ES310 (Transport Processes 2)****EM100 (Introduction to Marine Engineering)****3 class hours a week****3 laboratory hours every other week****EM415 Internal Combustion Engines****Credits: 3.5**

Study of theoretical and operational cycles of diesel engines; engine performance and selection criterion; fuel systems, lubrication systems; cooling systems; starting and reversing systems; governor systems; engine fuels, fuel injection; systems lubricants; manufacture and design of engine components; crankcase explosions; dynamic balancing of engine running gear.

Prerequisite: ES310 (Transport Processes 2)**3 class hours a week****3 laboratory hours every other week**

EM420 Engine Room Simulator**Credits: 1**

Engine Room Simulation-based training is designed to enhance the potential third engineer's skills to properly make all the decisions that are necessary to operate a large horsepower engine room in a safe and effective manner. As the training progresses, machinery casualties are implemented in which the student must simultaneously find alternative means of operating the engine room while troubleshooting and correcting the casualty. Tuning of PID controllers will also be included.

Prerequisites:**EM200 (Marine Engineering I)****EM415 (Internal Combustion Engines)****3 laboratory hours a week****EM425 Gas Turbines****Credits: 3**

The Brayton cycle application to gas turbine power cycles, heat balance, turbine and compressor flow passages, gas turbine design, construction, operation and maintenance, application to marine drives.

Prerequisites:**ES310 (Transport Processes 2)****ES301 (Strength of Materials)****3 class hours a week****EM426 Compressible Flow****Credits: 3**

An introductory course in compressible flows concentrating in aeronautical engineering applications. This course covers normal and oblique shocks, Prandtl-Meyer expansions, Fanno flow, Rayleigh flow, shock reflection, supersonic lift and drag, nozzles, diffusers and the method of characteristics for nozzle design.

Elective**Prerequisites:****ES310 (Transport Processes 2)****3 class hours a week****EM427 Aeronautical Engineering****Credits: 3**

An introductory course in aeronautical engineering. The first half of this course concentrates on practical aspects of flight, history of flight, lift, forms of drag, transition to turbulence, parametric equations for airfoil performance, drag divergence, the effect of airfoil geometry on performance, supersonic flight, aircraft performance, NACA sections, ground effects and stability. The second half of the course focuses on more theoretical topics like stream and potential functions, basic plane potential flows, superposition and circulation.

Elective**3 class hours a week****EM430 Diesel Maintenance****Credits: 2**

Teardown of diesel engines to survey work required for a complete repair report. Data taken during teardown and rebuilding includes cylinder wear, ring wear, piston clearances, bearing clearances, and crankshaft alignment. Includes complete rebuilding and final assembly of engine. Analysis of maintenance problems and causes are made for each engine studied.

Prerequisites:**EM415 (Internal Combustion Engines)****4 laboratory hours a week****EM441 Resistance and Propulsion****Credits: 3**

Fundamentals of resistance, dimensional analysis, series and statistical approximation methods, Froude's laws, power estimation, model testing, interaction of ship and propeller, propeller theory and design, Propeller selection. Introduction to NAVCAD or other resistance and propulsion software.

Elective**Prerequisites:****ES310 (Transport Processes 2)****MM332 (Engineering Math 2)****3 class hours a week****EM442 Ship Structures****Credits: 3**

Analysis of loads and responses of ship structure, including hull girder bending, stiffened and unstiffened plates, rings, midship section design, introduction to regulatory rules, use of structural programs.

Elective**Prerequisites:****ES310 (Strength of Materials)****3 class hours a week****EM443 Introduction to Ship Design****Credits: 3**

Concept and preliminary design techniques incorporating owners requirements, economic considerations into a balanced ship design. Mathematical modeling, ships characteristics, general arrangements, hydrostatic and dynamic considerations, stability, structures, and propulsion Use of synthesis, hydrostatic, hydrodynamic and CAD software.

Elective**Prerequisites:****EM303 (Ship Form and Stability)****EM441 (Resistance and Propulsion)****EM442 (Ship Structures)****2 class hours a week****2 laboratory hours a week****EM444 Marine Dynamics****Credits: 3**

Theory of water waves, spectral analysis of ocean waves, ship motions in regular and irregular waves, maneuvering course keeping. Use of sea-keeping and maneuvering software.

Prerequisites:**MM332 (Engineering Math 2)****3 class hours a week****EM450 Ocean Engineering****Credits: 3**

Introduction: overview of ocean engineering; ocean environment-ocean floor, ocean currents, tides, waves, ice; offshore structures-types of structures, wave forces on structures, wind and current forces on structures, offshore pipelines; coastal processes and structures-types of structures, wave refraction, diffraction and reflection, wave run-up, wave forecasting, sediment transport and scour, dredging; underwater systems-diving and life-support, pressure vessels, submarines, remotely operated vehicles, habitats, energy systems; instrumentation for ocean applications; environment, safety, and ethics.

Elective**Prerequisites:****ES310 (Transport Processes 2)****MC370 (Intro to Oceanography)****3 class hours a week**

EM451 Offshore Power Systems
Credits: 3

Fundamentals of modern power electronic switching devices in their uses for control of AC and DC systems-rectifiers, phase control rectifiers, inverters, converters, DC choppers, AC and DC machine controllers; fundamentals of power hydraulics-pumps, actuators, hydraulic system components, energy evaluation in hydraulic systems, hydraulic system design and circuit analysis.

Elective**Prerequisites:**

EE300 (Electrical Circuits)
3 class hours a week

EM452 Offshore Oil Drilling and Production
Credits: 3

The hydrocarbon production chain; hydrocarbon production history; offshore recovery systems; typical production and process systems; anatomy of an oil well; field development issues-geographical, economic, environmental, cultural/political; hazards and risk management.

Elective**Prerequisites:**

EM450 (Ocean Engineering)
3 class hours a week

EM453 Port Development **Credits: 3**

Layout and design of the infrastructure for water transportation-harbors, channels and ports. Nature of water movement; problems in designing for the coastal environment; features of harbors sites; structures and planning the design of port facilities; economics and regulations; infrastructure modeling.

Elective**Prerequisites:**

EM450 (Ocean Engineering)
3 class hours a week

EM460 Thermal Analysis of Marine Power Plants
Credits: 3

The application of thermodynamics, fluid mechanics and heat transfer to the design of marine power plants and systems. The course will cover the analysis of steam, diesel and/or gas turbine power plants and associated auxiliary systems.

Prerequisites:

ES310 (Transport Processes 2)
EM400 (Marine Engineering 2)
2 class hours a week
2 laboratory hours a week

EM461 Mechanical & Thermal Aspects of Marine Engineering
Credits: 3

Application of engineering mechanics, materials engineering, strength of materials and thermodynamics to the design and selection of machine elements, as components of marine engineering systems. Power plant cycles as well as components are studied. Fasteners, bearings gears, shafts and power transmission systems components are some of the elements considered.

Prerequisites:

ES200 (Introduction to Materials Engineering)
ES301 (Strength of Materials)
ES310 (Transport Processes 2)
3 class hours a week

EM470 Marine Engineering License Seminar
Credits: 1

This course focuses on the final preparation of marine engineering license candidates. It stresses the importance of environmental protection and the various international and U.S. laws mandating the minimizing of pollution by ship and, in particular, those aspects under the direct control of marine engineers. It also focuses on enhancing the third assistant engineer candidate's examination-taking skills and reinforcing the knowledge necessary to successfully pass the final comprehensive assessment examination in the program of study, the U.S. Coast Guard Third Assistant Engineer examination.

Prerequisites:

All other required Marine Engineering (EM) courses
2 laboratory hours a week

EM480 Marine Engineering Systems Design
Credits: 3.5

The application of the engineering sciences to the design of marine engineering power plants and their associated systems and equipment. Steam power plant heat balances; piping system design; design and sizing of reduction gears; shafting system design; design considerations of pumps, compressors, and turbines.

Prerequisites:

EM200 (Marine Engineering 1)
EM310 (Transport Processes 2)
3 class hours a week
3 laboratory hours every other week

EM481 Marine Engineering System Design Project 1 **Credits: 0.5**

First phase of the design project for Marine Engineering Systems majors. Students design teams complete trade-off studies related to marine power plants and systems.

Corequisite or Prerequisite:
EM480 and EM415

1 laboratory hour per week

EM482 Marine Engineering System Design Project 2 **Credits: 0.5**

A continuation of the design project for Marine Engineering Systems majors. Students design teams begin the design of systems for a marine vehicle including design calculations, equipment selection, and preparation of specifications and drawings.

Prerequisite: EM481

1 laboratory hour per week

EM483 Marine Engineering Design Project 3 **Credits: 1**

Completion of the design of the systems for a marine vehicle including design calculations, equipment selection, and preparation of specifications and drawings. Presentation of the final project to a faculty and industry panel. Prerequisite: Marine Engineering Systems Design.

Prerequisites:

EM 482 (Marine Eng. System Design Project 2)
2 laboratory hours a week

EO210 Materials and Processes for Marine Technology

Credits: 2.5

An introduction to marine materials and maintenance/repair processes and procedures applied aboard ship and in shipyards, to expand the student's knowledge of machining, tool practices, joining, measurement and inspection by emphasizing physical fundamentals..

Prerequisites:

EM100

(Intro. to Marine Engineering)

EG111 (Engineering Shop 1)

2 class hours a week

3 laboratory hours a week

EO301 Electrical Technology

Credits: 4.5

This course, limited to Maritime Operations and Technology (MOT) majors, covers the electrical engineering principles associated with theories, design, operation and maintenance of shipboard electrical systems. Topics covered include AC and DC circuit theory, measurement and instrumentation, magnetism, transformers, electronics, electrical machinery, power electronics, fuel cells, automation and control, and regulatory standards.

Prerequisites:

MC130 (Physics)

4 class hours a week

2 laboratory hours a week

EO401 Ship Systems Operations

Credits: 2.5

This course, limited to Maritime Operations and Technology (MOT) majors, provides an in-depth knowledge of the engineering principles, construc-

tion, operations and maintenance of shipboard engineering systems other than the primary propulsion systems. Topics covered include hydraulics, refrigeration and ventilation (HVAC), deck machinery, evaporators, compressed air systems, and other general engineering subjects. Knowledge acquired in this course is intended to help prepare students for supervisory positions in seagoing and shoreside engineering operations.

Prerequisites:

EM100 (Intro to Marine Engineering)

2 class hours a week

2 laboratory hours every other week

EO402 Auxiliary Propulsion Machinery

Credits: 3.5

This course, limited to Maritime Operations and Technology (MOT) majors, provides an in-depth knowledge of the engineering principles, construction, operations and maintenance of the engineering systems that support the operation of modern, large-scale diesel and steam propulsion machinery. Topics include principles of thermodynamics, heat balances, fuel and lube oil systems, heat exchangers, bearing theory and construction, starting systems, and boiler and jacket water treatment. Knowledge acquired in this course is intended to help prepare students for supervisory positions in seagoing and shoreside engineering operations.

Prerequisites:

EM100 (Intro to Marine Engineering)

3 class hours a week

2 laboratory hours every other week

EP200 Manufacturing Processes

Credits: 2.5

Introduces manufacturing processes applied by shipyards and other manufacturing enterprises, and expands the student's knowledge of machining, joining, forming casting, forging, corrosion protection by emphasizing their physical fundamentals. Topics also include modern shipyard production processes and procedures.

Prerequisites:

EM100

(Introduction to Marine Engineering)

EG111 (Engineering Shop 1)

Corequisite:

ES200 (Engineering Materials)

2 class hours a week

1 laboratory hour a week

EP300 Engineering Ship Operations

Credits: 3

This course, for Marine Engineering and shipyard Management majors only, Introduces the basic managerial and economic principles of operations of a ship as an engineering system. Topics include: functions and responsibilities of the onboard engineering crew and shore-side management; preventive maintenance and repair systems; statutory and classification requirements for ship operations; economics of ship operations, maintenance and repair; introduction to shipyards, including location, layout, equipment and production processes; ship engineering and design; shipyard repairs, overhauls and conversions.

Prerequisites:

EM100 (Intro to Marine Engineering)

3 class hours a week

EP301 Shipyard Internship

Credits: 3

Each midshipman enrolled into Shipyard and Marine Engineering Management Program must satisfactorily complete a six-week internship assignment at a shipyard or at a related facility as a requirement for graduation. The objectives of the internship include learning procedures and obtaining practical skills in specific areas of shipyard operations and management, improving the midshipman's potential by exposure to the practical management functions, and collecting data for a capstone design project to be completed during the Senior Class year. The internship is performed prior to the senior year. It is open for midshipmen enrolled into Shipyard and Marine Engineering Management Program who have completed courses in Engineering Shop and Ship Engineering Operations

Prerequisite:

EP300 (Engineering Ship Operations)

EP310 Engineering Economics

Credits: 3

Introduces economic logic and quantitative methods to provide a basis for engineering decision-making involving capital investment and cost effectiveness. Topics include cost estimating in ship operations and in shipyards, project evaluation and selection, economic decision-making, time factor of money, risk and uncertainty, depreciation, replacement policy, and tax considerations. Practical applications to ship design, operations and construction are presented as case studies.

Prerequisites:

DB210 (Principles of Economics)
3 class hours a week

EP400 Engineering Project Management Credits: 3.5

Introduces the midshipmen to the fundamentals of management of engineering projects related to ship operation, ship production and repair. The subjects include classification of projects, organizational structure and contracts; ship and machinery design process, design spiral and iterative process; design teams and decision-making process, practical application, methods and models; project estimating; work breakdown, planning and scheduling; computerized network scheduling systems; project monitoring and updating; project cost control. Practical experience in evaluation, calculation and justification of project decisions is gained while working on an individual assignment and as a member of a capstone design team.

Prerequisites:

EP310 (Engineering Economics)
EP301 (Shipyards Internship)
3 class hours a week
1 laboratory hour a week

EP401 Shipyards Production Management Credits: 3.5

Introduces students to the fundamentals of management of maritime-related manufacturing enterprises involved in ship construction and repair, and in fabrication of ship components, equipment and spare parts. The subjects include classification of shipyards; modern ship production methods; process design and improvement; production control,

planning and scheduling; management organization and structures; computer based integrated management systems; labor and productivity management; quality assurance management; plant operations; productions; production cost control; capacity analysis. Practical experience is gained in case studies and in development of the capstone design project.

Prerequisite:

EP300 (Engineering Ship Operations)
EP200 (Manufacturing Processes)
EP400 (Engineering Project Management)
3 class hours a week
1 laboratory hour a week

EP450 Computer-Integrated Manufacturing Credits: 3

This course, for Marine Engineering and Shipyards Management majors only, introduces the basic principles of computer-integrated manufacturing (CIM) with a specific emphasis on shipyard production. This course is taught by a team of instructors with a combination of lectures on theoretical subjects and two design projects. The lecture topics include fundamentals of CIM, components and methods, and practical applications in the shipyard. The objectives of the design projects are for the student to learn the procedures and obtain the practical skills in designing a program for numerically-controlled milling machines and for robots.

Elective**Prerequisites:**

EG100 (Engineering Graphics)
ES110 (Computer Engineering)
EG211 (Engineering Shop 2)

EP401 (Shipyards Production Management)
3 class hours a week

EP461 Capstone Project Seminar 1 Credits: 0.5

(For Marine Engineering and Shipyards Management majors only.) Introduces the student to the fundamentals of developing engineering projects related to ship operations, ship production and repair. Provides the student with laboratory time and the instructor's assistance while working on the initial stage of the capstone project - development of a bidding package, economic evaluation and justification, project management strategy and procedures. Practical experience of design management is gained in planning and scheduling the project activities and in arranging team work.

1 laboratory hour a week

EP462 Capstone Project Seminar 2 Credits: 0.5

(For Marine Engineering and Shipyards Management majors only.) Introduces the student to the fundamentals of developing engineering projects related to ship operations, ship production and repair. Provides the student with laboratory time and the instructor's assistance while working on the capstone project development stage. Typical examples of the tasks are design of modernization and/or improvement proposals, production processes and shipyard capacity analysis and evaluation. Practical experience of design management is gained in planning and scheduling the project activities and in arranging team work.

