



Ship Performance Analysis & Management

A new NTUA / SNAME Postgraduate Program

George Dimopoulos, Kostas Belibassakis

03/11/2025



National Technical University of Athens
School of Naval Architecture and Marine Engineering

Master's Degree in
Ship Performance Analysis and Management



National Technical University of Athens
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Msc in Ship Performance Analysis and Management

Ανάλυση και Διαχείριση Επιδόσεων Πλοίου

Officially Established 29/10/2025

Government Gazette (ΦΕΚ Β' 5715/29-10-2025)

- ☐ **Applications:** November - December 2025
- ☐ **Selection Process** January – February 2026
- ☐ **Semester start:** February 2026

- **35 Students**
- **3 Semesters duration (2 x Courses + 1 x Thesis)**

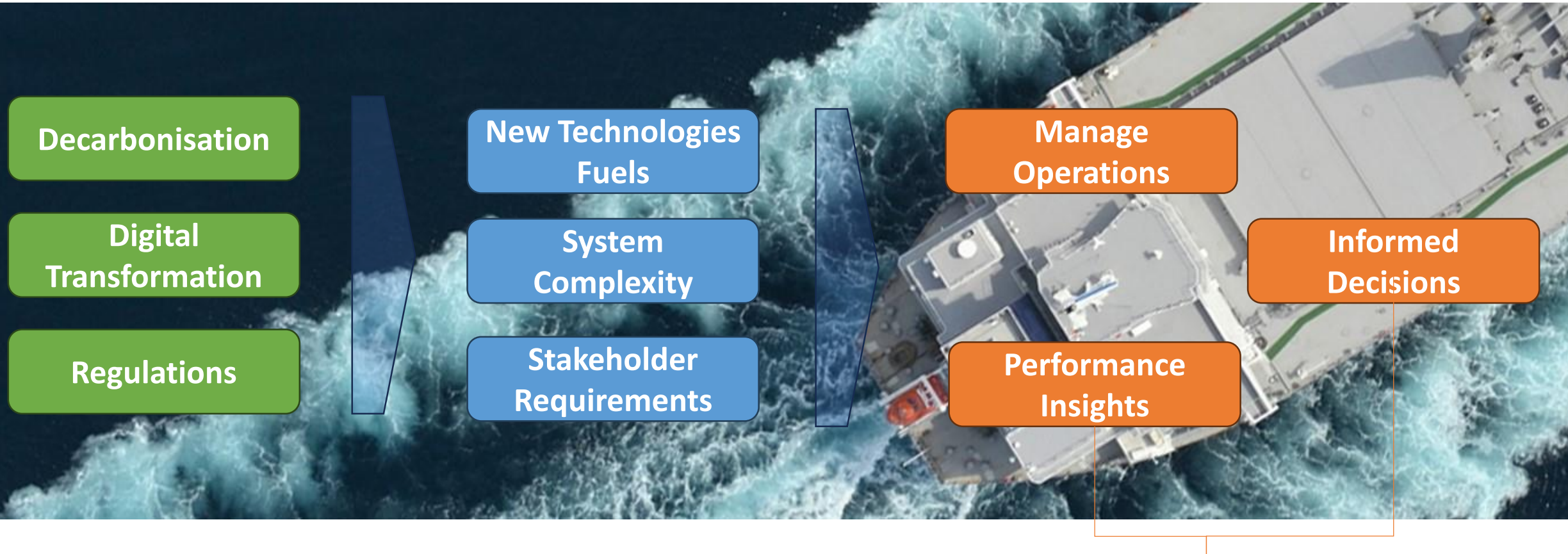


01 Motivation



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Industry is moving into more advanced and scientific ways to manage ships and operations

