

# The New Program in Marine Engineering Technology

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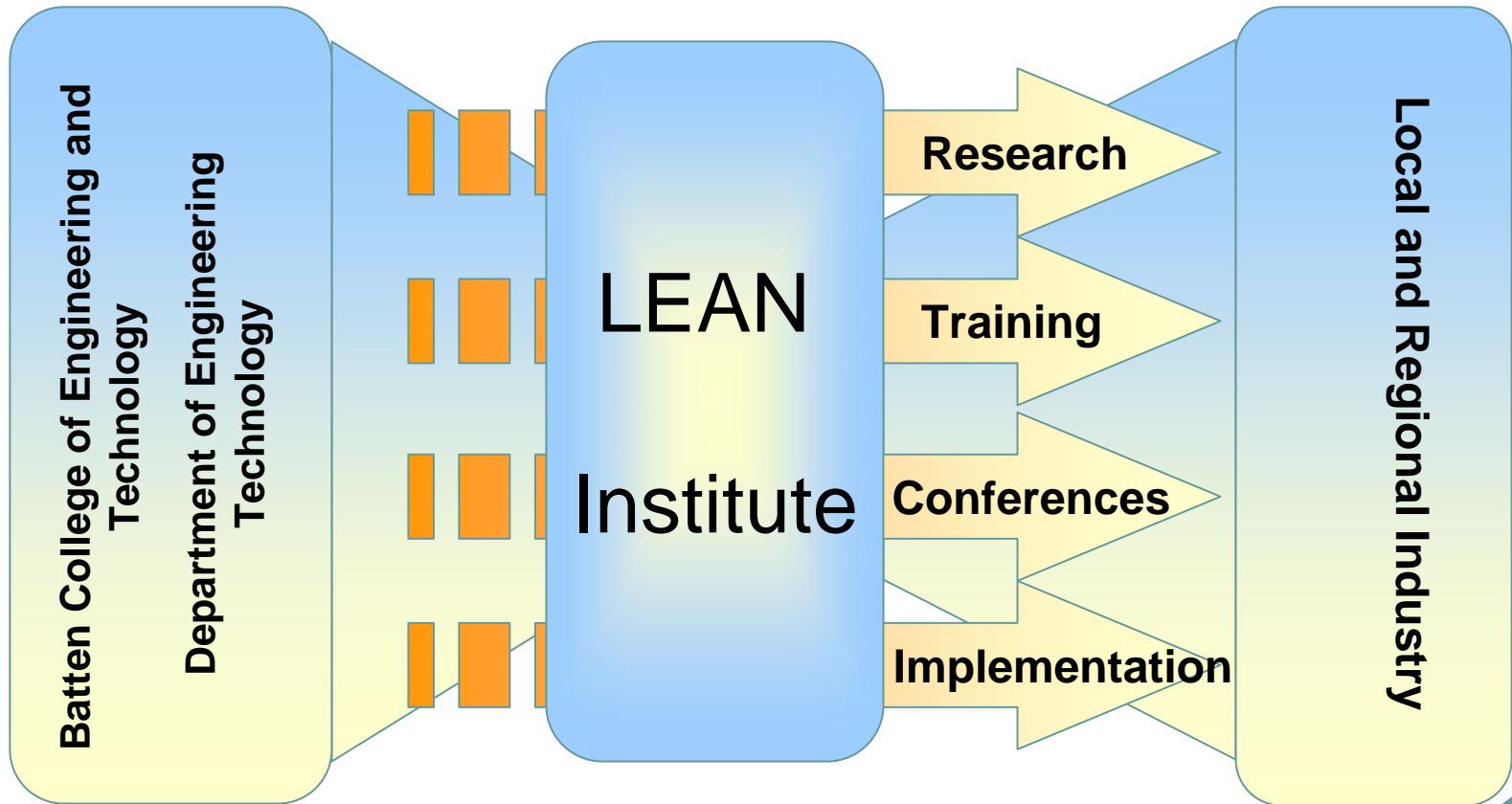
# Old Dominion University

- **Located in historic Norfolk.**
- **Founded in 1930 as a division of the College of William and Mary.**
- **Old Dominion is now one of only 101 public universities with a Carnegie/Doctoral Research-Extensive distinction.**
- **Approx. 20,000 students**
- **Proximity to NASA Langley Research Center**
- **200 miles south of Washington DC**



# Lean Institute at ODU

Focus on Research, Education & Training, Conferences and Implementation



# The Need for a Marine Technology Program at Old Dominion University



**Strong ties to the world's largest Naval Base and Shipbuilding and Repair**

**Early qualitative research indicated high interest for development of such a program in support of one of the regions largest industries.**

**This program will initially be offered as a concentration within the existing TAC of ABET accredited MET program until the program is ready to seek independent accreditation.**