1 laboratory hour a week

EP463 Capstone Project Seminar 3 Credits: 0.5

(For Marine Engineering and Shipyards Management majors only.) Introduces the student to the fundamentals of developing engineering projects related to ship operations, ship production and repair. Provides the student with laboratory time and the instructor's assistance while working on the final stage of the capstone project, which includes final project report development and preparation of project presentation. Practical experience of design management is gained in planning and scheduling the project activities and in arranging team work.

1 laboratory hour a week

EP801 Resource-Driven Production Strategy Design Credits: 2

This course, for Marine Engineering and Shipyards Management majors only, introduces students to the methods of PERT-based analysis of production plans. The principles topics include: PERT and CPA systems; task-driven production schedules; constraints and assumptions; resource-driven schedules; workforce optimization; and balancing and leveling. Practical design assignments are given

Elective**Prerequisites:**

EP401 (Shipyards Production Management)
3 class hours a week

ES100 Engineering Mechanics *Credits: 3*

This course is an analysis of the subject of statics and dynamics. The objective is to impart to the student the understanding of statics and dynamics with the understanding of forces, moments, components of forces, centroids, Theorem of Pappus, Truss Analysis, moments of inertia, radius of gyration, kinematics and systems of particles, kinetics and systems of particles, and plane kinematics of rigid bodies. A full mathematical understanding is expected.

Prerequisites:

MM130 (Calculus 2E)

MP 101 (Physics 1)

3 class hours a week

ES110 Computer Engineering *Credits: 2*

This course is designed to familiarize the student with electronic spreadsheets and computer programming. Common commercial software programs are utilized to meet the intent of the course goals. Regarding spreadsheets, simple-to-advanced features are covered; this includes formulas and functions, templates, inserting objects, spreadsheet automation, customizing options, and incorporation of charts. The computer programming portion of the course covers fundamental computer logic and program design, user input and output, forms sub-procedures, variables, constants, controls, functions, loops, formatting, error trapping, arrays, graphing, printing, compiling and program distribution.

2 class hours a week

ES200 Introduction to Materials Engineering *Credits: 2*

An introduction to the structure and properties of solids commonly used in engineering applications, with an emphasis on atomic, crystalline, and non-crystalline structures. States of equilibrium and nonequilibrium in solids and the effects of internal structure on the physical and mechanical properties of materials are considered.

Prerequisites:

MP101 (Physics 1)

MC100 (General Chemistry)

ES210 Transport Processes 1 *Credits: 3.5*

The development of thermodynamic principles and concepts. Systems of units. First law - conservation of energy, mass continuity. Properties of pure substances. Ideal and real gases. Second Law including the Carnot cycle, entropy, availability and available energy. Gas-gas and gas-vapor mixtures. Reactive systems analysis.

Prerequisites:

MM130 (Calculus 2E)

3 class hours a week

2 laboratory hours every other week

ES301 Strength of Materials *Credits: 2*

Stress and strain, thin-walled cylinders, Poisson's ratio, statically indeterminate members, thermal stresses and Mohr's circle. Torsion in shafts. Shear and moment in beams. Beam deflections. Columns: Euler's formula and other column formulas.

Prerequisites:

ES100 (Engineering Mechanics)

2 class hours a week

ES305 Materials Engineering Laboratory *Credits: 1*

This laboratory will cover: tensile, compressive, torsion, bending, impact, hardness testing, strain gauge measurement, phase transformation of steels, metallography, and non-destructive testiness including ultrasonic, magnaflux dye penetrates and radiographic inspections, statistical evaluation of data.

Prerequisites:

ES200 (Materials Engineering)

ES301 (Strength of Materials)

2 laboratory hours a week

ES310 Transport Processes 2 *Credits: 3.5*

Principles of fluid statics including manometry, forces on submerged surfaces, buoyancy, and stability. Bernoulli's equation. Reynolds transport equation and flow continuity. Incompressible viscous flow including flow in pipes and ducts. Similitude. Drag and lift. Introduction to the fundamental laws of heat transfer. Steady-state conduction. Fin heat transfer, heat generated, transients with small internal resistance. Forced convection.

Prerequisites:

ES210 (Transport Processes 1)

3 class hours a week

2 laboratory hours every other week

ES400 Advanced Thermal Science *Credits: 3*

Application of thermodynamic principles to the analysis of internal combustion engines, gas turbines, and steam power plants. One dimensional compressible flow, including nozzle flow with normal shocks. Thermal

radiation principles and applications. Heat exchangers.

Elective

Prerequisites:

ES310 (Transport Processes 2)

3 class hours a week

ES401 Thermal System Optimization *Credits: 3*

The simulation and optimization of thermal systems, including gas turbines, air conditioning, steam propulsion. Components are simulated, using various modeling techniques, and combined into systems. The systems are examined for operating characteristics and optimization within a concept.

Elective

Prerequisites:

EM480 (Marine Engineering

Systems Design)

3 class hours a week

ES410 Vibrations *Credits: 3*

Theory of mechanical vibrations, free and forced vibration of damped and undamped single degree of freedom systems, natural frequencies and critical speeds, instability, dynamic balancing isolation techniques, vibration testing and analysis techniques, introduction to modal analysis, introduction to acoustics, human response to vibration and noise.

Elective

Prerequisites: MM332 (Engineering Mathematics 2)

ES301 (Strength of Materials)

ES411 Machine Design 1 *Credits: 3*

Application of mathematics, engineering sciences, and general design factors to the design and analysis of components used in marine

machinery. Includes factors in design, stress and deflection analysis, dynamic loading, energy methods, stress concentration and fatigue, fracture, and statistical considerations. Basic design practices for shafting gears, fluid film and antifriction bearings, bolted joints and brakes.

Elective

Prerequisites:

MM332 (Engineering Mathematics 2)
ES301 (Strength of Materials)

ES412 Machine Design 2 Credits: 3

Application of the principles covered in machine Design I to the design of a complete machine, such as a pump or compressor. Some aspects related to hydraulic design will be also covered. Each student (either individually or as part of a team, based on the number of students enrolled in the class) will be expected to complete a design based on a specification that will be provided. Drawings and a detailed design report will be required for the design. In addition, an oral presentation will be made during which the design will be described.

Elective

Prerequisites:

MM332 (Engineering Mathematics 2)
ES301 (Strength of Materials)

ES413 Solids Modeling & Finite Elements Analysis Credits: 3

Solids modeling and principles of finite-element analysis: model preparation; element types; mesh generation; restraints; applied loads; displacements; strains; stresses; dynamic analysis; evaluation of results; optimization. Applications related to computer-aided manufacture and inspection. Each student will

submit a project consisting of the modeling and analysis of an original design.

Elective

Prerequisites:

MM332 (Engineering Mathematics 2)
ES301 (Strength of Materials)
ES310 (Transport Processes)

ES420 Introduction to Nuclear Physics and Engineering

Credits: 3

This is a team taught course-covering Nuclear Physics and Nuclear Engineering. The Nuclear Physics portion will cover nuclear structure, radioactivity and reactions; particle accelerators; binding energy; fission and fusion; scattering and attenuations of radiation; nuclear instrumentation; radiation safety. The Nuclear Engineering portion will cover nuclear reactor components; reactivity effects and the fission process in reactors; reactor dynamics; neutron characteristics; neutron life cycle; delayed neutrons; macroscopic cross sections and mean free path; diffusion length and multiplication factors in reactors; production and loss rate formulas and reactor startup calculations.

Elective

Prerequisites:

MP325 (Atomic Physics)
2.5 class hours a week (average)
2 laboratory hours every other week
Equivalent to MS420

ES421 Nuclear Engineering

Credits: 3

This course introduces students to the fundamental operating principles of a Pressure Water Reactor and its subsystems including: primary

system; pressurizing system; primary relief system; emergency cooling system; discharge system; reactor core; rod control; reactor plant control panel; primary purification system; and emergency core cooling system. The course also covers rod control; evolution and effects on the pressurizer; reactor startup and shutdown; reactor scrams and decay heat considerations; and reactor plant casualties and immediate actions. Advanced nuclear reactor designs are also discussed.

Elective

Prerequisites:

ES420 (Introduction to Nuclear Physics and Nuclear Engineering)
3 class hours a week

ES423 Advanced Internal Combustion Engines Credits:3

This elective will be offered to all first class midshipmen interested in gaining a deeper appreciation of the internal combustion engine. Several different engine combustion applications will be presented: diesel; spark-ignited; prechamber spark ignited; and gas turbines. The course will have both practical and analytical components. Some cycle analysis using MatLab will be performed to study certain engine applications. The student will gain an in-depth understanding of the current state-of-the-art strategies in engine combustion, engine performance and emission reduction.

Elective

Prerequisites:

MM310 (Transport Processes 2)
MM230 (Engineering Math) or
MM332 (Math for Engineers 2)
3 class hours a week

ES428 Fluid Dynamics Credits:3

An introductory course in computational fluid dynamics (CFD), with practical applications. The first half of the course covers theoretical aspects of CFD: the Navier-Stokes, continuity and energy equations, finite differences, implicit and explicit solutions, analytical and computer solutions of simple flows, solution of systems of equations, Reynolds-Averaged Navier-Stokes models, and meshing. Second half course work will include tutorial using commercially available CFD software.

Elective

Prerequisites:

ES310 (Transport Processes 2)
3 class hours a week

ES430 Solid Waste Management Credits: 3

An analysis of solid waste generation, collection, salvage, cost analysis, and system design. Emphasis is placed on the engineering considerations associated with various options of disposal, with a heavy focus on waste to energy generation.

Elective

Prerequisites:

MC340 (Environmental Chemistry)
3 class hours a week

ES431 Air and Water Pollution Control Credits: 3

A study of the causes and ramifications of air and water pollution. Design and operational techniques to minimize pollution are considered. Included are studies of relevant physical and chemical processes, including mass-transport and chemical equilibrium.

Elective**Prerequisites:**

MC340 (Environmental Chemistry)
3 class hours a week

ES432 Hazardous Waste Management **Credits: 3**

An analysis of hazardous waste generation and current management practices. Emphasis is placed on engineering treatment and disposal methods such as physiochemical processes, biological processes, stabilization and solidification, and thermal methods, as well as land disposal. Site remediation such as quantitative risk, characterization and remedial technologies are also discussed.

Elective

3 class hours a week

ES801 Alternative Energy Systems Design **Credits: 3**

This is a system design-based course that focuses on today's promising zero pollution, alternative energy technologies. These include solar photovoltaic, wind generation and fuel cells. The student develops a fundamental understanding of each technology, and is required to develop in-depth expertise on a technology, or fact of a technology, of their choice. In addition, the student participates in the "hands-on" construction of the integrated technologies, KP Alternative Energy systems. Communication with off-campus renewable energy technology companies is required.

Prerequisites: None
3 class hours a week

Sea Year

First Sailing Period
Engineering Courses

EC110 Machine Shop **Credits: 1**

This course provides practice using the lathe skills learned during plebe year in a shipboard environment. This course consists of the fabrication of a metal project using the ship's tools. As an alternative, midshipmen may provide photographic and technical report documentation of actual projects fabricated for the ship.

EC111 Marine Propulsion 1 **Credits: 2**

This course is a study of the main propulsion machinery, the associated support systems, and the operational procedures related to the ship's main propulsion system. The project focuses on either main propulsion diesel, steam turbine, or gas turbine plants. The objective is to begin developing the skills necessary to be a proficient shipboard engineering officer as well as to provide practical, hands-on experience.

EC115 Shipboard Systems 1 **Credits: 2**

This course is a study of the ship's auxiliary machinery, the ship's support systems, and the operational procedures related to the ship's main propulsion system. This project also includes safety equipment and systems and provides the midshipman with practical operating experiences.

Second Sailing Period
Engineering Courses

EC252 Electrical Engineering **Credits: 1**

This course studies the electrical systems on board the ship, including electrical generation, distribution, motor control, and lighting. Some knowledge of troubleshooting is studied.

EC253 Maintenance Management **Credits: 1**

This course focuses on the logistical support of maintaining the ship in good operating condition, including inventory management, maintenance and repair activities, and planning shipyard work.

EC260 Marine Propulsion 2 **Credits 2.5**

Similar to Marine Propulsion 1, but with focus on steam plants with more depth of knowledge.

EC261 Marine Propulsion 3 **Credits 2.5**

Similar to Marine Propulsion 1, with focus on diesel plants with more depth of knowledge.

EC262 Shipboard Systems 2 **Credits 2**

Similar to Shipboard Systems 1, but with more depth of knowledge.

EC264 Naval Architecture **Credits 2**

This course is the study of the ship's structure and construction. It is designed to provide an understanding of classification, definitions shipboard construction, trim and stability, materials, and structural details.

EC265 Refrigeration **Credits 1**

This course is the study of the ship's heating, ventilation, and air conditioning system and the ship's stores refrigeration system. It includes investigating the system devices, principles of operation, and the procedures for maintenance and repair.

First Sailing Period
Deck Courses

EC120 Marine Engineering for Deck Midshipmen **Credits: 1**

This course is designed to provide deck midshipmen with an overview of the ship's mechanical and electrical systems. The objective is to provide them with enough knowledge on how the ship functions to make them better ship's officers. The study focuses on equipment or systems that tend to affect the operation of the ship.

EC121 Marine Engineering for Ship's Officers **Credits: 1**

Similar to EC120, except tailored to the Ship's Officer's program. The Ship's Officer's program includes more engineering, so that the midshipman will be competent to fill unlicensed shipboard engineering positions upon graduation as a "Qualified Member of the Engine Department - QMED."

Second Sailing Period
Deck Courses

SE257 Marine Engineering for Ship's Officers 2 **Credits: 1**

Similar to EC121, except the project is more in-depth, and the midshipman is required to spend a minimum of 90 days as an engine cadet.

Department of Humanities

The department offers two introductory English courses. The first course, in plebe year, gives primary emphasis to composition and introduces midshipmen to classic works of literature to develop writing skills through close reading and critical analysis. A second English course, given in an upper-class year, focuses on literature of various genres and ages, and provides additional work on composition. Midshipmen have opportunities to reflect on the complexities of human life, culture and history, and the psychology of human conflict and cooperation.

During their second sailing period, midshipmen complete a Humanities Project, a long comparative essay that correlates literary, biographical or historical reading with shipboard observations about leadership.

The English Support Program provides an additional hour of remedial work in grammar and composition to selected plebes enrolled in English 1.

A one-credit ethics course in plebe year exposes midshipmen to common ethical dilemmas and provides tools for successful resolution of ethical situations. This course also affords midshipmen opportunities to read and writer critically.

The department offers three history courses. The History of Sea Power, which plebes must take, grounds midshipmen in maritime and naval history,

including the role of sea power during the two 20th century world wars. Sea Power also is designed to reinforce basic writing, critical reading and speaking skills.

The History of the Modern World, offered in an upper-class year, examines key transnational events and issues that have shaped our societies. Since USMMA graduates will enter an international transportation industry, they will find the broad perspective gained from this course essential to their understanding of the world.

Modern American History, also given to upper-class midshipmen, explores the wellsprings of contemporary American life. The course describes the events that have shaped our society since 1945 to seek a better understanding of the issues we face today.

All midshipmen take one course from a grouping entitled Topics in Literature and History. Here midshipmen choose from non-survey courses focused on aspects of literature, culture and history. Through analysis of particular topics, the courses explore the roots, evolution and expressions of cultural systems to expose students to cultural, historical or literary analysis. Each course has strong writing and public speaking components and gives midshipmen responsibility for facilitating classroom discussion.

