



Technology
Innovation Hub
IITG TIDF



INTRODUCTION TO NAVAL ARCHITECTURE

3 DAYS
TRAINING PROGRAM
FOR NON-NAVAL ARCHITECTS



Trainer Profile

Prof. MSP Raju

B.E (Naval Architecture)
M. Tech (Ocean Engineering – IIT –Madras
EPBM (IIM – Visakhapatnam)



>28 years of experience

- Vice President – SeaTech Integrated Technology Pvt Ltd, Visakhapatnam
- Director – Dept. Of Naval Architecture & Offshore Engineering, AMET Univ, Chennai
- Superintendent, Selandia Shipping, Mumbai
- Sr. Surveyor – DNV / DNVGL (Visakhapatnam, Chennai & Mumbai)
- Scientist – D, Naval Science & Technology Laboratory, DRDO, Visakhapatnam
- ABG Shipyard, Surat

Awards

- Best Faculty 2022 - AMET Univ, Chennai
- Best Faculty 2022 - AMET Univ, Chennai
- Best Faculty Consultancy Projects 2019 - AMET Univ, Chennai
- Distinguished Professor, IARDO Academic Excellence Awards – 2019, Mumbai
- Laboratory Scientist of the year 2002 at Naval Science & Technology Laboratory, DRDO, Visakhapatnam

Professional Body Membership

- Member of Royal Institution of Naval Architecture (RINA), London, UK
- Fellow of Institute of Naval Architects, India
- Member of Condition Monitoring Society of India

Course Content

DAY

1

Ship Geometry

- Ship lines & Curves
- Basic Hull component & terminology
- Cross – section Geometry
- Ship Geometry Calculations

Ship Hydrostatics & Stability

- Ship Stability Parameters
- Center of Gravity
- Center of Buoyancy (B)
- Metacentric Height (GM)
- Relationship between ship geometry & stability
- Hydrostatic calculations
- GZ Curve – Curve of Statical Stability

Ship Resistance & Powering

- Component of Ship Resistance
- Frictional Resistance Formulation
- Wavemaking Resistance
- Ship Model Testing
- Ship Resistance Prediction
- Engine Power Estimation
- Propeller Geometry
- Propeller Model Testing
- Types of Propellers

DAY

2

Ship Motion & Maneuvering

- Ship Motion – Six degrees of Freedom
- Ship Motion Equations
- Response Amplitude Operator
- Metacentric Height (GM)
- Ship Dynamic Effects
- Ship Maneuvering Test
- Types of Rudders
- Rudders Design

DAY

3

Ship Structure

- Ship Structural Elements
- Ship Deck Structure
- Ship Side Structure
- Ship Bottom Structure
- Midship Section Design
- Classification Society Rules

Ship Design Aspects

- Owner Requirements
- Ship Design Spiral
- Ship Design Phases
- Metacentric Height (GM)
- Concept Design
- Basic Design
- Contract Design
- Detail Design

Established in 2000 in Singapore, SeaTech Solutions has built a strong reputation for reliable, highly efficient and environmentally friendly vessel designs operating globally. We take pride in building a strong bond with clients, from inception, to delivery, and beyond, by listening to their operational requirements to ensure best—customized solutions.

SeaTech Solutions uses state-of-the-art CAD/CAM/CIM/CAE software such as FORAN, GHS, NAUTICUS, AVEVA, E3D, Ship Constructor, CADMATIC, SAFEHULL, NAVCAD, ANSYS and STAADPRO to develop cutting-edge designs. The services offered by SeaTech Solutions, cover Design, Engineering, and Consultancy, leading the maritime decarbonization with innovative and efficient GreenTech designs. SeaTech Solutions provides solutions with electric, hybrid propulsion and renewable energies and alternative fuels. SeaTech Solutions is committed to develop and nurture local talent in marine and offshore design to foster innovation, share knowledge and resources, and promote international cooperation in addressing global challenges.



The **Technology Innovation Hub (TIH) at IIT Guwahati** is a premier center of excellence established under the **National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS)**, supported by the Department of Science & Technology (DST), Government of India. Strategically located in Guwahati, the Gateway to Northeast India, TIH is committed to advancing cutting-edge research, technology development, skill enhancement, and startup incubation in emerging deep-tech domains.

TIH focuses on pioneering innovations in **underwater exploration technologies, robotics, artificial intelligence, cyber-physical systems, advanced manufacturing, and sustainable engineering solutions**. The Hub has successfully developed and supported transformative initiatives such as underwater biomimetic robots, India's first structured underwater welding certification program in collaboration with industry partners, live fish transport systems with real-time monitoring technologies, and advanced 3D printing applications including underwater 3D printing.

Through seed funding, incubation support, industry collaborations, certification programs, and capacity-building workshops, TIH nurtures startups, researchers, and entrepreneurs to translate research into market-ready solutions. It actively collaborates with national agencies, defense organizations, industries, and international partners to create scalable impact.

With world-class research facilities, interdisciplinary expertise, and strong industry linkages, TIH IIT Guwahati is shaping the future of deep-tech innovation while empowering the Northeast region to emerge as a global technology hub.



OUTCOMES

Upon successful completion of the training program, participants will be able to:

- Demonstrate a strong understanding of shipbuilding design principles
- Apply their knowledge to design, construct, and maintain various types of ships.
- Contribute effectively to shipbuilding projects adhering to industry standards.
- Be well-prepared for employment opportunities in the shipbuilding and maritime sectors

AUDIENCE

- Any engineering graduates or diploma holders.
- Experienced professionals in the shipbuilding and marine industries seeking to upskill or reskill
- Marine engineering graduates or diploma holders



HIGHLIGHTS

Duration: 3 days

Location: TIH-IIT Guwahati

Date: 09 – 11 April 2026

Course Fee: TBC

For More Details contact:

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REGISTRATION LINK:

<https://docs.google.com/forms/d/e/1FAIpQLSe-vK8cuJn7caKvTUusy7856UIns8b7Tub9vVaKSY8x9eGgMA/viewform?usp=publish-editor>