# Marine Engineering Technology Advisory Board Industry Representatives



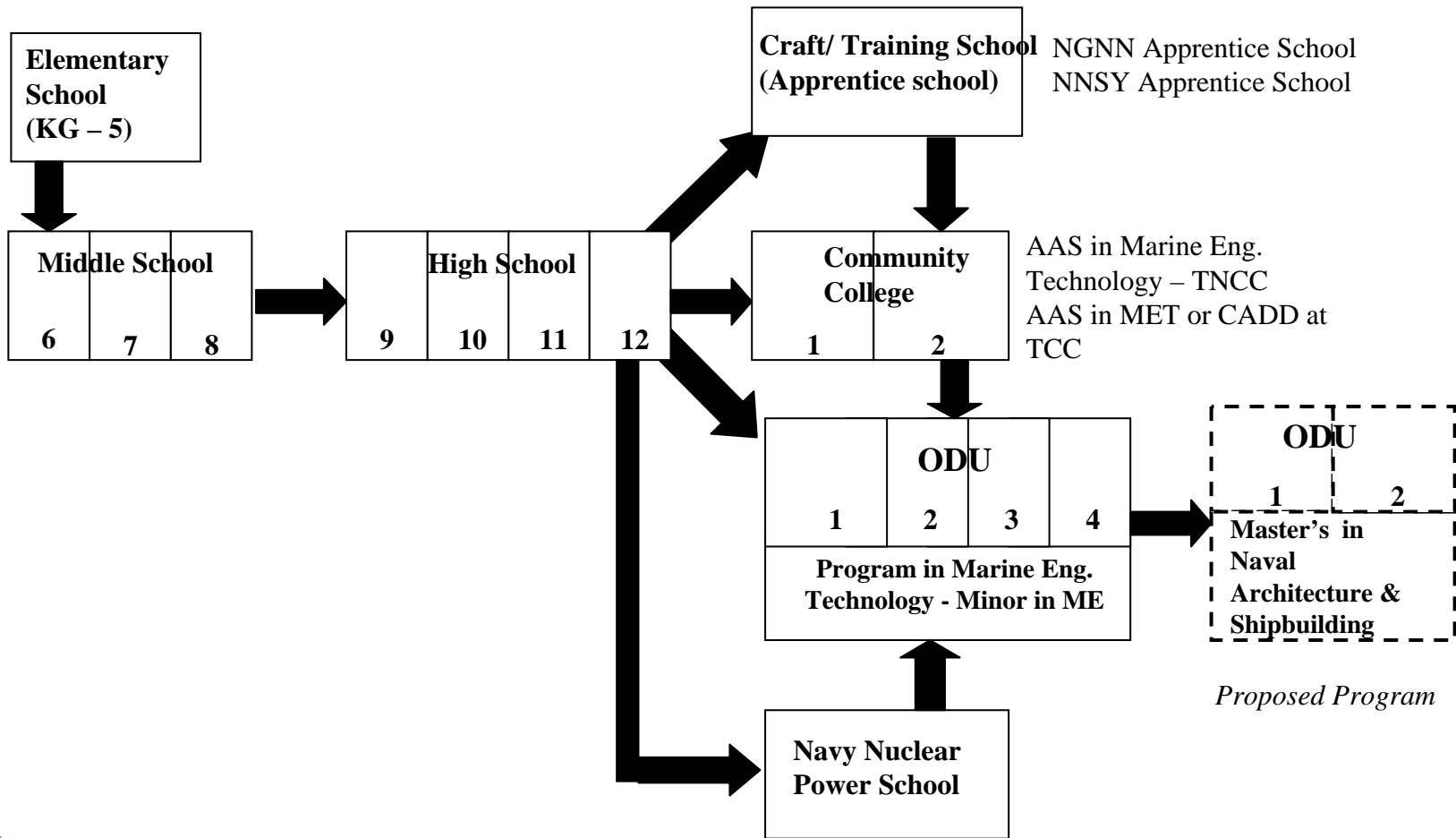
Aerial view of the Norfolk Naval Shipyard

- **Dr. James Hughes** – Manager Academic Programs - Apprentice School- NGNN
- **Mr. Ronald Jerasa** – Director of Business Development – Colona’s Shipyard
- **Mr. Malcolm Branch** – Executive Director – Virginia Ship Repair Association
- **Ms. Norine Bradshaw** – Director, Supportability Engineering Division – AMSEC, LLC
- **Captain Dick Whalen** – Military Liaison, ODU
- **Mr. Doug Smith** – Six Sigma College -NAVSEA

# Target Student Population

- Articulation agreements already exist with the **Northrop-Grumman Newport News Shipbuilding Apprentice School**, the **Virginia Community College system**, **Virginia Dominion Power**, and the **US Navy Nuclear Power School**.
- Many transferring students have some experience in the Maritime industry and are prime candidates for this program.
- **Hampton Roads NROTC program** (administered by Hampton University, Norfolk State University and Old Dominion University) is one of the largest NROTC units in the country.