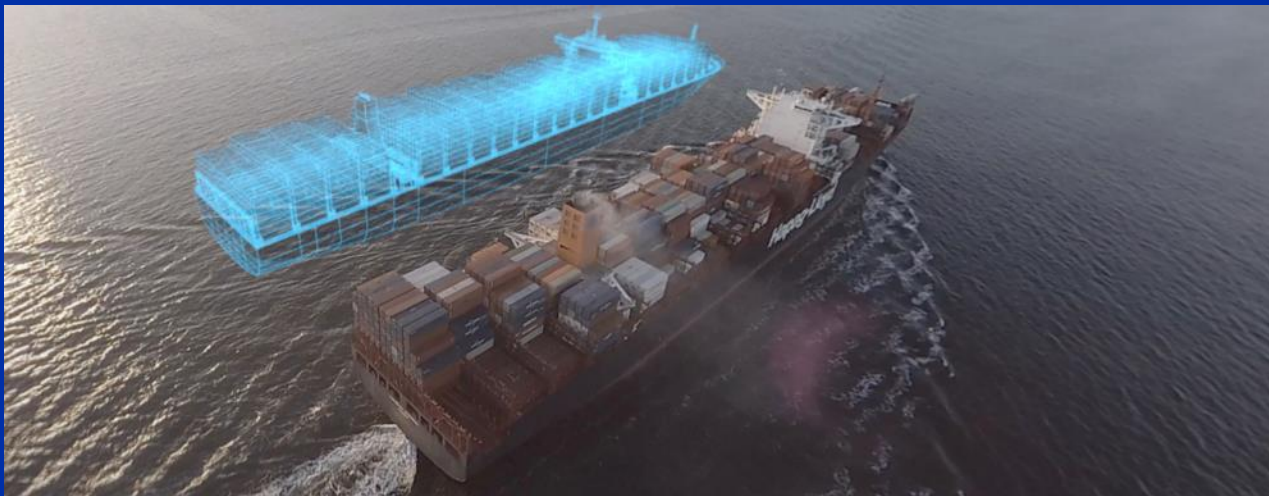


... or simply because the current technology levels allow it!



01 Motivation

Why a Performance Engineering Postgraduate course?



Currently there is no other similar postgraduate specialization program!



Ship Performance is now a critical task for shipping companies.



Competitive Industry and performance improvements are essential to reduce costs.



Cargo owners and charters monitor and require performance reporting.



Decarbonisation & regulations requirements for the use and analysis of data coming from ships.

