

ABOUT THE COURSE

The primary objective of this short course is to provide conversion or refresher training for science and engineering graduates and experienced draughtsmen who hold active line responsibilities in the design of ships and ship systems and in shipbuilding practice. The course is designed in such a way that at the end of the lectures, the person will have a very broad understanding of the behaviour of ships under a variety of loading and operating conditions. The syllabus will include: basic definitions of ships, structural components of the hull girder, general arrangement, ship as functional blocks, resistance and propulsion methods. The course is intended for practicing engineers and research scientists who need to understand the concepts behind the behaviour of ships & ships system at sea.

WHO SHOULD ATTEND?

Engineers and scientists involved in the design of ships and ship systems. Personnel from ship management companies, oil companies, classification societies and ship builders will benefit from attending this course. The course is innovative in both content & structure with a careful balance of theory & practice.

COST

The registration fee for the course will be £3000 plus VAT (UK ONLY) for a minimum of 6 people. For additional persons, it will be £600 plus VAT per person

PAYMENT

Payments can be made by cheque (made payable to ASRANet Ltd.), cash or banktransfer. Please enquire for details.

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ONLINE

In-House Course

Basic Naval Architecture



(A Maritime Company for Courses,
Conferences and Research)

PROGRAMME (All timings are in BST(GMT+1))

DAY 1

09.00 - 10.30 **Lecture 1:** Introduction & Definition:
ships

Ship types; Basic ship dimensions and form; Hydrostatic data and curves; Bonjean curves; Capacity plan

Prof T Krishankutty

10.30 – 10.45 *Break*

10.45 – 12.15 **Lecture 2:** Initial stability

Ship equilibrium conditions; Causes of heeling moments; Metacentric height; Righting arm curve; Effects of ship dimensions and parameters on stability; Effect of weight changes on stability; Evaluation of stability; IMO criteria on intact stability;

Prof T Krishankutty

12.15 – 12.45 *Break*

12.45 – 14.15 **Lecture 3:** Large angle stability

Cross curves of stability; Dynamic stability levers- Wind heeling moment, maximum allowable KG - Stability of grounded vessels

Prof T Krishankutty

14.30 – 16.00 **Lecture 4:** Damage Stability

Ship subdivision, Effects of Flooding; Free Surface Effect on Stability; Floodable length; Damaged stability calculation and standards.

Prof T Krishankutty

DAY 2

09.00 - 10.30 **Lecture 5:** Resistance & Propulsion

Components of ship resistance – frictional, wave making, viscous pressure, appendage; Resistance model tests and extrapolation to prototype; Ways to reduce ship resistance.

Screw propeller; Powering and efficiency components; Propeller theory, Hull-propeller interaction; Open water and self-propulsion tests; Propeller cavitation; Design of screw propellers.

Prof T Krishankutty

10.30 – 10.45 *Break*

10.45 – 12.15 **Lecture 6:** Seakeeping-I

Ship motions; Seaway effects on ships; Undamped and damped motions in still water and in regular waves; Motion in irregular seas; Seakeeping criteria; Methods to improve

seakeeping performance; Motion stabilisation.

Prof T Krishankutty

12.15 – 12.45 *Break*

12.45 – 14.15 **Lecture 7:** Seakeeping-II

Ship motions; Seaway effects on ships; Undamped and damped motions in still water and in regular waves; Motion in irregular seas; Seakeeping criteria; Methods to improve seakeeping performance; Motion stabilisation.

Prof T Krishankutty

14.30 – 16.00 **Lecture 8:** Manoeuvring:

Controllability - elements of ship motion control system; Surface ship manoeuvring equations of motion, types of motion stability, mathematical models, hydrodynamic derivatives; standard manoeuvring tests, IMO

Prof T Krishankutty

ABOUT THE LECTURER:

Dr. P. Krishnankutty, Professor, Ocean Engineering, IIT Madras

Dr. P. Krishnankutty is a Professor at the Department of Ocean Engineering, Indian Institute of Technology (IIT) Madras, with more than 40 years of teaching experience in the field of naval architecture. Prior to joining IIT Madras in 2006, he was a faculty member at Department of Ship Technology, Cochin University of Science and Technology, India.

Dr. Krishnankutty has a Bachelor's degree in Naval Architecture and Ship Building from University of Cochin, India, obtained his Masters in Ocean Engineering from Stevens Institute of Technology, New Jersey, USA and Ph.D in the area of Marine Hydrodynamics from IIT Madras. He was a research fellow at the Department of Naval Architecture & Marine Engineering in the Universities of Glasgow and Strathclyde, UK during 2001-2004. His research has spanned several areas within the naval architecture field including ship motions and manoeuvring. His work encompasses both numerical and experimental approaches. The 3D FEM based software to solve wave-structure diffraction-radiation problem and the experimental facilities such as a Planar Motion Mechanism system, false bottom for shallow water studies, and the bio-mimetic fin oscillation facility developed by his team are being widely used by the staff and research scholars of IIT Madras.

Dr. Krishnankutty is well recognised in the professional arena. He is currently serving as the Vice President of the Asia Region of the Royal Institution of Naval Architects (RINA) headquartered in London. He is also serving as the Chairman of the Hydrodynamics Panel of the Naval Research Board, Ministry of Defence, Govt. of India and Member of the Research Advisory Committee (RAC) of the National Institute of Ocean Technology (NIOT), Ministry of Earth Science, Govt. of India. He also served as Dean of the Faculty of Ocean Engineering in Kerala University of Fisheries and Ocean Sciences (KUFOS) during 2015-2017.