Department Head and Professor:

Jane Pacht Brickman (1981)

(History)

B.A., Queens College

M.A., Ph.D., CUNY

Professors:

Laury Magnus (1981)

(English)

B.A., Brooklyn College

M. Phil., Ph.D. CUNY

Rosanne Wasserman (1991)

(English)

B.A., Indiana

M.F.A., Columbia

Ph.D., CUNY

Associate Professors:

Howard L. English, Jr. (2001)

(History)

B.S., Fordham

M.A., Fordham

M.B.A., Iona Collage

Ph.D., Fordham

Jeffrey F. Taffet (2002)

(History)

B.A., Franklin and Marshall

M.A., Georgetown

Ph.D., Georgetown

Assistant Professors:

Allan A. Arnold (1966)

(History)

B.S., Brooklyn College

M.A., Columbia

Melanie Ross (2004)

(English)

A.B., Princeton

Ph.D., New York University

Joshua Smith (2003)

(History)

M.A., St. Andrew's University

A.S., Maine Maritime Academy

M.A., East Carolina University

Ph.D., University of Maine

Gregory F. Sullivan (2006)

(History)
B.A., University of California,
Berkeley
M.A., Yale University
Ph.D., Yale University

Christopher R. Trogan (2006)

(English)
B.A., Columbia
M.A., Columbia
M.A., CUNY
Ph.D., (pending) CUNY

Professor Emeritus

Arthur L. Donovan

(History, 1988-2003)
A.B., Harvard
M.S., Wisconsin
Ph.D., Princeton

Jacques Szaluta

(History, 1965-2001)
B.S., New York University
M.A., Ph.D., Columbia

HC200 Chinese Civilization

Credits: 3

Introduction to key aspects of the historical and contemporary culture of China. Analysis of geographical environment, population dynamics, spoken and written languages, classical thought and religion, the imperial order, traditional society and economy, premodern science and technology, China's modern encounters with the West, foreign imperialism in China, the rise of power of nationalist and communist movements, and China's recent experiences under state socialism.

HC201 Studies in Comparative Culture

Credits: 3

The social, economic, political structures, and religious and cultural foundations of non-Western societies. Perspectives on contemporary developments in selected areas, focusing on the distinct historical evolution of cultures and comparison to Western developments. Areas vary from year to year.

HC420 Empires and Consolidated States

Credits: 3

Comparative analysis of two important imperial systems in world history - Rome and Han China. Major themes include politics and government, military strategy and tactics, ideological and religious rationalization for empire, and the processes by which imperial systems "rise and fall." The consolidation of nation-states of modern times, comparing key social, political, military, and cultural facets in the emergence of France and Japan in the seventeenth and eighteenth centuries.

HC425 American Enterprise: Business, Management, Labor & Economic Development

Credits: 3

An exploration of the evolution of the American economy to enable students to understand the modern economy and the new workplace they will encounter. The study of business, technological innovation, labor and labor relations, as well as economic policies. An introduction to the major issues and debates surrounding American economic development and competitiveness.

HC430 Leadership in Modern Times: A Biographical and Psycho-Historical Approach

Credits: 3

Examination of major figures in the nineteenth and twentieth centuries. The study of biographies from traditional and psychohistorical perspectives. Figures selected for study include F. D. Roosevelt, Eisenhower, Clinton, Thatcher, Nightingale, Freud, Gandhi, Malcolm X, MacArthur, and Hitler.

HC435 The World and American History

Credits: 3

Topics in American history, from the colonial period to the present, set in the context of parallel or contemporaneous developments in other parts of the world; aspects of American history seen in a global perspective.

HC440 Introduction to Cinema

Credits: 3

This course introduces cinema as an international art form, providing basic concepts, vocabulary, and examples of films and directors to enable students to make educated judgments about the cross-cultural themes, values, and pleasures of the film.

HE001 English Support Program

Credits: 3

An additional hour of English for selected students enrolled in English I. Students will work intensively to develop writing skills.

HE101 English 1

Credits: 3

Fundamentals of composition, grammar, critical reading, and analysis of essays and literature. Exposure to research techniques and forms, including library and Internet. Development of communication skills through oral presentations, graded essays, and papers.

HE102 English 2

Credits: 3

Study of literature and composition. Intensive writing, combined with the study of literary genres through selected works of drama, poetry, short stories, and novels. Continued work in technical writing and research.

HE301 Literature of the Sea

Credits: 3

A survey of the greatest writing about the sea, from Homer and "The Seafarer," through Melville and Conrad, to Patrick O'Brian and Jimmy Buffett. Students share and write stories of their own Sea Year adventures.

HE302 Shakespeare

Credits: 3

The study of works and textual and performance interpretation of Shakespeare's drama, including analysis of his histories, tragedies, comedies, and romances. The selection includes *Richard III*, *Henry IV (Part I)*, *The Taming of the Shrew*, *As You Like It*, *A Midsummer Night's Dream*, *Much Ado About Nothing*, *Twelfth Night*, *Romeo and Juliet*, *Hamlet*, *Othello*, *King Lear*, and *The Tempest*.

HE400 The Growth of Self in Literature and Film Credits: 3

This course explores the theme of the quest for the self, as expressed in literature and film. Additionally, the course focuses on the two similar but divergent media of literature and film as vehicles for dramatizing character and character development. In literary works, films, and film adaptations, students will trace protagonists' struggles with their inner demons as well as the evils of their societies as they move toward maturity and articulate inner lives. Four of five literary works will be examined, both as texts and in film versions or adaptations.

HE410 War and Peace in Literature, History and Film Credits: 3

This course studies the cultural continuity of war and peace themes from the ancient to the modern world. Since its Homeric beginnings, war literature has continued to occupy a sizable place in the literary canon and folk/popular culture. The course will examine great works of literature and film that seek to understand the meaning of war from individual and historical frameworks.

HE420 The Making of the Modern Mind Credits: 3

This interdisciplinary course focuses on the forces of cultural definitions at the turn of the twentieth century. The course explores the interconnections among the arts, literature, and history. The areas studied will be broken into four units: Cubism and Fragmentation; Impact of Freud on the Arts; Existential Response to War and the Holocaust; and African-American and Feminist Statements. The course will conclude with a consideration of the role of art in the twenty-first century.

HG401 Public Speaking Credits: 3

This course is designed to develop professional competency in oral communication. Its primary emphasis is on speech design and speaking, whether as individuals addressing professional audiences or in small groups working on problems or tasks usually performed by investigative teams. The course's learning tasks culminate in two speeches given toward the end of the term -- one to inform and one to persuade.

HG402 Public Speaking and Technical Writing Credits: 3

This course is designed to develop professional competency in oral and written communications. Its primary emphasis is on speaking, whether as individuals addressing professional audiences or in small groups to work on problems or tasks usually performed by investigative teams. The course's learning tasks culminate in two speeches given toward the end of the term -- one a technical report and one to persuade.

HH100 The History of Sea Power Credits: 3

An introduction to the circumstances and traditions of seafaring, the concept of sea power and its applications, the strategic doctrines and military history of the U.S. Navy, and the origins and consequences of federal maritime policy in the 20th century.

HH310 Modern World History Credits: 3

This course examines key issues of the modern world. It will focus on exploring political, economic and/or intellectual change and the impact of interactions between a number of different areas of the world. There is a focus on significant transnational events over an extended time period. Each instructor will choose a theme, or series of themes, to organize the material. This course is not intended to be comprehensive. Themes may also change by term.

HH360 Modern American History Credits: 3

This course examines the evolution of society within the United States from the end of the Second World War to the present. During the term, midshipmen will examine a series of key cultural and social changes that occurred during this period and, when appropriate, will assess the political, economic, demographic, ideological and the international contexts for those changes.

HH370 Holocaust: Its Historical and Ethical Meaning Credits: 3

A study of the history and ethical implications of the Holocaust. The course includes aspects of Jewish history and anti-Semitism, World War II, and German efforts to eliminate the European Jewish population. Beyond the study of the facts, the course will engage students in critical analysis of the psychological and ethical meaning of these events.

HH371 Studies in Ethical Theories and Issues Credits: 3

Introduction to theories of ethical conduct and the practical application of theory to difficult political, social, and business dilemmas. The course seeks to stimulate students' moral imagination to raise recognition of ethical issues.

HH400 History of the South *Credits: 3*

This course will explore the relationship between the South and major events and trends of American history. A major portion of the course will be devoted to understanding the Civil War, military and politically. Students will learn what has made the South a distinctive region and how Southern history has converged with the larger history of the United States.

HH410 American Government *Credits: 3*

This course focuses on the major principles, structures, and policies of government in the United States. In particular, the Constitution and its development, the ways in which government has changed over the centuries, and current political controversies and figures will be considered and studied.

HH420 The U.S. and the Third World *Credits: 3*

The course will serve as introduction to key issues and events in the history of United States relations with the Third World. Students will analyze how and why the United States, as a primary participant in the world system, dealt with events in Asia, the Middle East, and Latin America. Students will also discuss the modern implications of historical United States actions abroad, exploring how current global relationships evolved.

HH430 The History of Latin American-U.S. Relations *Credits: 3*

This course will serve as introduction to key issues and events in the history of Latin American-United States relations. Students will analyze how and why the United States has attempted to protect, control, or serve its southern neighbors. The course also will examine how Latin Americans responded to political, cultural, and economic initiatives of the United States.

HI703 Independent Study *Credits: 3*

A course of individual study, research, or design on a suitable topic, with the course syllabus and content constructed under the direction of a faculty member and approved by the department head.

HI704 Maritime History Independent Study *Credits: 3*

A course of individual study, research, and writing based on the leading figures of the maritime field, including Joe Curran, Paul Hall, William Francis Gibbs, Malcom McLean, Admiral Alfred Thayer Mahan, Samuel Bowditch, or William Webb. Papers will become chapters in a biographical compendium of maritime leaders.

HL300 Introduction to Conversational Spanish *Credits: 3*

This course is designed to develop Spanish-language conversational skills. Every effort will be made to create a homogeneous group, based on students' representations of their previous exposure to the study of Spanish, as well as the instructor's evaluation of each student on the first day of class. The level at which the course will be taught will reflect students' prior experience. The course focuses on making the student conversant in a variety of culturally authentic situations likely to be experienced as a visitor in a Hispanic country.

HL301 Intermediate Conversational Spanish *Credits: 3*

This course has been designed for the student who has already been exposed to elementary and intermediate Spanish. The focus of this course is to enable the learner to function in a variety of authentic business and social settings. The course will propel the student from the "tourist" in language settings to one who begins to feel comfortable in "living" the language in a more vocational and commercial environment.

HP101 Ethics Primer *Credits: 1*

This interactive course provides an overview of the field of ethics. Students will analyze case studies of ethical principles and precepts and apply them to their own experiences as students at a federal academy. The course is designed to enhance moral and ethical reasoning as well as leadership development.

HS221 Humanities Sea Project *Credits: 1*

A reading and writing project to be completed by all midshipmen during their second sailing period.



Department of Marine Transportation

The department administers the marine transportation program for midshipmen. It is also responsible for major portions of the Maritime Operations and Technology and the Logistics and Intermodal Transportation curricula and for the nautical science and business components of the Dual License curriculum. The department offers courses in three disciplines: Nautical Science, Maritime Business, and Logistics and Intermodal Transportation.

Courses are given in the core curriculum to provide midshipmen with nautical science and management skills, as well as a knowledge of the transportation process necessary for successful careers in the maritime industry. The core includes courses in management, law, economics, transportation, logistics, intermodal and port operations, navigation, seamanship, marine safety and meteorology.

In addition, the department offers advanced elective courses in relevant areas. These courses can be grouped to give midshipmen a more in-depth exposure to a particular subject area. Students interested in concentrating their electives are advised to contact faculty advisors for specific information and advice.

The department's administrative and faculty offices, classrooms and most of its laboratories are located in Bowditch Hall. These include navigation and electronics laboratories, a tanker loading simulator, and a computer work area. A new radar simulator laboratory is currently the only interactive "16 Own Ship" radar simulator in the world. It simulates numerous ship models and has navigation aid capabilities with plotters and printers attached. Students interact with up to 50 contacts and maneuver through simulated land databases utilizing radars and Automatic Radar Plotting Aids (ARPA's). A seamanship laboratory in Samuels Hall is also maintained and operated by departmental faculty. The department provides hands-on training in ship operations utilizing the vessels and dockside facilities of the Waterfront Activities Department.

An important component of deck officer training is achieved through the use of a ship's bridge simulator, located in the Computer Aided Operations Research Facility (CAORF) in Samuels Hall. This full task bridge simulator offers midshipmen the opportunity to practice bridge team management as well as vessel maneuvering under realistic conditions.

Department Head and Associate Professor:

CAPT Brian J. Hall, USMS (1998)
(Marine Transportation)
B.S., U.S. Merchant Marine Academy
M.S., SUNY Maritime College
License: Master of Steam and Motor Vessels of Any Gross Tons, Oceans (STCW95); Tankerman PIC; GMDSS Certification
Military: CAPT, USNR

Professors:

CAPT Fiaz H. Arain, USMS (1991)³
(Marine Transportation)
B.S., University of Wales, Cardiff
M.B.A. (Finance), University of Bridgeport
M.S., PH.D. (Transportation Planning and Engineering), Polytechnic University
License: Master of Steam and Motor Vessels of Any Gross Tons, Oceans (STCW95).

Michael B. Cohn (1978)
(Economics)
B.A., Yeshiva
M.A., Ph.D., New York University

CDR Dennis Compton, USMS (1981)
(Marine Transportation)
B.S., M.S., SUNY Maritime College
Licenses: Master, Inland Steam or Motor Vessels of Any Gross Tons; Chief Mate of Steam and Motor Vessels of Any Gross Tons, Oceans (STCW95).

CAPT George R. Sandberg, USMS, FNI (1990)³
(Marine Transportation)
Director, Nautical Science Simulation
B.S., SUNY Maritime College
M.S., SUNY Maritime College
License: Master of Steam and Motor Vessels of Any Gross Tons, Oceans (STCW95).

CAPT Douglas A. Hard, USMS (1966)^{1,3}

(Marine Transportation)
B.S., U.S. Merchant Marine Academy
M.B.A., Pennsylvania (Wharton)
M.S., Polytechnic Institute of New York
License: Master of Steam and Motor Vessels of Any Gross Tons, Oceans,
Military: Captain, USNR

CAPT Jon S. Helmick, USMS (1995)³

(Logistics and Transportation)
Director, Logistics and Intermodal Program
B.A., University of Miami
Ph.D., University of Miami
License: Master of Steam, Motor, Auxiliary Sail, and Sail Vessels of Any Gross Tons, Oceans.

CDR Mark E. Huber, USMS (1980)¹

(Marine Transportation)
B.S., SUNY Maritime College
M.S., Long Island University
License: Master of Steam and Motor Vessels of Any Gross Tons, Oceans (STCW95); GMDSS Operator; Tankerman PIC (DL).

Gary A. Lombardo (2002)

(Maritime Business)
B.S., New Hampshire College
M.S., University of Southern California
Ph.D., University of Oregon

Warren F. Mazek (1986)

(Economics)
A.B., Washington and Jefferson
M.A., Indiana
Ph.D., Pittsburgh

Gerhardt Muller (1997)

(Marine Transportation)
B.S., SUNY Maritime College
M.S., SUNY Maritime College
License: Second Mate, Steam and Motor Vessels of Any Gross Tons, Oceans.

Shashi Kant Shah (1998)

(Maritime Business)
B.S., M.A., Brigham Young University
M.B.A., New York University
Ph.D., City University of New York

CDR Paul J. Zerafa, USMS (1986)

(Marine Transportation)
B.S., SUNY Maritime College
M.S., New York Institute of Technology
M.S., Long Island University
License: Master of Steam and Motor Vessels of Any Gross Tons, Oceans (STCW95);
GMDSS Operator and Maintainer.