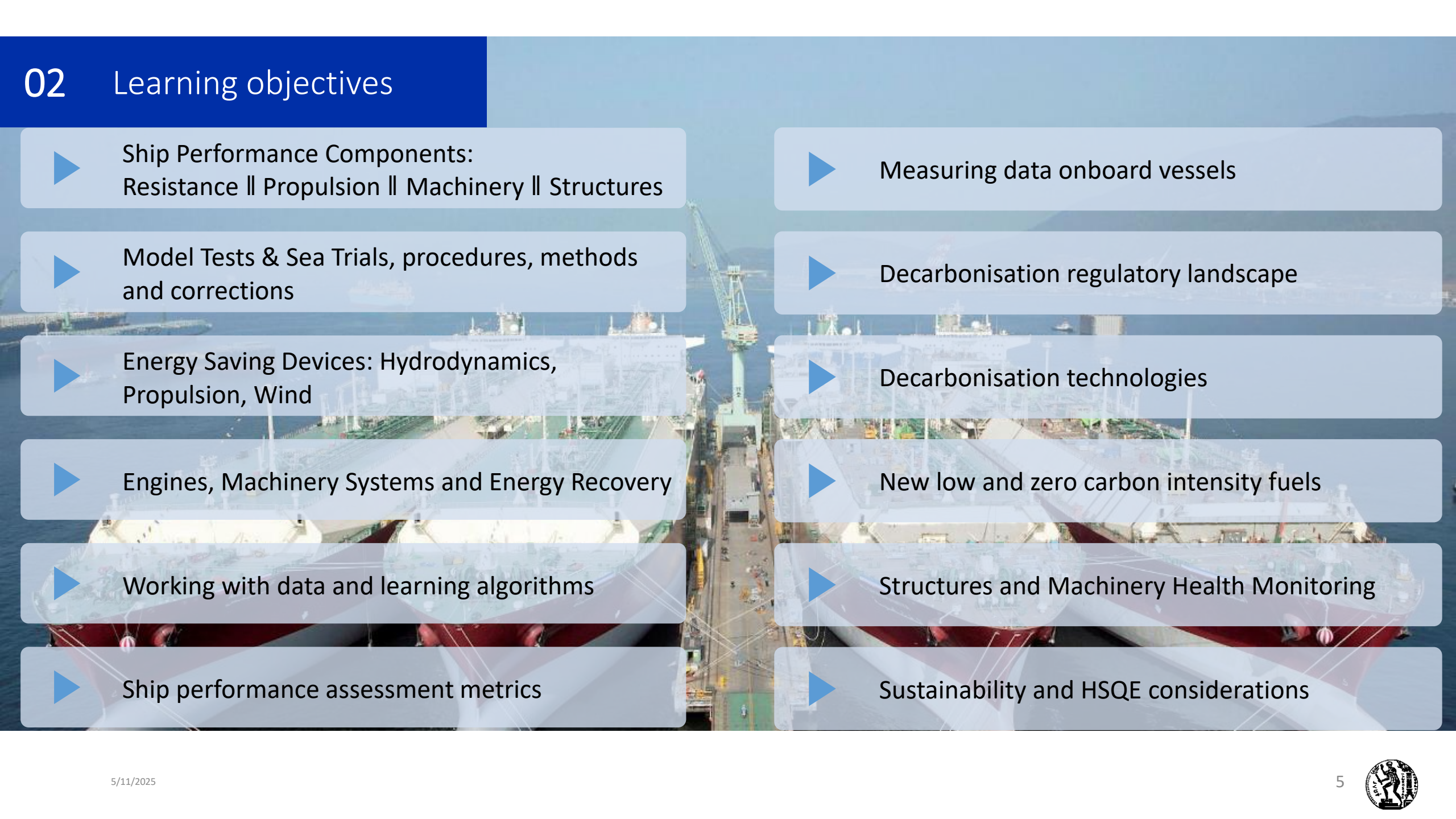


Currently ad-hoc solutions, structure, systematics and methods to address ship performance.



Significant need for systematics and knowledge for effective ship performance management.

02 Learning objectives

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- ▶ Ship Performance Components: Resistance || Propulsion || Machinery || Structures
 - ▶ Model Tests & Sea Trials, procedures, methods and corrections
 - ▶ Energy Saving Devices: Hydrodynamics, Propulsion, Wind
 - ▶ Engines, Machinery Systems and Energy Recovery
 - ▶ Working with data and learning algorithms
 - ▶ Ship performance assessment metrics
 - ▶ Measuring data onboard vessels
 - ▶ Decarbonisation regulatory landscape
 - ▶ Decarbonisation technologies
 - ▶ New low and zero carbon intensity fuels
 - ▶ Structures and Machinery Health Monitoring
 - ▶ Sustainability and HSQE considerations



02 Learning objectives



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Focus will be on the practical issues of ship performance management: methods and tools to address them.

The program will serve as a specialization to give graduates a working knowledge on ship performance.

Close collaboration with the industry will guide the program's output to the practical aspects of ship performance.

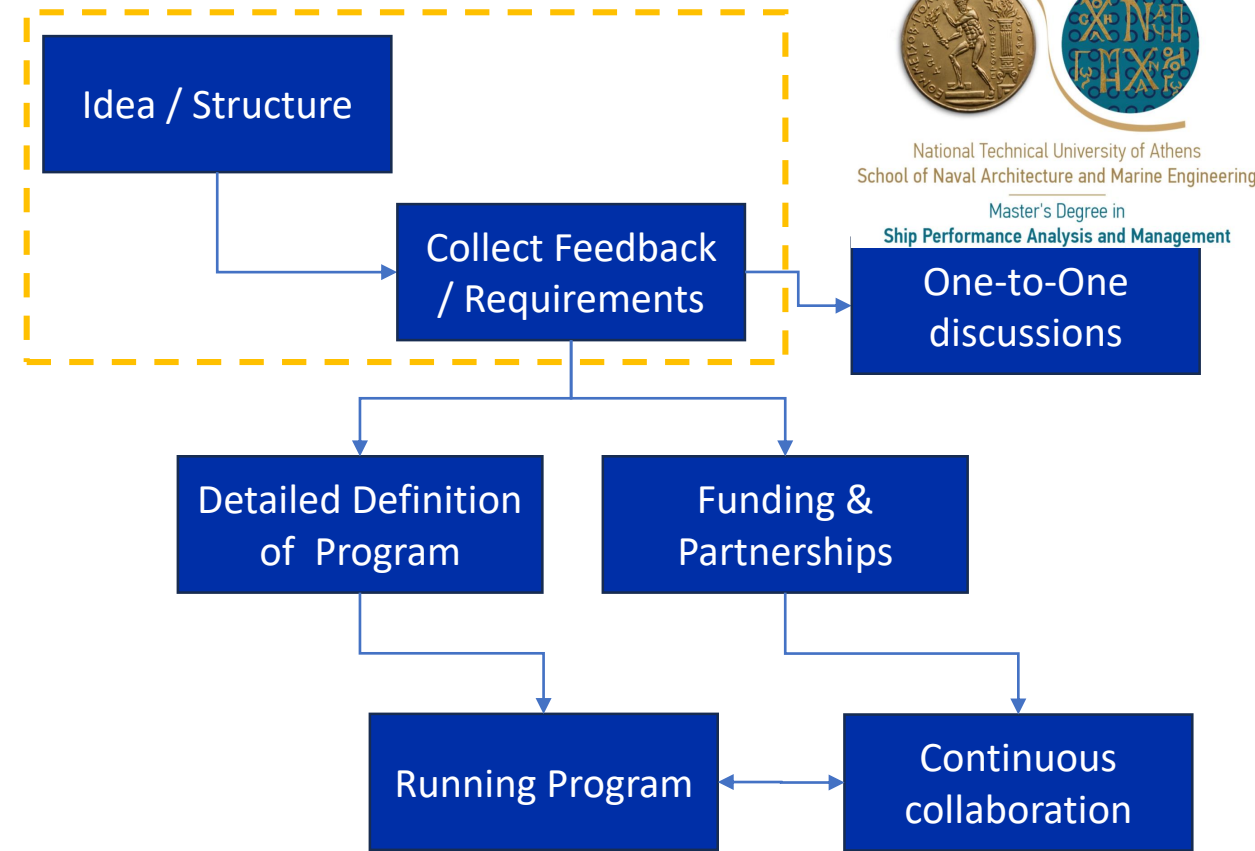
New and emerging digital tools and technologies will be used / demonstrated and explored in real-world setups.



