Naval Architecture and Marine Engineering

WHAT IS NAVAL ARCHITECTURE AND MARINE ENGINEERING?
Naval Architects and Marine Engineers are involved in the design, construction, and maintenance of ships, boats, and related maritime equipment. They design and supervise the construction of everything from aircraft carriers to submarines, and from sailboats to tankers. Naval architects work on the basic design of ships, including hull form and stability. Marine engineers work on the propulsion, steering, and other systems of ships. Naval Architects and Marine Engineers apply knowledge from a range of fields to the entire design and production process of all maritime equipment. Workers who operate or supervise the operation of marine machinery on ships and other vessels also may be called marine engineers or, more frequently, ship engineers.*

NEEDED SKILLS:
- Engineering skills
- Hydrodynamics
- Ship dynamics
- Structural dynamics
- Design skills
- Computer skills
- Decision making
- Creative thinking
- Critical thinking
- Scientific reasoning
- Communication and active listening skills

INDUSTRIES AND OCCUPATIONS
- Defense
- Coastal/Great Lakes/deep sea transportation
- Architectural services
- Oil and Gas Exploration & shipping
- Federal Government
- Scientific research
- Other transportation industries**

JOB TITLES
- Naval Architect
- Marine Engineer
- Marine Architect
- Naval Engineer
- Boat Designer
- Structural Designer
- Piping Designer
- Technical Manager**

SALARIES
$88,100 *
The nationwide average salary for employees with a bachelor’s degree in Naval Architecture and Marine Engineering

$60,500
UM graduates average starting salaries

MORE INFORMATION
- www.myplan.com
- stats.bls.gov/ooh
- www.name.engin.umich.edu (UM program website)
- http://www.sname.org (Society of Naval Architects & Marine Engineers)
- Engineering Career Resource Center, 230 Chrysler
- See an NAME advisor. Call 764-6471 or visit 221 NAME Building

*Information from http://www.bls.gov/ooh/
**Information from: www.myplan.org

Updated July 2015
WHICH NAME CLASSES SHOULD YOU START WITH?

To begin, a good option is to take MECHENG 211 and NAVARCH 270, followed by MECHENG 235, MECHENG 240, and NAVARCH 260. Note that NAVARCH 260 is only offered in the Winter Term. Read more about the NAME Department at: http://www.engin.umich.edu/dept/name/

COURSE DESCRIPTIONS

MECHENG 211 – 4 credits
Introduction to Solid Mechanics

Prerequisites: Physics 140 and Math 116.
Engineering applications: axial loads, torsion of circular rods and tubes, bending and shear stresses in beams, deflection of beams, combined stresses, stress and strain transformation. Four lecture classes per week.

MECHENG 235 – 3 credits
Thermodynamics I

Prerequisites: Chem 130/125 or Chem 210/211 and Math 116.
Introduction to engineering thermodynamics. First law, second law, system and control volume analyses; properties and behavior of pure substances; application to thermodynamic systems operating in steady state and transient processes. Heat transfer mechanisms. Typical power producing cycles and refrigerators. Ideal gas mixtures and moist air applications.

MECHENG 240 – 4 credits
Dynamics & Vibrations

Prerequisites: Physics 140, preceded or accompanied by Math 216.

NAVARCH 260 – 2 credits
Marine Systems Manufacturing
ONLY OFFERED WINTER TERM

Prerequisite: NAVARCH 270 or concurrent with NAVARCH 270.
the marine industry and its environment as it relates to all aspects of naval architecture and marine engineering, including industry characteristics; organization; product types and components; materials used, joining methods, shipbuilding, boatbuilding and offshore equipment manufacturing methods; design; production engineering; planning contracts and specifications; cost estimating; production and material control.

NAVARCH 280 – 2 credits
Introduction to Probability for Marine Engineers

Prerequisite: Math 116.
Introduction to the fundamentals of probability theory, with marine applications. Events, Probabilities, Combinatorics, Independence, Bayes Theorem; Discrete and Continuous Random Variables, Central Limit Theorem, Elements of Engineering Statistics, goodness of fit, regression, correlation.