*Associate Professors:***Chang Q. Guan (2002)**

(Logistics and Transportation)
Diploma, Jimei Institute of Navigation, Fujian, P.R. China
B.S., SUNY Maritime College
M.S., SUNY Maritime College
License: Third Mate, Unlimited (People's Republic of China)

CAPT George Edenfield, USMS, (2003)³

(Marine Transportation)
Assistant Department Head - Nautical Science
B.S., U.S. Merchant Marine Academy
License: Master of Steam and Motor Vessels of Any Gross Tons, Oceans (STCW95).

CDR James E. Hall, USMS (1976)

(Marine Transportation)
B.S., SUNY Maritime College
M.B.A., Pennsylvania (Wharton)
License: Chief Mate of Steam and Motor Vessels of Any Gross Tons, Oceans (STCW95).
Military: Commander, USNR

CDR Stephen C. Hempstead, USMS (2004)

(Marine Transportation)
B.A., M.A., University of Rhode Island
B.S., Massachusetts Maritime Academy
License: Master of Steam and Motor Vessels of Any Gross Tons, Oceans (STCW95) ; GMDSS Operator.

CAPT David B. Moskoff, USMS (2001)³

(Marine Transportation)
B.S., SUNY Maritime College
License: Master of Steam and Motor Vessels Of Any Gross Tons, Oceans (STCW95); GMDSS Operator

CAPT John M. Nunnenkamp, USMS (1977)

(Marine Transportation)
B.S., U.S. Merchant Marine Academy
M.S., SUNY Maritime College
License: Chief Mate of Steam and Motor Vessels of Any Gross Tons, Oceans (STCW95). GMDSS Operator.
Military: Captain, USNR

Jeffrey C. Peck (1969)

(Law)
Assistant Department Head-Maritime Business
B.S., Brooklyn College
J.D., LL.M., New York University
Member of the Bar - State of New York

CAPT Cynthia L. Robson, USMS (1996)³

(Marine Transportation)
B.S., Texas A&M (Texas Maritime Academy)
M.A., University of Houston (Clear Lake)
License: Master of Steam or Motor Vessels of Any Gross Tons, Oceans; Limited Master Ocean, Sail or Auxiliary Sail Vessels.

CAPT Ann Sanborn, USMS (1993)³

(Marine Transportation)
B.S., Texas A&M (Texas Maritime Academy)
J.D. , University of Houston
License: Master of Steam and Motor Vessels of Any Gross Tons, Oceans (STCW95).
Member of the Bar - State of Texas

CAPT Timothy D. Tisch, USMS (2002)³

(Marine Transportation)
B.S., SUNY Maritime College
M.S., U.S. Naval Postgraduate School
Ph.D., U.S. Naval Postgraduate School
License: Master of Steam or Motor Vessels of Any Gross Tons, Oceans (STCW95); GMDSS Operator.

Assistant Professors:

CAPT Thomas Dorr (2003)³
(Marine Transportation)
Master, Training Vessel *Kings Pointer*
B.S., SUNY Maritime College
License: Master of Steam and Motor
Vessels of Any Gross Tons, Oceans
(STCW95); First Class Pilot.

**CAPT John H. Hagedorn,
USMS (1996)^{1,3}**
(Marine Transportation)
B.S., SUNY Maritime College
License: Master of Steam and Motor
Vessels of Any Gross Tons, Oceans
(STCW95).

CDR Daniel Hunt, USMS (1990)¹
(Marine Transportation)
B.S., U.S. Merchant Marine Academy
M.A., Columbia University
License: Chief Mate of Steam and
Motor Vessels of Any Gross Tons,
Oceans (STCW95); GMDSS Operator.

**LCDR Ronald F. Jablonski, USMS
(1983)**
(Marine Transportation)
B.S., SUNY Maritime College
License: Second Mate of Steam and
Motor Vessels of Any Gross Tons,
Oceans (STCW95).

LCDR John L. Lutz, (2005)
(Marine Transportation)
B.S., U.S. Merchant Marine Academy
License: Master of Steam and Motor
Vessels of Any Gross Tons, Oceans
(STCW95).
Military: LCDR, USNR

**CAPT James Nicholson, Jr, USAF
(2004)**
U.S. Air Force Liaison Officer
(Logistics and Transportation)
B.S., Excelsior College

CDR John F. Ryan, USMS (2002)
(Marine Transportation)
B.S., SUNY Maritime College
M.S., SUNY Maritime College
License: Master of Steam and Motor
Vessels of Any Gross Tons, Oceans
(STCW95) ; First Class Pilot.

LT Ann Wickham, USCG (2005)
(Marine Transportation)
U.S. Coast Guard Liaison Officer
B.S., U.S. Merchant Marine Academy
License: Third Mate of Steam and
Motor Vessels of Any Gross Tons,
Oceans

Professors Emeritus:

**CAPT Raymond Eisenberg, USMS
(Ret.)**
(Marine Transportation: 1941-1976)
Diploma, Pennsylvania State Nautical
School
License: Master of Steam and Motor
Vessels, Any Gross Tons, Oceans.

**CAPT Robert J. Meurn, USMS
(1978)^{1,3}**
(Marine Transportation, 1978-2003)
B.S., U.S. Merchant Marine Academy
M.A., George Washington University
License: Master of Steam and Motor
Vessels of Any Gross Tons, Oceans.
Military: Captain, USNR

**KP100 Maritime Professional
Studies Credits: 4**

This course has two objectives: to introduce the midshipman to the basic knowledge and skills of nautical science and marine engineering that are required of all officers in the merchant marine; and to expose the midshipman to enough of the basics of the two professional disciplines to allow an informed decision on which major to select. Topics covered in nautical science include the economic role of the merchant marine, merchant ship types, shipboard terms, dimensions, personnel organization, ship construction nomenclature, mooring with lines, mooring with ground tackle, and practical labs in knots, splices, and hitches for the bosun chair and stage. Topics covered in marine engineering include main propulsion shafting and bearing, types of propellers, energy conversion, heat transfer, components and cycle of steam plants, gas turbines, cycles of internal combustion engines, components of diesel propulsion, comparison of propulsion plants, components of hydraulic steering gear, and practical labs in the use of basic hand tools and pipe fitting.

**3 class hours a week
2 laboratory hours a week**

**DB110 Principles of Logistics and
Transportation Credits: 3**

This course examines the fundamentals of the transportation system and the complex environment in which it operates. The elements of the supply chain and the principles of logistics will be explored. The economic, operating, and service characteristics of individual modes will be surveyed. Cost factors, demand, pricing, and regulations of transportation services will be examined. The goal of the course is to provide students with a solid understanding of the principal elements of logistics and transportation systems and a grasp of important terminology, with emphasis on the role of each mode of transportation in inter-modalism and integrated logistics systems.

DB210 Economics Credits: 3

Scope and method of economics; allocative mechanisms and economic systems; supply and demand analysis; pricing and resource allocation under various market conditions; cost curve analysis; national income accounting; theory of income determination; fiscal policy; money and banking; monetary policy.

DB230 Management Credits: 3

A comprehensive course designed to explore the world of a manager with emphasis on the principles and practices of management. This course focuses on the managerial functions of planning, controlling, staffing, directing and motivating individuals and work-groups. The objective is to enhance midshipmen knowledge and thinking about the workings of organizations

and the relevance of management concepts as they embark on their professional careers.

DB240 Marketing Credits: 3

This course examines the role of marketing from the perspective of a marketing manager who needs knowledge of customer/consumer behavior to develop, evaluate and implement effective strategies intended to influence those behaviors to achieve the firm's objective. Among the topics covered are: market research and analysis, consumer behavior, marketing strategies, distribution, and pricing. Special emphasis will be given to marketing services of transportation companies.

DB300 Fundamentals of Business and Maritime Law Credits: 3

An introduction to the American legal system and business law and an analysis of the public policy behind the law. A presentation of fundamental concepts of law to give the students an understanding of the role and importance of maritime law in shipping and transportation. Topics include: nature and sources of the law, jurisdiction, constitutional law, administrative law, torts, contracts, rights of seamen cargo, collision, salvage and maritime pollution.

3 Class hours a week

DB310 Finance and Accounting Credits: 3

The principles of accounting essential to the development of a good accounting information system will be studied. The methods of collecting financial information and their processing to produce the financial state-

ments necessary for good management control will be developed. The journal, the ledger, trial balance, adjustments, depreciation, statement preparation and analysis will be covered. Budgeting and cost controls are developed. This course will familiarize students with concepts and terminology of business finance: DCF, NPV, IRR, break-even analysis, capital budgeting, and cost of capital will be introduced. Microcomputer software and business oriented simulation will be used.

DB410 International Business and Ocean Shipping Credits: 3

A comprehensive course covering the international environmental forces and their influence on all of the functional areas of the international firm - marketing, finance, management and operations - with special emphasis on the international ocean shipping firm and its central role in international trade and global logistics. This survey course is designed to help midshipmen develop an increased awareness and understanding of international business and global business issues, as well as their impact on international ocean shipping firms.

DB498 Maritime Economics Credits: 3

An analysis of the Economics of the Maritime Industry. The course covers the various sectors of the industry: Dry Bulk, Liquid Bulk and General Cargo. Costs of providing shipping services and the demand for these services are studied. This leads to an analysis of the pricing of ships and shipping services. The regulatory framework of the industry is also considered. For

someone planning a career in the shipping industry, the course seeks to provide an understanding of the economic forces at work

Elective
Prerequisite: DB210 Economics
3 Class hours a week

DL200 Integrated Logistics Management Credits: 3

This course examines the theory and practice of logistics management in the modern business environment, with attention to parallels between business and military logistics. Key objectives of the course are to provide midshipmen with an in-depth understanding of the operation of key elements in logistics systems, comprehension of the interrelationships among individual components of supply chains, awareness of the structure and purpose of logistics information systems, knowledge of how the logistics function interfaces with other business functions, and a grasp of the principal tools and techniques used in the analysis of logistics systems. Emphasis is on system optimization for the purpose of achieving competitive advantage, cost reduction, and customer satisfaction.

DL300 Intermodal Transportation Systems Credits: 3

This course explores the important concepts and operational specifics of commercial and military intermodal transportation, primarily as they pertain to the movement of freight. It is designed to provide students with an appreciation of the development and characteristics of the present intermodal transportation system, comprehension of the advantages and

disadvantages of intermodalism, awareness of the intermodal services, terminals, equipment, and information systems currently in operation and under development, and understanding of how individual modes and intermediaries interact in intermodal systems, and a grasp of the key challenges faced by commercial and military intermodal transportation managers and knowledge of some of the strategies that can be employed in dealing with these concerns.

DL340 Management of Transportation Enterprises Credits: 3

Building on the foundation laid in earlier logistics and intermodal transportation major courses, this elective will be examine the challenges inherent in managing today's businesses operating both modally and in intermodal service. the course will focus on the regulatory, financial, economic, and global environments impacting such businesses. Particular attention will be paid to intermodal issues where appropriate. The course will be conducted under the case analysis method, and will be augmented by speakers from transport management, financial institutions, and relevant government agencies. Because the case method will be used, class participation will provide a significant part of the final grade, and class preparation will be closely monitored. this course fulfills the elective requirement for Logistics and Intermodal Transportation majors.

Elective
Prerequisite: DB110 Principles of Logistics and Transportation
3 Class hours a week

DL350 Introduction To Railroad Operations Credits: 3

This course is designed to introduce the student to the operational aspects of that segment of the nation's infrastructure that moves passengers and freight over steel rails. Sufficient detail is provided to ensure an understanding of the physical plant, operational capabilities and limitations, the maritime interface, comparative advantages and limitations of rail transportation, and its niche in intermodal transportation.

Elective

Prerequisite: DB110 Principles of Logistics and Transportation
3 Class hours a week

DL400 Intermodal Port and Terminal Operations Credits: 3

A detailed analysis of the economic, legal, and practical dimensions of intermodal terminal operations. Subjects covered include gate operations, yard management, cargo-handling equipment, terminal information systems, maintenance and repair, documentation, port administration, and labor-management relations. Challenges related to productivity, infrastructure constraints, increasing vessel size, and new technologies are addressed. Emphasis is on the central role of intermodal ports and marine transportation in achieving the goal of "seamless" transportation.

DL420 Global Supply Chain Management Credits: 3

Designed to provide students with an understanding of the unique functional, legal, cultural, and strategic issues that characterize international freight logistics. Topics addressed include global sourcing, international inventory management, system optimization, global transportation options, international terms of sale and documentation, global information management, international logistics strategies, and organizing the firm to achieve effective global logistics management. The development of managerial decision-making skill in the global context is facilitated through the use of case studies and computer simulation exercises.

DL440 Introduction to Air Transportation Credits: 3

This course will examine the background, operations and future of the commercial domestic and international air transport industry and U.S. military aviation. Through the perspective of shippers, passengers, carriers, facilitators, airports, and government, the course surveys the services provided, equipment used, airports, cost and rate structures, documentation, government policies and regulations, independent and alliance business arrangements, insurance, routing techniques and optimization, analysis of operations and competitive alternatives, and plans for the future. The course will also provide a better

understanding of the growing importance that the communication of information has on purchasing and operating commercial and military air transportation services.

Elective

Prerequisite: DB110 Principles of Logistics and Transportation
3 Class hours a week

DL450 Logistics and Intermodal Seminar Credits: 3

A capstone course structured to integrate the lessons learned in prior course work, internships, and the sea year experience. Through case studies and applied research projects dealing with current challenges provided by industry, government, and military organizations, the seminar provides midshipmen with the opportunity to apply their knowledge and skills in solving "real-world" problems in logistics management intermodal transportation, and port operations. Midshipmen regularly interact with, and make presentations to, officers of organizations providing issues and problems.

DL460 Defense Transportation Systems Credits: 3

This course explores the important concepts and operational specifics of the Defense Transportation System (DTS), primarily as they pertain to the deployment of forces "from fort to fox-hole." It is designed to provide students with an appreciation of the characteristics of the present transportation system, challenges faced by the DTS, and an awareness of the services, terminals, equipment, and

information systems currently in operation. The course will also discuss the logistical support provided to the tactical operations of a brigade task force.

Elective

Prerequisite: DB110 Principles of Logistics and Transportation
3 Class hours a week

DM300 Information and Technology Management Credits: 3

This course provides midshipmen with broad knowledge of information systems and relevant issues faced by managers and administrators in organizations. The course focuses on information technology - computer hardware, software, networks/telecommunications, and protocols and procedures, as a tool to solve business problems. The student will explore the principles and practices of managing and developing information systems and technology in an enterprise and assess their impacts on management, organizations and society. This course is required for all Marine Transportation majors and may be taken as an elective by other midshipmen. Class size limited to 30 students.

3 Class hours a week

DM320 Human Resources Management Credits: 3

A comprehensive course designed to assist future ship's officers with the basic tools in dealing with the "people" issues. Topics include organization and administration of the human resource function, selection and placement, performance appraisal, fringe benefits, wage and salary administration, and major personnel issues in today's maritime milieu.

DM340 Admiralty and International Law Credits: 3

An in-depth study of U.S. admiralty law and the public international law of the sea. Major decisions and the principles upon which they are based will be examined in relevant contexts. Admiralty topics include: liens, personal injury, collision, carriage of cargo salvage, general average, and pollution. International law topics include: sources of law, jurisdiction, territorial sea, contiguous zone, continental shelf, exclusive economic zone, high seas and the deep seabed. U.S. oceans policy will be discussed under each of these topics.
3 class hours a week

DM390 Entrepreneurship and Management of Start-Ups Credits: 3

This course explores the factors that transform an idea into a serious business opportunity of choice. It covers significant aspects of a new business start-up and/or a small privately-held firm; incorporates researching the background; development; implementation of ideas; and producing a business plan for the venture that will facilitate the future practice of entrepreneurship in the maritime industry. It lays the groundwork for networking with alumni practitioners and enhances a simulated entrepreneurial experience.