# Educational Path for Marine Engineering Technology Program



# Goals of the Marine Engineering Technology Program

- Provide the student with:
  - Skills necessary for working in the commercial or naval **ship design**
  - Exposure to basic ship characteristics, the unique aspects of ship design, familiarization with **ship construction processes and techniques, various shipboard systems**
  - Basic **shipboard operations and maintenance principles and philosophies**



Ariel view of NOB  
“The Largest Naval Base in the World”

# Existing Faculty Expertise

- Existing faculty members have strong ties to the US Navy and the Maritime industry.
  - One former Submarine officer
  - An enlisted nuclear operator aboard both aircraft carriers and nuclear cruisers
  - A graduate from the US Merchant Marine Academy, former Merchant Marine
- Additionally, several faculty within the department are involved with various research projects with the US Navy, area ship repair facilities and Northrop Grumman Newport News.
- Many of our faculty are active in the American Society of Naval Engineers

# Existing Electives within the Current MET Program Options

<u>Manufacturing Systems</u>	<u>Mechanical Systems Design</u>	<u>Nuclear Technology</u>
<i>MET 400, Computer Numerical Control in Production</i>	<i>MET 440, Heat Transfer</i>	<i>MET 440, Heat Transfer</i>
<i>MET 410, Advanced Manufacturing Processes</i>	<i>MET 460, Refrigeration and AC</i>	<i>MET 450, Energy Systems</i>
<i>MET 415, Introduction to Robotics</i>	<i>MET 450, Energy Systems</i>	<i>MET 471, Nuclear Systems I</i>
<i>MET 430, Mechanical Subsystem Design</i>	<i>MET 430, Mechanical Subsystem Design</i>	<i>MET 472, Nuclear Systems II</i>
<i>MET 445, Computer Integrated Manufacturing</i>	<i>EET 360, Elect. Power &amp; Machinery</i>	<i>EET 360, Elect. Power &amp; Machinery</i>
<i>EET 360, Elect. Power &amp; Machinery</i>		

# New Courses Developed to Support the Marine Option

- **Principles of Marine Engineering I:**

This course of study includes: Fundamental Principles of Naval Architecture including nomenclature, geometry, stability, hydrostatics, structures, and motions; Ship Design Processes; and a basic introduction to Shipboard Systems such as HVAC, refrigeration, power generation, propulsion, hydraulics, electronics, cargo handling systems, seawater systems, freshwater systems, and fuel, lube and other oil systems.

# New Courses Developed to Support the Marine Option

- **Principles of Marine Engineering II:**

This course of study builds upon the previous course and provides a more in-depth look at shipboard systems and introduces topics such as basic shipboard operations, and ship specifications.

# New Courses Developed to Support the Marine Option

- **Principles of Maintenance Engineering:**

This course of study looks at maintenance systems: predictive, preventative and corrective; large scale maintenance systems, principles of reliability engineering, maritime logistics, planning for maintenance and repair, using and ordering spare parts, technical manuals, system specifications, and shipyard operations.

# Senior Electives for the Marine Option with in the Existing MET Program

## Marine Technology\*

*MET 440, Heat Transfer*

*MET 450, Energy Systems*

*MET 475, Principles of Marine Engineering I*

*MET 476, Principles of Marine Engineering II*

*MET 485, Principles of Maintenance Engineering*

*EET 360, Elect. Power & Machinery*

# Two New Faculty Positions being Added

- **Instructor of Marine Engineering Technology**
  - Position Description: Master's degree in Marine or Mechanical Engineering, Technology or a related field. Registration as a professional engineer is preferred. Several years experience in the marine industry, with expertise in at least one of the following areas: naval architecture, ship operations, ship maintenance and shipbuilding is required.
- **Assistant Professor of Marine Engineering Technology (Electrical)**
  - Position Description: Expertise related to technology, communications, electromagnetics, and control systems as related to marine shipboard electrical technologies and the general maritime industry. Prior industrial experience and successful teaching experience in the areas of basic circuit analysis, electronics, and fundamental digital circuits. Minimum educational background is a master's degree in electrical engineering or engineering technology or closely related area. A Ph.D. and/or professional registration are preferred

# First Course Offered ...

- The initial offering of the first course in the program was in the Spring of 2006.
  - The course offered was MET 485 – Maintenance Engineering.
  - Student response to the course offering was strong with a final registration of 25 students.
- When asked the question: “Overall, I have learned or benefited from this class?” The student evaluation average for this first course offering was a 4.53 out of a possible 5.0 (as compared to the departmental and college averages of 4.18 and 4.21 respectively).

# Additional Interest...

- **The Department of Mechanical Engineering is looking into the viability of cross listing one or more of the Marine Technology courses as electives for their students as well. Particular interest is high for the MET 485 Maintenance Engineering course**
- **There is a plan to develop a Masters program in Marine Engineering and Naval Architecture as a result of this program's industry acceptance**
- **Old Dominion University's School of Business and Public Administration houses the ODU Maritime Institute offering courses in areas related to port operations, maritime transport, international supply chain management and logistics. Beginning in the Fall of 2006 the School of Business and Public Administration will begin offering a Bachelor in Science in Maritime Logistics, opening the door for an additional minor for the ET students**

# Thank You...

## QUESTIONS?

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