03 Program Design



Start: February 2026



- ☐ Postgraduate Program.
- ☐ Maritime partners – participation.
- ☐ **Program advisory board.**
- ☐ Dissertations according to needs / support.
- ☐ Pool of candidates for performance departments.



04 Program Curriculum

Semester 01



Semester 02



Semester 03

Courses:

Title
Ship Resistance and Propulsion with Applications in Performance Analysis
Hydrodynamic and Aerodynamic performance improvement devices
Decarbonisation Regulatory Framework, Legislation and Life Cycle Analysis
Data Analysis and Machine Learning in Ship Performance Analysis
Technical evaluation of ship performance and efficiency
Industry guest lectures and visits

Title
Shipping Decarbonization: Technologies, Fuels and Electrification
Mathematical Modeling Techniques in Ship Systems Analysis
Monitoring and evaluation of the structural integrity of ship hull and machinery
Performance analysis of ship machinery systems and laboratory
Sustainable shipping: ESG and HSQE dimensions of ship performance
Industry guest lectures and visits

Thesis

Course: 3 hours/ week
~ 3 courses per week
13 weeks per semester
Total 90 ECTS



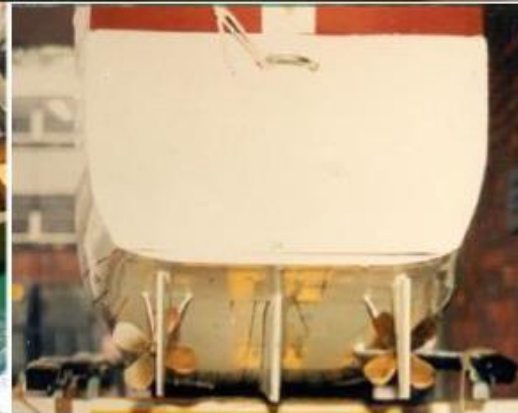
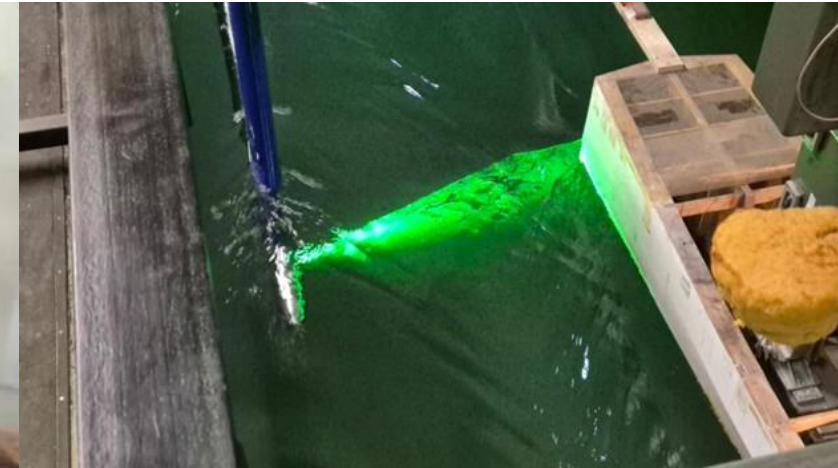
04 Program Curriculum

Hydrodynamics Laboratory Infrastructure



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04 Program Curriculum

Laboratory of Marine Engineering Infrastructure



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05

Target prospective students

35 Students / per program round

Maritime Industry Professionals

Early Graduates wanting to specialize

Engineering disciplines (indicative):

- **Naval Architecture and Marine Engineering**
- **Mechanical Engineering**
- **Electrical Engineering**
- Chemical Engineering
- Computer Engineering
- Applied mathematics



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Gratefully Acknowledge the support of our Donors:



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