DM400 Marine Insurance Credits: 3

This course will familiarize the student with the fundamentals of marine insurance, the ocean marine hull and cargo policies, third party liability insurance (P and I insurance), the

categories of marine losses, and general average and salvage adjustments. This course is required for all Marine Transportation majors and may be taken as an elective by students who have completed the prerequisites. Class size limited to 30 students.

DM410 Chartering and Brokerage Credits: 3

This course will provide a basic understanding of how charter parties are constructed, how chartering decisions are made, how vessels characteristics and voyages are analyzed, the functions of brokers and agents and vessel sales and purchases. This course is required for all Marine Transportation majors and may be taken as an elective by Logistics and Intermodal and Marine Operations and Technology majors. Class size limited to 30 students.

3 class hours a week

DN100 Safety of Life at Sea Credits: 2

Students successfully completing this course will be able to take charge of the preparation, embarkation and launching of survival craft. They will be able to manage a boat under oars or motor, and take charge of an inflatable life raft. Students will know the correct use of all survival equipment and the action to take to preserve the lives of those in their charge. An official test to obtain U.S. Coast Guard certification as lifeboatman will also be given.

DN110 Basic Firefighting & Safety Credits: 2

Provides the student with the knowledge and experience to handle shipboard fires and emergencies. The student will be instructed in the behavior of fire, prevention and suppression techniques and equipment. The student will be instructed in the safe use of respirators, fit testing of respirators, and the application of this training to firefighting and other hostile environments. This course is designed to give the student the necessary skills to minimize the risk of fire and maintain a state of readiness for combating shipboard fires.

DN120 Terrestrial Navigation Credits: 3

This course is designed to teach the student the technical and practical concepts of Terrestrial Navigation. Areas covered include terrestrial coordinates, nautical charts, navigation publications, piloting, navigation aids, compass corrections, the computation of tides, and tidal currents. Practical chart work laboratories, simulator time, and a laboratory on the training vessel provide extensive practice. A discussion of the International Regulations for preventing collisions at sea (Navigation Rules of the Road) is provided.

2 class hours a week

2 laboratory hours a week

DN121 Celestial Navigation Credits: 4

Introduction to the study of celestial bodies, their locations and apparent

motion relative to an observer on Earth, their ephemera elements of the celestial sphere, concepts and use of time including predictions of celestial phenomena. The course will encompass celestial theory derived from qualitative and quantitative analysis of the combined coordinate systems for reductions of celestial observations to lines of position. Celestial observations will be used to determine compass error. Studies will also involve practical application through the use of the sextant, azimuth ring, alidade, and other standard shipboard equipment and publications.

2 class hours a week

2 laboratory hours a week

DN140 Meteorology Credits: 3

This course will cover the principles of modern meteorology as is applicable to the marine environment. The course encompasses the following: the earth-atmosphere system, weather elements: atmospheric thermodynamics; wind systems; cyclones and anti-cyclones, air masses, fronts and middle-latitude cyclones; violent local storms; tropical storms; the synoptic weather map; weather service for merchant shipping; weather forecasting; ocean waves; sea ice and ice accretion; weather map construction and analysis; optimum shiprouting utilizing the prevailing and projected weather conditions to advantage; weather routing to avoid adverse conditions; practice of practical shipboard reporting procedures.

DN210 Cargo Operations Credits: 3

This course will cover the principles of materials handling and their application to the movement of marine cargoes, safe cargo operations, certification of cargo gear, stresses on cargo gear, mathematical calculations of safe and efficient cargo stowage, dehumidification units and prevention of moisture damage due to cargo and ship sweat. In addition, this course will examine ship stability and trim, and the practical application of these principles in the loading of vessels carrying break bulk, bulk and container cargoes. A container loading project will be required to be completed involving computing stowage, trim, KG, GM and LCG.

3 class hours a week

DN220 Electronic Navigation

Credits: 3

To present information needed by the deck officer or member of the bridge team to use and understand various land-based and space-based electronic navigation systems including depth indicators, global positioning system (GPS), differential global positioning system, electronic chart display information (ECDIS), raster chart display information system (RCDS), and the integrated bridge system. Fundamental collision avoidance in compliance with The Rules of the Road, using radar transfer plotting sheets in conjunction with various radar/ECDIS laboratories. Electronic navigation information generally tested on the U.S. Coast Guard Third Mate Examination is also covered.

2 class hours a week

2 laboratory hours a week

DN230 Seamanship and Shiphandling Credits: 3

This course presents theories and practices of seamanship and shiphandling. Topics that will be investigated include: maneuvering of vessels, propulsion and steering systems, interaction between vessels and/or constraining channels, the use of tugs, mooring, anchoring, and port arrival/departure. Studies will also address wire rope, lines, towing, salvage, ice seamanship, heavy weather, emergencies such as loss of steering, and special situations encountered by vessels. Simulators and vessels will be used in lab exercises to allow the midshipman to apply the shiphandling and seamanship theories. A key aspect of the course is an assessment of the midshipman's ability to properly process and utilize information needed by the deck officer to safely operate a vessel under a variety of situations.

2 class hours a week

2 laboratory hours a week

DN240 Tanker Operations

Credits: 3

An in-depth study of the transport of bulk liquid cargoes by tankship. The course topics include: vessel design/construction, oil/chemical cargo characteristics, cargo system design, cargo pumps, loading/discharging operations, venting/vapor control systems, ballasting/deballasting operations, tank cleaning, gas freeing/enclosed space entry, inert gas systems, crude oil washing operations, oil pollution regulations and control, and tanker safety. This USCG approved course satisfies the training requirement for individuals pursuing an endorsement as a tankerman PIC

(DL). Additionally, this course incorporates the material required under STCW 78/95 for specialized training of individuals serving on tankships carrying dangerous oil and chemical cargoes. The material presented reflects current regulation and accepted industry practice through a combination of classroom lectures and practical demonstrations.

3 class hours a week

DN241 Advanced Tanker Operations Credits: 3

An in-depth study of inert gas systems, crude oil washing operations and related safety topics that impact the role of a deck and engineering officer on a modern tanker. This course is designed to satisfy both international (IMO) and domestic (ISCG/shipping company/union) requirements for specialized training of individuals in the areas of crude oil washing and inert gas systems. Certificates will be issued upon successful completion of the course

Prerequisite: DN240 Tanker Operations

3 class hours a week

Elective

DN410 Advanced Firefighting

Credits: 1.5

This course is designed for shipboard personnel serving on all classes of vessels who are involved in response and assistance during shipboard emergencies. It provides the student with the necessary tools to function in a command and control environment.

Prerequisite: Basic Firefighting

1 class hour a week

1 laboratory hour a week and one 8-hour laboratory

DN420 Advanced Navigation

Credits: 3

This capstone navigation course expands upon previous navigation courses stressing an in-depth understanding of theory and advanced concepts of navigation. Topics include the theory, mathematics and applications of various chart projections, sailings, magnetism and the earth's magnetic field, magnetic compass adjustments, leeway, voyage length and arrival times, major ocean surface currents, and the theory of tides and tidal waves.

3 class hours a week

DN421 Navigation Law Credits: 2.5 (Rules of the Road)

This course is an in-depth study of the various statutes which govern the operation of water craft subject to U.S. jurisdiction. Particular emphasis is placed on both the International Navigational Rules Act of 1977 (which implemented the 72COL-REGS, the regulations resulting from the 1972 Convention on International Regulations for Preventing Collisions at Sea) and the Inland Navigational Rules Act of 1980 (which implemented the new unified Inland Rules of the Road presently applicable on the navigable water of the United States). Also discussed are the underlying legal concepts and constitutional issues associated with both international and domestic navigation law as pertains to the American mariner. A bridge simulator will be used to allow the midshipman to apply the 72COL-REGS and the Inland Rules of the Road.

2 class hours a week

2 laboratory hours every other week

DN430 Maritime Communications
Credits: 4

This course is designed to satisfy the requirements necessary to earn the STCW95 endorsement as a Global Maritime Distress and Safety System Operator. It covers all of the material delineated in the U.S. Coast Guard-approved model course in GMDSS. A midshipman who successfully completes this course will be able to operate the radio communications equipment required on board GMDSS-compliant vessels. Non-GMDSS communications systems (signal flags and Morse code by flashing light) will also be addressed.

Prerequisite: Electronic Navigation
3 class hours a week
2 laboratory hours a week

DN440 Radar/ARPA **Credits: 4**

This course covers technical and practical applications of radar and ARPA for those who will be in charge of navigational watch or a member of a bridge team. Information is presented that is necessary for the deck officer or bridge team member to stand safe bridge watch. This includes the theory, operation, limitations and practical applications of radar navigation, collision avoidance and radar and ARPA systems. Midshipmen will be exposed to a variety of radar and ARPA types, collision situations and navigation exercises. All IMO Model Course 1.07 and 1.08 objectives are included.

Prerequisite: Electronic Navigation
2 class hours a week
4 laboratory hours a week

DN460 Bridge Watchstanding
Credits: 2

Bridge Watchstanding (Simulator-Based Training) is designed to enhance the potential third mate's decision-making skills as it applies to traffic and voyage planning situations. Practical application of Rules of the Road and development of correct bridge procedures will be emphasized. Open sea and harbor conditions will be simulated for day as well as night using the simulator.

1 class hour a week
2 laboratory hours a week (simulated)

DN470 License Seminar **Credits: 2**

This course provides an intensive review in the topics and problems covered on the U.S. Coast Guard Third Mate Exam, by means of review, problem-solving and examination. Topics that will be reviewed and examined include seamanship, cargo handling and stowage, meteorology/oceanography, navigation theory, ship construction terminology, and navigation law. Types of navigation problems that will be reviewed include computing and plotting lines of position (visual bearings, radar, RDF, meridian transit, and sunlines), sailings (mercator, mid-latitude, parallel), computing time of meridian transit and sunrise/set, tide and current calculations, and compass deviation (by bearing, amplitude, azimuth).

4 laboratory hours a week

DN480 Tankerman Engineer (DL)
Credits: 3

An in-depth study of the transport of bulk liquid cargoes by tank-ship. The course topics include: vessel design/construction, oil/chemical cargo characteristics, cargo systems, ballasting/deballasting, tank cleaning, gas freeing/enclosed space entry, inert gas systems, crude oil washing operations, oil pollution regulations and control and tanker safety. Successful completion of this course meets the USCG requirements for training of individuals pursuing an endorsement as "Tankerman Engineer." Additionally, this course incorporates the material required under STCW 78/95 for specialized training of individuals serving on tank-ships carrying dangerous oil and chemical cargoes. The material presented reflects current regulation and accepted industry practice which is presented through a combination of classroom lectures and practical demonstrations

3 class hours a week
Elective

DS210 Deck Operations for Engineers **Credits: 1**

The objective of this sea project is for the engine midshipman to acquire the knowledge and practices of deck seamanship, fire fighting SOLAS operations necessary to successfully perform the duties of a ship's licensed engineer. Using the ship as a laboratory, this portion of the Sea Project will require the engine midshipman to observe various deck operations, and thus enhance his understanding how the Deck and engine departments cooperate in order to fulfill the mission of the ship.

DS220 Navigation I **Credits: 2**

The objective of this sea project is for the midshipman to acquire the navigational skills and practices necessary to successfully perform the duties of a ship's licensed deck officer. This is to be achieved by the shipboard practice of computations learned from in-residence courses in celestial and terrestrial navigation, and writing in-depth descriptions of navigational publications that will prepare the midshipman for capstone navigation courses in first class year. This sea project will be completed by all midshipmen of the following majors: Marine Transportation, Marine Operations and Technology, Logistics and Intermodal Management, and Dual.

Prerequisite: DN120 Terrestrial Navigation **DN 121 Celestial Navigation**

DS221 Navigation Law I Credits: 1

The objective of this sea project is for the midshipman to acquire the knowledge and practices of Navigation Law necessary to successfully perform the duties of a ship's licensed deck officer. Using the ship as a laboratory, this portion of the Sea Project will build upon the midshipman's knowledge of gained from in-residence course work. This sea project will be completed by all midshipmen of the following majors: Marine Transportation, Marine Operations and Technology, Logistics and Intermodal Management, and Dual.

DS230 Cargo Operations I**Credits: 1**

Using the ship as a laboratory, the objective of this sea project is for the midshipman to acquire the knowledge of safe and efficient stowage and handling of cargo necessary to successfully perform the duties of a ship's licensed deck officer. This sea project will be completed by all midshipmen of the following majors: Marine Transportation, Marine Operations and Technology, Logistics and Intermodal Management, and Dual.

DS240 Seamanship Credits: 1

The objective of this sea project is for the midshipman to acquire the knowledge and practices of seamanship necessary to successfully perform the duties of a ship's licensed deck officer. Using the ship as a laboratory, this portion of the Sea Project will build upon the midshipman's knowledge of seamanship terminology, practices and procedures gained from in-residence course work. This sea project will be completed by all midshipmen of the following majors: Marine Transportation, Marine Operations and Technology, Logistics and Intermodal Management, and Dual.

DS241 Ship Structure and Terminology Credits: 1

The objective of this sea project is for the midshipman to acquire the knowledge of merchant ship structure, dimensions and terminology necessary to successfully perform the duties of a ship's licensed deck officer. This sea project will be completed by all midshipmen of the following majors: Marine Transportation, Marine Operations and Technology, Logistics and Intermodal Management, and Dual.

DS320 Navigation 2 Credits: 3

The objective of this sea project is for the midshipman to acquire the navigational skills and practices necessary to successfully perform the duties of a ship's licensed deck officer. This is to be achieved by the shipboard practice of computations learned from in-residence courses in celestial and terrestrial navigation, and writing in-depth descriptions of navigational publications that will prepare the midshipman for capstone navigation courses in first class year. This sea project will be completed by all midshipmen of the following majors: Marine Transportation, Marine Operations and Technology, Logistics and Intermodal Management, and Dual.

Prerequisite: DN120 Terrestrial Navigation**DN121 Celestial Navigation****DS321 Navigation Law 2 Credits: 2**

The objective of this sea project is for the midshipman to acquire the knowledge and practices of Navigation Law necessary to successfully perform the duties of a ship's licensed deck officer. The project concentrates on examining the major differences between the International and Inland Navigation Rules. The project will build upon the knowledge gained from in-residence course work and the first sailing period. It will prepare the midshipman for the Navigation Law Class offered in first class year. This sea project will be completed by all midshipmen of the following majors: Marine Transportation, Marine Operations and Technology, Logistics and Intermodal Management, and Dual.

DS322 Electronic Navigation Credits: 2

The objective of this sea project is for the midshipman to acquire the knowledge and skills concerning electronic navigation and communications necessary to successfully perform the duties of a ship's licensed deck officer. This will be accomplished by the researching and then completing extensive written responses to questions concerning shipboard electronic systems used for navigation and communication. These questions will build upon knowledge gained from in-residence courses, and will prepare midshipmen for capstone navigation courses in the First Class year. This sea project will be completed by all midshipmen of the following majors: Marine Transportation, Marine Operations and Technology, Logistics and Intermodal Management, and Dual.

DS330 Cargo 2 Credits: 2

Using the ship as a laboratory, the objective of this sea project is for the midshipman to acquire the knowledge of safe and efficient stowage and handling of cargo necessary to successfully perform the duties of a ship's licensed deck officer. This project will build upon the knowledge gained in DN210 Cargo Operations and first sailing period. This sea project will be completed by all midshipmen of the following majors: Marine Transportation, Marine Operations and Technology, Logistics and Intermodal Management, and Dual.

DS340 Seamanship II Credits: 1.5

The objective of this sea project is for the midshipman to acquire the knowledge and practices of seamanship necessary to successfully perform the duties of a ship's licensed deck officer. In addition to basic seamanship subjects the midshipman examining ship handling and the use of tugs. This Project will build upon knowledge gained from DN230 Seamanship/Shiphandling and the first sailing period. This sea project will be completed by all midshipmen of the following majors: Marine Transportation, Marine Operations and Technology, Logistics and Intermodal Management, and Dual.

