

About The Course

Marine CFD is one of the more sought after topics in the computational industry. Traditionally, the marine industry has depended on towing tank and model testing for ship performance evaluation. Nowadays, the rise of CFD has made virtual tank possible and save a lot of money for the ship industry. The study of flow around ships, especially the wake behind the ship or the resistance of a various types of vessels is of great interest to the marine community and CFD researchers equally. In this course, we take a look at the details of CFD modelling with emphasis on the flow around ships. This course will be of use to the marine engineers, CFD enthusiasts and Naval Architects who need a professional experience in this topic.

Who should attend?

The course is intended for Engineers, Operations managers, Fabricators, Applied Scientists, and Technologists interested in ship design.

COST

The registration fee of the workshop will be £795 + VAT (UK ONLY) which includes course notes.

Payment

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

Contact Us

ASRANet
Limited

W www.ASRANet.co.uk/courses

E info@asranet.co.uk

General enquiries: +44 (0)7764575990

Payment enquiries: +44 (0) 7712731566

CFD for ships & Marine Technology ONLINE

13-14 May 2024



(A Maritime Company for Courses, Conferences,
and Research)

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

Tuesday 13 May 2024

09:00 – 10:30 **Lecture 1:** Introduction to CFD
. The basic momentum equations
. Discretization and meshing.

Professor Hari Warrior

10:30 – 11:00 *Break*

11:00 – 12:30 **Lecture 2:** : Turbulence basics (1)
. Inertial subrange,
. Energy cascade
. Eddy viscosity concepts.

Professor Hari Warrior

12:30 – 13:00 *Lunch*

13:00 – 14:30 **Lecture 3:** Turbulence basics (2)
. Reynolds decomposition,
. RANS equation

Professor Hari Warrior

14:30 – 15:00 *Break*

15:00 – 16.30 **Lecture 4:** Turbulence Modelling
. Mixing length Model
. k- ϵ Model,
. LES, DNS

Professor Hari Warrior

Wednesday 14th May 2024

09:00 – 10:30 **Lecture 5:** Finite Volume Method (1)
. Simple diffusion,
. convection- diffusion problems

Professor Hari Warrior

10:30 – 11:00 *Break*

11:00 – 12:30 **Lecture 6:** Finite Volume method (2)
. Grid generation,
. central differencing,
. upwind schemes

Professor Hari Warrior

12:30 – 13:00 *Lunch*

13:00-14:30 **Lecture 7 Introduction to Naval
Architecture**
. Hydrostatic parameters,
. Archimedes principle,
. GM, GZ curve.

Professor Hari Warrior

14:30- 15:00 *Break*

15:00 – 16:30 **Lecture 8:** Hydrodynamics – A review
Professor Hari Warrior



Professor Hari Warrior

Dr. Hari Warrior is currently a full professor in the department of Ocean Engineering and Naval Architecture at IIT Kharagpur. Previously, he was the Head of the department from 2019-2022. Professor Warrior did his BTech in Naval Architecture from IIT Madras after clearing the prestigious JEE and then went on to do an MS and PhD at University of South Florida, USA.

After his studies he joined as an Assistant Professor at IIT Kharagpur. He was promoted to Associate Professor and then to full Professor. Professor Warrior's expertise is in Computational Fluid Dynamics and associated turbulence modelling. He has more than 30 international publications in the same on this topic. He was selected for a best paper award by the American Society of Civil Engineering in 2012. He has been active in the field for the last 20 years. He has over 40 publications in CFD, turbulence modelling, Naval Architecture and Oceanography. He has done more than 25 projects from both government organizations and private sectors. Most of his projects have been on CFD applications to Ocean Engineering and Numerical Ship Hydrodynamics. He currently serves on the panel of Marine Hydrodynamics for the Indian Naval Research Board, DRDO. He also serves as an advisor to NPOL, DRDO.