DS341 Ship's Structure and Stability Credits: 1.5

The objective of this sea project is for the midshipman to acquire the knowledge of merchant ship structure, dimensions, terminology and stability necessary to successfully perform the duties of a ship's licensed deck officer. This project will build upon the knowledge gained from in-residence course work and the first sailing period. This sea project will be completed by all midshipmen of the following majors: Marine Transportation, Marine Operations and Technology, Logistics and Intermodal Management, and Dual.

DS390 Maritime Business**Credits: 1**

This course is taken by midshipmen of all majors during the second sailing period. It is designed to both introduce the midshipman to the business side of the maritime operations and to provide an understanding of the total transportation network which ocean shipping is a part of. Midshipmen are required to research information and practices aboard their ship to answer questions concerning these topics.



Department of Mathematics and Science

This department offers courses in the basic sciences: physics, chemistry and mathematics. All midshipmen take these courses, generally during their first two years. In the Fourth Class year, mathematics and science courses comprise approximately 40 percent of the academic program. The courses are designed to teach the fundamental concepts that midshipmen will use in later courses in the Engineering and the Marine Transportation curriculums. The department also provides a strong science background required of all educated people in our world of high technology.

All midshipmen are required to take two terms of Physics and one term of General Chemistry. Both courses have a strong laboratory component so that midshipmen can experience the experimental side of science regardless of major. The department maintains general science laboratories that incorporate the recent technologies of microelectronics, lasers and computers. State of the art equipment using PC-based data acquisition is used in the recently constructed nuclear lab and the new Engineering Chemistry lab. The department is also responsible for the operation of the Class of '81 Astronomical Observatory. The observatory as well as laboratories and offices are located in the Fulton/Gibbs building.

All midshipmen take two terms of Calculus. In addition, Marine Transportation, Maritime Operations and Technology, and Logistics and Intermodal Transportation students take one term of Probability and Statistics; Marine Engineering students take one term of Engineering Mathematics; Marine Engineering Systems students take two terms of Engineering Mathematics; and the Marine Engineering and Shipyard Management students take one term of Engineering Mathematics and two terms of Quantitative Methods.

Because mathematics is so important to nearly every area of study at the Academy, all entering midshipmen take an examination administered by

the department. Those students who are found to be weak in math are placed in either College Mathematics or an extended Calculus 1 course. College Mathematics is designed to improve their skills in algebra and trigonometry and the extended Calculus 1 provides them with an extra hour of math instruction per week.

The physics and chemistry courses are rigorous. The physics course is a calculus-based course and is taken concurrently with Calculus. Students majoring in Marine Engineering, Marine Engineering Systems and Marine Engineering and Shipyard Management take an Engineering Chemistry course in their Second Class Year.

The department also offers electives that, in addition to providing advanced study, reflect some of the scholarly and research efforts of the faculty. Examples of such electives are Environmental Science, Environmental Chemistry, Advanced Engineering Math, Astronomy, Chemistry of Hazardous Materials, Atomic Physics, and Nuclear Physics. Marine Engineering and Marine Engineering Systems majors are required to take one of our electives from an approved list and some electives are required as part of the Marine Engineering Systems minor tracks.

The Nuclear Engineering minor track is one of the department's oldest and most successful programs, dating back to the 1960s, when the Academy trained personnel for America's first nuclear merchant ship, the SAVANNAH. Presently, midshipmen taking this sequence find employment opportunities in the nuclear power industry or enlist in the navy's nuclear service. The Atomic and Nuclear Physics courses are given by the Mathematics and Science Department, while the Nuclear Engineering courses, which follow, are given by the Engineering Department.

Professors:

David Dellwo (1977)
(Mathematics)
B.A., Carroll
B.S., M.S. D.E.S., Columbia

H. Leroy Hutson (1989)
(Mathematics)
M.S., Ph.D., Rutgers

Anton J. Shurpik (1971)
(Chemistry)
B.S., Brooklyn College
Ph.D., Rutgers

Charles F. Weber (1972)
(Mathematics)
B.S., Manhattan
M.S., Ph.D., New York University

Associate Professors:
Argyrios Doumas (1998)
Assistant Department Head
(Physics)
B.S., Maryland
Ph.D., Texas A&M

Mark J. Hogan (1999)

(Physics)
B.S., Haverford College
M.S., Ph.D., National University of Singapore

Michael E. Melcer (1996)

(Chemistry)
B.S., SUNY Stony Brook
M.S., Ph.D., SUNY College of Environmental Science and Forestry

*Assistant Professors:***Lowell A. Cummings (2004)**

(Physics)
B.S., University of New Mexico, Albuquerque
M.S., Bowling Green State University
Ph.D., New Mexico State University, Las Cruces

Yuri Fedyunin (2005)

(Physics)
B.S., Moscow Electrical Engineering College
M.S., Ph.D., Moscow State University

Joshua S. Friedman (2005)

(Mathematics)
B.S., SUNY Binghamton
M.A., SUNY Stony Brook
Ph.D., SUNY Stony Brook

Walter C. Lebensohn (1966)

(Mathematics)
B.A., CCNY
M.L.S., Pratt
M.S., Adelphi

Paul Serafino (2004)

(Physics)
B.S., Trinity College
Ph.D., Yale University

Dianne Taha (2005)

(Information Technology)
B.A., Harpur College, Binghamton University
M.S., New York Institute of Technology

*Professors Emeriti:***Laurence M. Cassar (1967)**

(Physics)
B.S., M.S., St. John's University
Ph.D., Adelphi

Albert Stwertka

(Physics:1954-1995)
B.S., Bard College
M.A., Columbia
Ph.D., Adelphi

Career Advisors:

Environmental Science: M. Melcer
Hazardous Materials Science: H. Beim
Nuclear Engineering: A. Dumas

ES420 Introduction to Nuclear Physics and Engineering**Credits: 3**

In the Nuclear Physics portion: nuclear structure, radioactivity and reactions; particle accelerators; binding energy; fission and fusion; scattering and attenuations of radiation; nuclear instrumentation; radiation safety.

In the Nuclear Engineering portion: nuclear reactor components; reactivity effects and the fission process in reactors; reactor dynamics; neutron characteristics; neutron life cycle; delayed neutrons; macroscopic cross sections and mean free path; diffusion length and multiplication factors in reactors; production and loss rate formulas and reactor startup calculations.

Elective**Prerequisites: MP325**

2.5 class hours a week (average)
2 laboratory hours every other week

MC100 General Chemistry**Credits: 4**

Fundamental concepts including matter, energy, measurement units, density, specific gravity and heat capacity; structure of the atom; the periodic table; bonding; formulas and equations; the liquid state; solutions of electrolytes, acids, bases and salts; pH and methods of expressing concentrations; the gas laws and the kinetic-molecular theory; reaction rates; chemical and ionic equilibria.

Corequisite: MM101 or MM100

3 class hours a week
2 laboratory hours a week

MC300 Engineering Chemistry**Credits: 3**

Lecture includes traditional topics with applications to engineering: buffer solutions, hydrolysis, water chemistry, heats of reaction, organic chemistry, combustion of hydrocarbons, calculation of percent excess air, electrochemistry, corrosion, redox equations, and colligative properties. The laboratory explores heats of reaction, melting point, fractional distillations, freezing point depression, heats of reaction using Hess's law, titration curves and determination of half cell potentials.

Prerequisite: MC100

2.5 Class hours a week (average)
2 laboratory hours every other week

MC310 Introduction to Environmental Science**Credits: 3**

The basic principles of environmental science, covering such topics as population, environmental degradation, matter and energy resources, ecosystems, soil and water resources, air and water pollution, solid and hazardous waste, and environmental ethics.

Elective

3 class hours a week

MC340 Environmental Chemistry**Credits: 3**

Fundamental concepts and applications in environmental chemistry: organic chemistry relevant to environmental issues; properties of solutions and solution chemistry; water pollution and treatment; air pollution and emission treatment vs. impact; chemistry of hazardous materials in the environment and the reduction, treatment and disposal of hazardous waste.

Elective**Corequisite: MC300**

2.5 class hours a week (average)
2 laboratory hours every other week

MC370 Introduction to Oceanography**Credits: 3**

Introduction to the history of oceanography: earth structure and plate tectonics; ocean topography; sediments; seawater chemistry and ocean physics: atmospheric and ocean circulation: wave dynamics and tides; the marine ecosystem; productivity and marine animals; marine resources and environmental concerns.

Elective

Prerequisites: MC100 and MP130
3 class hours a week

MC460 Chemistry of Hazardous Materials**Credits: 3**

A study of the hazards posed by the many chemicals that surround us today, including corrosives, flammables, explosives, toxic substances, oxidizers, water-reactive chemicals and radioactive materials. Methods of chemical hazard identification: classification, safe handling, personal protection, handling of spills, and introduction to the Code Of Federal Regulations. Emphasis is placed on the safe transportation of hazardous materials. Lecture topics are

supported with demonstrations in the laboratory.

Elective

Prerequisite: MC100

3 class hours a week

MC 461 Intermodal Transportation of Hazardous Materials Regulations Credits: 3

A course designed to teach up-to-date compliance with Hazardous Materials transportation regulations found in 49CFR. Stress is placed on all transportation modes. Topics include: regulatory process; fines and penalties; structure of US regulations; hazardous materials; hazardous classes; 49CFR; packaging operations' marking; labeling; shipping papers; placarding, separation and segregation; safety; training; hazardous substances; PCB's; overpacks; salvage drums; samples; empties. The student obtains certification by passing 10 modular Dept. of Transportation/Dept. of Energy certification exams.

Elective

Prerequisite: MC100

3 class hours a week

MC900 Chemistry Seminar Credits: 3

The content of this course is determined by the student interest and by instructor availability. Examples of possible topics are organic chemistry, biochemistry and physical chemistry.

Elective

3 class hours a week

MM100 College Mathematics Credits: 3

Algebraic operations including factoring, complex fractions, logarithms, exponents and radicals; algebraic equations including linear, quadratic, polynomials, simultaneous equations and equations of lines; trigonometry including trigonometric functions, right

triangles, laws of sines and cosines and trig identities.

3 class hours a week

MM101 Calculus I Credits: 3

Linear, exponential, power, logarithmic and trigonometric functions; concept of the derivation from an analytic, geometric and numerical point of view; differentiation formulas; applications of derivatives.

3 class hours a week

MM120 Calculus 2D For Deck Midshipmen Credits: 3

Antiderivatives; the definite integral; applications to business and economics; the Fundamental Theorem of Calculus; techniques of integration; applications of integration.

Prerequisite: MM101

3 class hours a week

MM130 Calculus 2E For Engineering Midshipmen Credits: 4

Antiderivatives; the definite integral; the Fundamental Theorem of Calculus; techniques of integration; numerical integrations: improper integrals; applications of integration to Physics and Engineering; sequences and series.

Prerequisite: MM101

4 class hours a week

MM210 Probability and Statistics For Deck Midshipmen Credits: 3

An introduction to probability and statistics; sample spaces, probability, counting, conditional probability, independence, Bayes' Theorem, random variables. Expectation, variance, Chebychev's Theorem. The Binomial, Poisson, Uniform, Normal, Exponential and "t" distributions; Central Limit Theorem with application to confidence intervals and hypothesis

testing.

Prerequisite: MM120

3 class hours a week

MM230 Engineering Mathematics Credits: 4

For Shipyard Management Majors
Multivariable calculus: surfaces in 3D, planes; dot and cross product of vectors; partial derivatives; gradients and directional derivatives, chain rule; optimization; double integral; iterated integration. Categorization of differential equations; separation of variables; first order linear equations; characteristic equations; undetermined coefficients; Laplace transforms; applications to damped and forced simple harmonic motion.

Prerequisite: MM130

4 class hours a week

MM232 Mathematics for Engineers 1 Credits: 4

First order differential equations; integrating factor; higher order linear equations with constant coefficients, auxiliary equation, undetermined coefficients, Laplace transforms; applications to damped and forced simple harmonic motion; power series solutions, method of Frobenius, Legendre and Bessel equations. Probability, permutations and combinations; probability density functions, expectation and variance; binomial and normal distributions; Central Limit theorem; confidence intervals.

Prerequisite: MM130

4 Class hours a week

MM332 Mathematics for Engineers 2 Credits: 3

Multivariable calculus: graphs, contour maps, vector products; partial and directional derivatives: gradient, extrema; multiple integrals; Fourier series; eigenvalue problems; wave and heat equations.

Prerequisite: MM232

3 class hours a week

MM350 Quantitative Methods 1 Credits: 3

The fundamentals of probability and statistics: sample space, events, probability assessment and mathematical properties; combinatorial analysis, probability distributions, and expected value; the binomial and normal distributions; descriptive, inferential statistics and sample design; point estimation, confidence intervals and hypothesis testing; correlation and regression; acceptance sampling, quality control charts and capability and reliability; applications to Excel..

Prerequisite: MM130

3 class hours a week

MM360 Advanced Engineering Math Credits: 3

The divergence and curl; line and surface integral; Green's Theorem; the integral theorems of Gauss and Stokes; analytic functions; Laplace's Equation; conformal mapping; complex integration; Cauchy Integral Theorem and Formula; applications to fluid dynamics.

Elective

Prerequisite: MM332

3 class hours a week

MM450 Quantitative Methods 2 Credits: 3

For Shipyard Management Majors
This course is designed to familiarize students with modeling in operations research. Topics include project management; linear programming, integer programming; inventory analysis; queuing theory; simulation, network analysis and the transportation and assignment algorithms. Both deterministic and stochastic models are emphasized. Excel is applied.

Prerequisites: MM350

3 class hours a week

MM900 Mathematics Seminar *Credits: 3*

The content of this course is determined by the student interest and by instructor availability. Examples of possible topics are linear algebra, partial differential equations, and numerical methods.

Elective
3 class hours a week

MP101 Physics 1 *Credits: 4*

Mechanics and waves: kinematics and dynamics of a particle; systems of forces; work, energy and power; momentum; rigid body dynamics and statics; simple harmonic motion; wave motion; sound; and light.

Corequisite: MM101
3.7 class hours (average) a week
0.8 lab hours (average) a week

MP130 Physics 2 *Credits: 4*

Thermodynamics, gravitation and electromagnetism: heat and thermodynamics; gravitation; electric field; electrical potential; DC circuits; magnetic force; magnetic field; electromagnetic induction; and AC circuits.

Prerequisites: MM101 and MP101
3.5 class hours (average) a week
1.0 lab hours (average) a week

MP320 Astronomy *Credits: 3*

Observations of astronomical objects at the Academy observatory. History of Astronomy; telescopes and detectors; light, atoms and gravity; structure and formation of the solar system; stellar structure and stellar life cycle; black holes; white dwarfs and neutron stars; galaxies and cosmic structure; Big Bang Cosmology; inflation; life on other planets..

Elective
Corequisite: MP130
2 class hours a week
2 laboratory hours a week

MP325 Atomic Physics *Credits: 3*

Modern concepts of the structure and properties of atoms; atomic nature of matter; quantum theory of light; theory of relativity; quantum mechanics; the Hydrogen atom; introduction to molecular structure.

Elective
Prerequisite: MM130 or MM120 and MP130
2.5 class hours a week (average)
2 laboratory hours every other week

MP900 Physics Seminar *Credits: 3*

The content of this course is determined by the student interest and by instructor availability. Examples of possible topics are advanced mechanics and advanced electricity and magnetism.

Elective
3 class hours a week

MX7XX Independent Study *Credits: 3*

A course of individual study, research, or design on a suitable topic, with the course syllabus and content constructed under the direction of a faculty member and approved by the department head.

Elective
Prerequisite: 2.75 QPA or department permission



Department of Naval Science

The U.S. Navy and America's merchant marine have shared a close, mutually supportive relationship since the Revolutionary War. Today, that relationship is especially vital as merchant ships carry critical raw materials and other necessary cargoes, while naval ships ensure safe and open sea lanes for our nation's ocean commerce.

Graduates of the Academy are appointed as Ensigns in the U.S. Navy Reserve, unless they apply and are accepted for active duty service in the Navy or apply and are accepted for active duty or reserve service in one of the other U.S. Armed Services.

The mission of the Department of Naval Science is to provide appropriate instruction to prepare midshipmen for commissions in the U.S. Navy Reserve. This instruction will enable these officers to operate effectively with the Navy in time of peace, national emergency or war, and to perform other tasks and functions as directed by higher authority.

The curriculum focuses on the skills and knowledge graduates will need to serve as officers in the Navy Reserve. All midshipmen take courses in Merchant Marine Reserve and Leadership and Ethics.

Department Head and Professor:
CDR Steven E. Morehead, USN (2005)

B.S., UCLA
M.S., Naval Postgraduate School

Associate Professor:
LT Nancy J. Edelen, USNR (2006)

B.S., Tulane University

Assistant Professors:
LT James T. Morris, USNR (2006)

B.S., U.S. Naval Academy

LT Douglas Park, USNR (2006)

B.S., U.S. Naval Academy

LT Stacy Bierman, USNR (2007)

B.S., U.S. Naval Academy

Administrative Assistant:
Brian M. Craig (2003)

NS120 Introduction to Merchant Marine Reserve Credits: 2

A plebe year introduction to the United States Navy. Topics include the ships, aircraft and weapons of the United States Navy plus a thorough review of all Navy Warfare Communities and how the Navy fights at sea. Required for all plebe midshipmen.

2 class hours a week

NS220 Naval Science for the Merchant Marine Reserve Officer Credits: 2

This course provides midshipmen with the professional knowledge to understand the operation of a merchant ship as a naval auxiliary or its operation

with the Navy in time of war or national emergency. Topics include: Merchant Ship Self Defense, Convoy Operations, Communications, Naval Control and Protection of Shipping, and the Role of the Merchant Marine in National Security. Required for all third class midshipmen.

2 class hours a week

NS402 Fundamentals of Leadership and Ethics Credits: 2

An advanced study of leadership and ethics issues and administrative management topics required to function as a newly appointed naval officer. This course in the Naval Science curriculum covers junior officer responsibilities in naval administration, and integrates the professional competencies developed in prior course work and profes-

sional training. Required of all second class midshipmen.

2 class hours a week

NS412 Advanced Naval Science for the Merchant Marine Reserve Officer Credits: 2

This course provides all candidates for commissioning with the professional information and skills needed to perform the functions and assume the responsibilities of an officer in the Navy Reserve. Included in this course are classes on Leadership, Performance, Resource, and Career Management. Required for all first class midshipmen.

2 class hours a week

Department of Physical Education and Athletics

The department offers a vigorous program of physical education that is an integral part of Academy training. Proper physical conditioning positively affects the personal growth and development of midshipmen. Teamwork, self-confidence and initiative are emphasized. The skills learned in classes, intramurals and intercollegiate athletics improve physical fitness and can be enjoyed after graduation in recreational and competitive endeavors.

The department is responsible for ensuring that each midshipman acquires the skills involved in swimming, aquatic survival, self-defense and first aid. Additional physical education experiences are offered through the Physical Education Activities courses. All midshipmen annually take an Academy physical fitness test patterned after the U.S. Navy's Physical Readiness Test.

The department additionally provides necessary instruction in ship's medicine. Plebes learn the basics of emergency health care, including cardiopulmonary resuscitation (CPR). An advanced ship's medicine course is offered in the upper-class years, focusing on medical treatments which have

proven effective at sea where comprehensive medical care may be not available.

The athletic program offers 24 varsity team and intramural sports. These teams have been successful at levels ranging from NCAA Division III National Champions to Conference Champions. The varsity teams are:

Fall

Football, Men's Soccer, Men's and Women's Cross Country, Women's Volleyball, Golf, Men's and Women's Sailing and Crew

Winter

Men's and Women's Basketball, Wrestling, Men's and Women's Swimming/Diving, Men's and Women's Pistol, Men's and Women's Indoor Track and Field.

Spring

Men's Baseball, Lacrosse, Men's and Women's Outdoor Track and Field, Men's Tennis, Softball, Men's and Women's Sailing and Crew.

Department Head and
Associate Professor:

Susan J. Petersen Lubow (1979)

B.S., Springfield
M.S., Hofstra

Professional Faculty:

Rob Alfeim (2004)

B.S., Sacred Heart
M.S., Northern Illinois

RO Timothy Alger (1998)

B.S., George Mason University

Cassie Arroyo (2007)

B.S., Southampton College

Anthony Boston (2006)

B.A., Whittier College
M.A., Whittier College

Doug Dwyer (2004)

B.S., Southern Connecticut
M.S., Adelphi

Melinda Eng (2001)

B.S., Hofstra University
M.S.Ed., Wagner College

William Fell (2004)

B.S., U.S. Naval Academy
M.S., Troy State University
Certificate, Sports Management
Institute

Tom Gill (1992)

B.S., Hofstra University
M.S., North Carolina

John Krikorian (2006)

B.A., Pennsylvania University

Scott Kushner (2006)

B.A., Swarthmore
M.S., University of Massachusetts,
Amherst

Michael Murray (2002)

B.A., Oswego State
M.A., Tufts

Charles E. Pravata (1988)

B.S., Adelphi
M.S., Brooklyn College

Michael Smolens (1992)

B.S., Springfield
M.S., Adelphi

Sean Tedesco (2001)

B.S., University of Connecticut
M.B.A., Adelphi

Michael Toop (2005)

B.S., U.S. Merchant Marine Academy

Olga Wotcik (2007)

B.S., University of Buffalo

PE101 Self-Defense Credits: 1
(Offered first, second and third terms to fourth classmen)

Instruction in the principles and fundamental skills of self-defense geared to the beginning and intermediate levels. The purpose of this course is to give the midshipman a basic understanding of the essential techniques of unarmed combat and to contribute to the development of individual fitness, alertness, confidence, self-control, and ability to adapt to various situations.

PE110 Swimming and First Aid Credits: 1
(Offered the first and second terms to fourth classmen)

Students receive instruction in the various strokes and procedures which may be utilized in water survival situations. Students also develop their fitness component through their work in the pool. Individual remedial instruction is available for students with little or no experience in the water. Students are prepared to recognize and provide elementary care for victims of illness and/or injury according to current First Aid standards. Students are also taught to administer proper respiratory and cardiac care in emergency situations.

PE120 Aquatic Survival Credits: 1
(Offered in the second and third terms to fourth classmen)

Students learn how to react in a correct manner during water emergency situations, take measures appropriate to his/her own survival and to the survival of others. Students also receive instructions in the prevention of aquatic emergencies and the use of survival equipment.

PE200 Ship's Medicine Credits: 1
(Offered to second and third classmen)

This is a course of instruction which will allow ship's personnel to provide emergency medical care with a degree of competence to increase chances of survival at sea. Midshipmen will be versed in anatomy, physiology, emergency medical techniques and equipment, as well as their proper application.

PE201 Emergency Medical Technician Basic Credits: 3

This course provides the student with the required training to fulfill the New York State EMT-B certification. The student will learn the skills to provide definitive care for a patient rapidly and safely as a situation dictates and when possible, to improve the patient's condition. The course consists of both lecture and laboratory components as well as clinical hospital/ambulance observation. The student will gain proficiency in CPR and oxygen therapy as well as how to assess and treat various medical and traumatic illnesses and injuries.

PE300 Physical Education Activity Courses Credits: 1/2 each
(Offered to midshipmen during their third, second and first class years)

Students are introduced to the basic principles and skills of different activities. These courses provide an opportunity for development of skill, strength, stamina, leadership and sportsmanship in an enjoyable setting. Students also develop an understanding for many of these "lifetime activities" and the importance of a healthy lifestyle well into the future.

- PE301 Basketball
- PE302 Bowling
- PE303 Boxing I
- PE304 Fitness and Conditioning
- PE305 Golf
- PE306 Life Skills
- PE307 Project Adventure
- PE308 Racquetball
- PE309 Rifle
- PE310 Pistol
- PE311 Sailing I
- PE312 Sailing II
- PE313 Scuba
- PE314 Tennis I
- PE315 Tennis II
- PE316 Volleyball
- PE317 Weight Training
- PE318 Badminton
- PE319 Sports and Cooperative Games I
- PE320 Sports and Cooperative Games II
- PE321 Touch Football
- PE322 Soccer
- PE323 Softball

- PE325 Wrestling
- PE326 Conditioning Swimming
- PE327 Boxing II

Every midshipman is required to complete two credits of Physical Education Activity Courses.



Department of Professional Development and Career Services

*The Department of Professional Development and Career Services consists of:
Office of Shipboard Training
Office of Career Services*

The Shipboard Training Program

All midshipmen, as an integral part of their professional training, participate in a cooperative educational program during the two periods of their sea year. Training aboard ship is designed to give the midshipman practical knowledge of the performance and operating characteristics of various classes of vessels, the operating requirements in different trade routes, and labor relations in the ocean shipping industry.

The first sea period lasts approximately 135 days. During this period, the midshipman is assigned to different types of dry cargo vessels. The midshipman then returns to the Academy to build on his/her experiences at sea. The second sea period is longer, roughly 265 days. During this period, the midshipman finishes his/her sea service requirement of 300 days aboard ocean going vessels and completes an internship with a company or organization with involvement in the transportation or marine engineering industry.

Academy Training Representatives assign midshipmen to vessels, monitor and guide

their progress, and maintain liaison between the midshipmen, the shipping companies, and the Department of Shipboard Training.

The shipboard training program provides midshipmen with the opportunity to use a ship as a seagoing laboratory. Midshipmen are given a number of courses called the "Sea Project" which, in addition to their shipboard duties, they are required to complete and submit for evaluation and grading. The assignments are carefully designed to ensure that midshipmen, while aboard ship, apply the knowledge and skills learned in the Academy classrooms and acquire a firm foundation for advanced study when they return to the Academy. In addition to written assignments, midshipmen take oral and written examinations after returning from sea.

Aboard ship, marine transportation majors are assigned to the vessel's Deck Department, and engineering majors to the Engineering Department. Sea project courses concentrate on subject matter appropriate to the midshipman's major.

The shipboard training program for Marine Operations and Technology majors provides a cross-training opportunity. Each midshipman in this major completes a minimum of 90 days as an engine cadet and 180 days as a deck cadet, with the remaining time spent as either

deck cadet or engine cadet. The period spent in the engine department qualifies the midshipman to sit for the Coast Guard's Qualified Member of the Engine Department (QMED) endorsement.

Should a midshipman, prior to the second sailing period, acquire a definite maritime career goal, the department may arrange a program of shipboard assignments to provide opportunities for specialized experience in the last sailing period.

During the second sailing period, midshipmen with a strong interest in a career with the sea services of the U.S. Armed Forces or National Oceanographic and Atmospheric Administration (NOAA) may request a 30-day assignment aboard a vessel of the U.S. Navy, U.S. Coast Guard, U.S. Army Corps of Engineers or NOAA Corps. Midshipmen may also request a 30-day assignment aboard U.S. - flag tug and towing vessels.

Internships

The second sea period includes a two-to six-week internship assignment ashore, depending on the midshipman's major, to provide the opportunities to observe and participate in the management operations of a maritime, transportation, or engineering related organization. This will enable the midshipman

taped “mock” job interviews and one-on-one coaching are available, if requested. The Office maintains an open-door policy to encourage midshipmen to utilize the Career Resource Center, or to meet with any members of the staff.

Department Head

CAPT Richard T. Egan, USMS (2006)

B.S., U.S. Merchant Marine Academy

M.S., University of Maryland

Licenses: Chief Engineer of Steam, Motor and Gas Turbine Vessels of Any Horsepower

Military: CDR, USN (Ret.)

Academy Training Representatives:

CAPT Eugene R. Albert (2004)³

B.S., U.S. Merchant Marine Academy

M.S., Albertus Magnus

Licenses: Master of Steam and Motor Vessels of Any Gross Tons, Oceans; Master of Towing Vessels.

CDR Donald C. Farmer, USMS (2001)

B.S., U.S. Merchant Marine Academy

Graduate Studies: State University of New York

License: Master of Steam and Motor Vessels of Any Gross Tons, Oceans.

Military: LT, USNR (Ret.)

CDR Jeffrey C. Flumigan, USMS (1997)

B.S., U.S. Merchant Marine Academy

Graduate Studies, U.S. Naval War College

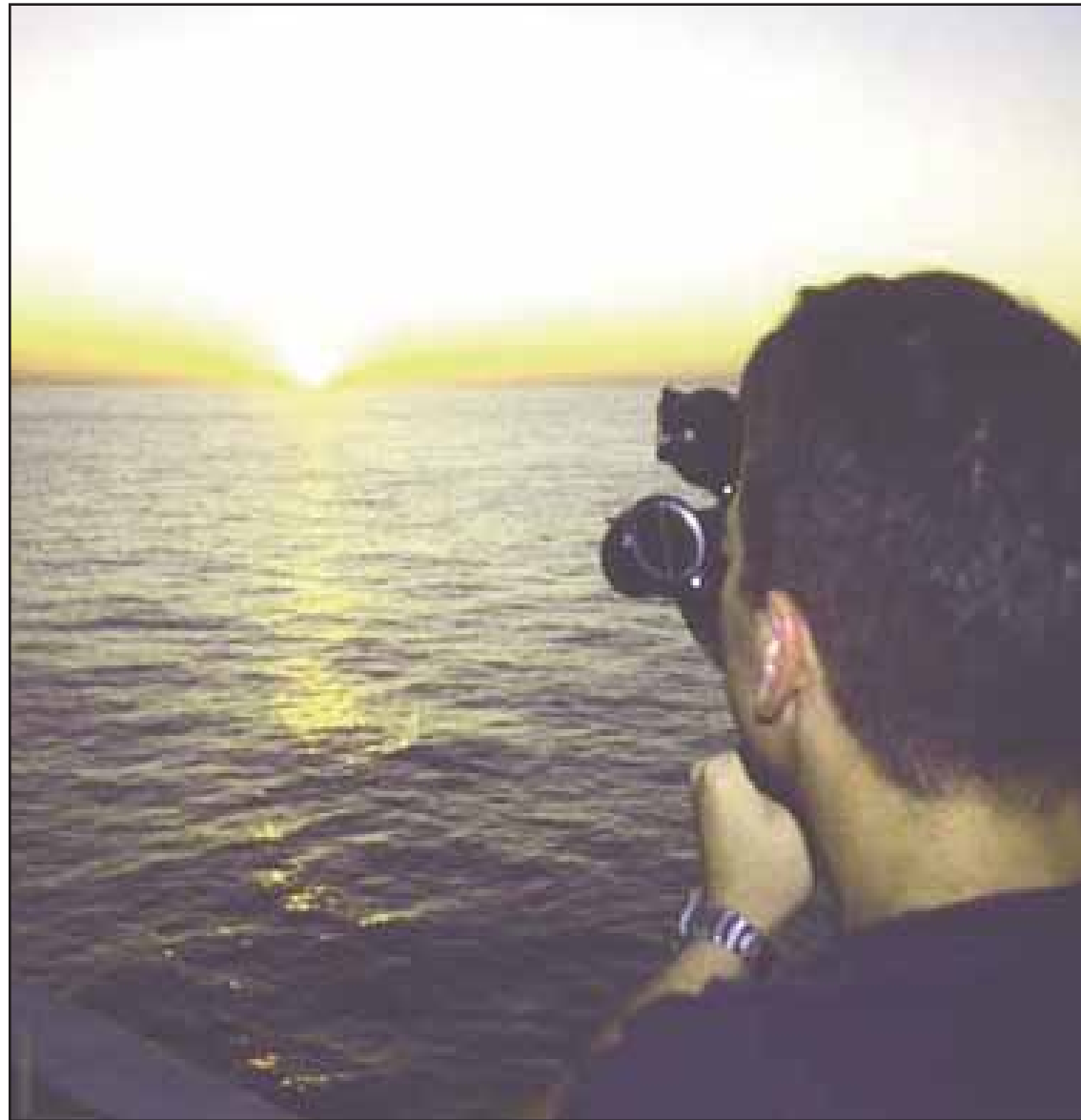
License: Third Mate of Steam and Motor Vessels of Any Gross Tons, Oceans.

Military: CDR, USNR

Veronica Cassidy Barry, (2006)

B.S., Niagara University

Graduate Studies, SUNY Maritime College



The Global Maritime and Transportation School

The Global Maritime and Transportation School (GMATS) is the continuing education division of the USMMA.

The primary mission of GMATS is to prepare private sector, government and military professionals as global leaders and innovators in intermodal systems, maritime operations and transportation security. GMATS offers over 140 core and customized courses in the areas of Nautical Science, Marine Engineering, Transportation, Logistics and Management. Through innovative education, training and research initiatives, GMATS is dedicated to optimizing America's economic and strategic intermodal transportation system and its global transportation interests.

The GMATS vision is to be a world leader in providing professional education in maritime activities, intermodal transportation and logistics.

GMATS is organized into four operating divisions:

1. Nautical Science

Offers courses for merchant marine officers, military personnel and NOAA Corps cadets. These programs include required STCW training courses as well as custom courses in leadership, sealift operations and technical rate training for the U.S. Navy.

CAPT John E. Hanus, USMS (1992)

Director

B.S., U.S. Merchant Marine Academy

Licenses: Second Assistant Engineer, Steam and Motor (unlimited); Chief Engineer of Motor Vessels (limited horsepower); Third Mate, Steam and Motor Vessels of Any Gross Tons Upon Oceans (Sailing Vessels limited).

Military: CDR, USNR

Brian T. Holden (1995)

Division Manager/Research and Special Projects

B.S., U.S. Merchant Marine Academy

License: Third Mate, Steam and Motor Vessels of Any Gross Tons, Oceans.

Military: LCDR, USNR

Daniel R. Croce (2004)

Division Manager/Transportation, Logistics and Management

B.S., U.S. Merchant Marine Academy

2. Marine Engineering

Offers programs for seagoing engineers, port engineers, military personnel and private sector professionals from the shipbuilding/ship repair industry, off-shore energy and power industries

3. Transportation, Logistics and Management

Offers programs to meet maritime security, intermodal transportation and maritime business training needs of corporate America and the international community, as well as the needs of government and military organizations. Courses are designed to cover the spectrum for management trainees and seasoned professionals.

4. Research and Special

Applied research in maritime engineering, nautical science, intermodal transportation and related areas. Research activities focus on technologies, processes, human resources, and infrastructures.

GMATS Contact Information

Telephone: (516) 773-5120

Fax: (516) 773-5353

Home Page: www.gmats.usmma.edu

M.S., SUNY Maritime College

License: Third Mate, Steam and Motor Vessels of Any Gross Tons, Oceans.

Military: CAPT, USCGR

Joseph Martucci (2003)

Associate Director

B.S., U.S. Merchant Marine Academy

M.S., City College of New York

License: Chief Engineer, Steam and Motor Vessels (Unlimited).

Military: CAPT, USNR (Ret.)

Peter D. Kahl (2005)

Division Manager, Marine Engineering

B.S., U.S. Merchant Marine Academy

M.B.A., Hofstra University

License: Chief Engineer, Motor Vessels (Unlimited); Second Engineer, Steam (Unlimited)



Administration and Staff

Administrative titles at the Academy may differ from those at civilian colleges, but in essence the responsibilities that accompany the titles are similar. The superintendent is akin to a college president and ultimately governs all areas of Academy operations. The deputy superintendent is the principal executive for management control. The academic dean, like a college dean of faculty, is responsible for the curriculum and the supervision of the academic departments. The commandant of midshipmen is like a dean of students and handles all midshipmen affairs of a non-academic nature, including military organization, conduct and discipline. The assistant superintendent for administration oversees the administrative business and financial functions of the Academy. The director of admissions recruits and selects the incoming classes. The head of resource management administers the financial functions. The head of plans, assessment and public affairs handles institutional assessment, strategic planning, policy development and the public affairs program. The officer-in-charge of the Naval Science Department coordinates all naval instruction at the Academy.

These administrative officers comprise the Academy's senior staff, and are assisted by capable office personnel in the daily operation of the institution.

Board of Visitors

Public Law 453, approved by the 96th Congress on October 15, 1980, provides for an annual inspection of the Academy by Congress through a Board of Visitors of nine members who are appointed in January of each

year. The board consists of one senator appointed by the Vice President; two senators appointed by the chairman of the Senate Committee on Commerce, Science and Transportation; one member of the House of Representatives appointed by the speaker of the House; three members of the House of Representatives appointed jointly by the chairman of the Senate Committee on Commerce, Science and Transportation and by the chairman of the House Committee on National Security.

Advisory Board

Public Law 453 also establishes an Advisory Board consisting of not more than seven persons of distinction in education and other fields relating to the purposes of the Academy who serve without pay. The members of the Board visit the Academy at least once during the academic year at the call of the chairman. The board's purpose is to examine the course of instruction and the management of the Academy and advise the maritime administrator and the superintendent of their findings.

Staff

Following each name is the year of joining the staff. Also listed are job title, degrees earned, where obtained, professional licenses, and military status.

This list is current as of September 30, 2007.

Office of the Superintendent

**VADM Joseph D. Stewart, USMS (1998)
Superintendent**

B.S., U.S. Naval Academy
M.S., Naval Postgraduate School
M.S., Salve Regina College/Naval War College
Military: MGEN, USMC (Ret.)

**RADM Christopher McMahon, USMS (1984)
Deputy Superintendent**

B.S., U.S. Merchant Marine Academy
M.S., The American University
M.S., Long Island University
M.Div. (GTU), U.C. Berkeley
Licenses: Master of Steam and Motor Vessels of Any Gross Tons, Oceans; Master of Sailing Vessels (Limited), Oceans.

**CDR Reed R. Bonnadonna, USMS (2001)
Director, Ethics and Character Development**

B.A., Virginia Military Institute
M.A., Clark University
Ph.D., Boston University
Military: LTC, USMCR

Office of the Academic Dean

Shashi N. Kumar (2007) Academic Dean

Graduate, Indian Maritime Academy
M.S., Maine Maritime Academy
Ph.D., University of Wales
License: Master Mariner (U.K.) Unlimited

Dianne Taha (2000) Assistant Academic Dean for Support Programs

B.A., Harpur College, SUNY Binghamton
M.S., New York Institute of Technology

Department of Information Technology

Howard Weiner (2004) Chief Information Officer

A.S., Montgomery Community College
B.S., Penn State
M.S., American University

Robert Reimels (1985) Manager, Information Services Division

George Webster (1976)
Manager, Facilities Engineering Division
B.S., New York Institute of Technology
License: General Class, Amateur Radio Operator

Library

George J. Billy (1977) Chief Librarian

B.A., Rutgers University
M.L.S., Pratt Institute
M.A., Adelphi University
Ph.D., City University of New York

Donald Gill (1997)
Reader Services Librarian
B.S.C.E., CCNY
M.L.S., St. John's University

Marilyn Stern (1991) Technical Services Librarian

B.A., CCNY
M.L.S., LIU
Medical Library Association Certification
Senior Member Academy of Medical Information Professionals Certification

Department of Waterfront Activities

CAPT Christopher Gasiorek, USMS (2005) Director of Waterfront Activities/Sailing Master

B.S., U.S. Merchant Marine Academy
License: Master, Oceans Unlimited.

Richard J. Cain (1997) Assistant Director of Waterfront Activities

CAPT Richard Barry, USMS (2006)
Master, TV Kings Pointer
B.S., U. S. Merchant Marine Academy
License: Master, Oceans Unlimited.

Mary Kate Terwedow (2006)
Mate, TV Kings Pointer
B.S., SUNY Maritime College
License: Second Mate, Unlimited Tonnage.

CDR Lance Klein, USMS (2004)
Chief Engineer, TV Kings Pointer
B.S., SUNY Maritime College
License: Chief Engineer, Motor, Steam and Gas Turbine Vessels, Any Horsepower.

Kevin Smith (2006)
Assistant Engineer, TV Kings Pointer
B.S., U. S. Merchant Marine Academy
License: Third Assistant Engineer, Unlimited Motor; Second Assistant Engineer, Unlimited Steam and Gas Turbine.

Ralf Steitz (1996)
Director of Varsity Offshore Sailing
Military: West German Army, 1983-4

Rick Dominique (1999)
Director of JV and Recreational Sailing
B.S., SUNY Maritime College
License: Third Mate, Steam and Motor Vessels of Any Gross Tons, Oceans.

Matthew Allen (2003)
Assistant Director of Intercollegiate Sailing
B.S., Old Dominion University

Derek P. Hartwick (2004)
Director of Varsity Crew
B.S., University of Western Ontario

Office of the Assistant Superintendent for Plans, Assessment and Public Affairs

CAPT Eric Y. Wallischeck, USMS (1984)
Assistant Superintendent for Plans, Assessment and Public Affairs
B.S., U.S. Merchant Marine Academy
Graduate, John F. Kennedy School of Government, Harvard University
Licenses: Third Mate, Steam and Motor Vessels of Any Gross Tons, Oceans; Master, Steam, Motor and Sail Vessels, 100 Tons

CDR Dennis Compton, USMS (1981)
Director, Office of Plans and Assessment

B.S., M.S. SUNY Maritime College
Licenses: Master, Inland Steam or Motor Vessels of Any Gross Tons; Chief Mate of Steam and Motor Vessels of Any Gross Tons, Oceans (STCW95).

CAPT Robert Larsen, USMS (1976)

Director, Office of Public Affairs
 B.S., U.S. Merchant Marine Academy
 M.B.A., Long Island University (C.W. Post)

Martin P. Skrocki (1973)
Public Information Officer

B.A., Hofstra University
 M.A., Hofstra University

Shirley A. Anthony (1999)

Parents Program Coordinator
 B.A., SUNY Empire State College

Office of Admissions

CAPT Robert E. Johnson, USMS (2004)
Director of Admissions and Financial Aid

B.S., U.S. Military Academy
 M.A., University of Tennessee
 M.A., Naval War College
Military: COL, USA (Ret.)

CDR Michael E. DeRosa, USMS (1998)
Assistant Director of Admissions and Financial Aid

B.S., Manhattan College
 M.B.A., Manhattan College
 U.S. Air Force Squadron Officer School

U.S. Air Force Air Command and Staff College
Military: LTCOL, USAFR (Ret.)

LCDR Norman R. Johnsen, USMS (1997)
Recruitment Specialist

B.S., Western Connecticut State University
 M.S., Western Connecticut State University

Sdenka F. Rios, (2002)
Financial Aid Specialist

B.S., SUNY Oneonta

LT Tyrone Broxton, USMS (2006)
Recruitment Specialist

B.A., Lebanon Valley College

LT Tina T. Schoggers, USMS (2007)
Recruitment Specialist

B.P.S., New York Institute of Technology
 M.S., New York Institute of Technology

LT Kelly Ann Flahive, USMS (2007)
Recruitment Specialist

B.S., College of Staten Island

Office of Resource Management

James D. Amoroso (1983)
Director of Resource Management

A.A.S., SUNY Farmingdale
 B.B.A., Dowling College
 M.S., American University

John Long (1985)
Special Projects Officer

B.S., SUNY Albany
 M.B.A., LIU (C.W. Post)

Oswaldo Jorge, (1987)
Deputy Director, Resource Management

B.B.A., University of Puerto Rico (San Juan)

Stylianos A. Kyritsis (1990)
Fiscal Control Officer

B.S., Lehman College
 M.B.A., New York University

Office of the Assistant Superintendent for Administration

CAPT John J. Jochmans, USMS (1974)
Assistant Superintendent for Administration

B.S., U.S. Merchant Marine Academy
 B.A., M.S., Western Michigan University
 M.B.A., Adelphi University
License: Third Mate

Frank Todesco (1986)
Deputy Assistant Superintendent for Administration

B.A., Boston College
 M.A., New York University
 M.P.A., Harvard

Gregg E. Wanlas (2006)
Head, Department of Procurement
 B.S., Stony Brook University

Thomas S. Goodwin (1982)
Personnel Officer
 B.A., St. John's University

Barry E. Niss (1976)
Head, Department of Engineering Resources
 B.S., New York Institute of Technology
 American Society of Civil Engineers
 American Institute of Architects

Kenneth Sendlein (1974)
Head, Department of Maintenance and Repair
 B.S., New York Institute of Technology

Richard Sager (2006)
Head, Department of Health Services
 B.S., New York Institute of Technology
 M.P.S., New York Institute of Technology

Richard E. Wall (2002)
Director, Midshipman Counseling and Personal Development
 B.A., University of Southern California
 M.A., Long Island University
 Ph.D., Long Island University

B. Susan Crowe (1999)
Midshipman Counselor
 B.A., Moravian College
 M.S., Johns Hopkins University

I. Ronald Shenker (2002)
Chief Medical Officer
 B.S., University of Wisconsin
 M.D., University of Wisconsin

LCDR Shani N. Lewins, USPHS, USCG (2004)
Senior Dental Officer
 B.A., State University of New York, Buffalo
 D.D.S., State University of New York, Buffalo

Joseph Abbamonte (2002)
Environmental Protection Specialist

John Redfern (2002)
Safety Officer
 B.A., C.W. Post College

LT Harold Schiffer (2003)
Chief (Acting), Police Department

Mitchell Glazer (1996)
Food Service Officer
 B.B.A., Baruch College

Carrie Federico (2006)
Head, Department of Administrative Services

Office of the Commandant of Midshipmen

CAPT Robert G. Allee, USMS (1999)
Commandant of Midshipmen
 B.S., U.S. Merchant Marine Academy
 M.S., Naval Post Graduate School
License: Master, Unlimited Tonnage
Military: CAPT, USN (Ret.)

CDR David L. Mund, USMS (1990)
Regimental and Training Officer
 B.A., Virginia Military Institute
Military: MAJ, USAR (Ret.)

CAPT Kenneth R. Force, USMS (1970)
Director of Music
 B.M., M.M., Manhattan School of Music
 M.P.S., New York Institute of Technology
 Professional Diploma (Ed. Admin.), Manhattan School of Music
 C.A.S.A.C., State of New York

CDR Bradley W. Burnside, USMS (1991)
Maintenance and Logistics Officer
 B.A., St. Lawrence University
 U.S. Army Command and General Staff College
Military: LTC, USAR (Ret.)

LCDR Robert E. Hughes, USMS (2003)
Company Officer
 B.S., U.S. Merchant Marine Academy
 M.S., Molloy College
License: Chief Mate, Unlimited Tonnage
Military: LCDR, USNR

LT Michelle Gates, USMS (2006)
Company Officer
 B.S., U.S. Merchant Marine Academy
License: Second Mate, Unlimited Tonnage
Military: LT, USNR

LCDR Eddie C. Ragin, USMS (1999)
Tactical Officer
 B.S., Phoenix University
Military: GYSGT, USMC (Ret.)

LCDR Stevens Frangos, USMS (2005)
Performance and Assessment Officer
 B.S., U.S. Merchant Marine Academy
License: Third Assistant Engineer, Steam and Motor Vessels, Unlimited.
Military: LCDR, USNR

CAPT Joel Buffardi, USAR (2006)
Army National Guard Liaison Officer
 B.S., U.S. Military Academy

CAPT David Kim, USMC (2007)
Marine Corps Representative

Master Sgt. J. R. Hauser, USMC
Marine Corps Representative

Virginia Reilly (2002)
Midshipmen Personnel Officer

Arthur W. Jacobs (1990)
Operations Administrator
B.S., M.P.A., John Jay College of Criminal Justice

Mary Cunningham (1984)
Social Director
B.A., Adelphi
M.S., LIU (C.W. Post)

