Background
The course Naval Architecture for Non-naval Architects teaches participants the basics of Naval Architecture. Participants will be taught by Mr A.J. Bos MSc. MBA Eur. Ing., a respected authority in the field of offshore transport engineering and shipbuilding. Mr Bos is director of HMC and vice-president of the DNV working group Heavy transport and lift. Besides facilitating several courses, Mr Bos also provides guest lectures at maritime colleges and universities. Rather than textbooks, firsthand practical experience and references of Mr Bos will support the participants to understand the basics of Naval architecture. His presentations are supported with course book(s) developed by HMC.

Main topics
Naval Architecture for Non-naval Architects is all about learning and understanding the basic techniques and knowledge of naval architecture. The course enables you to be successful within the maritime industry.

The main topics include:
- Ship and shiptypes
- Hullform of a ship
- Shipdesign
- Stability
- Ship resistance and propulsion
- Ship constructions
- Ship motions & vibrations
- The yard process
- General knowledge in naval architecture

Case studies & Practical sessions
- Video demonstrations
- Photograph demonstrations
- Simulated visual demonstrations of state of the art transport engineering systems.

Principal Course Facilitator
Mr A.J. (Ton) Bos
MSc. MBA. Eur. Ing.
Director HMC BV, Netherlands

◊ Master of Science in Naval Architecture and Marine Engineering
◊ Master in Business Administration
◊ Eur. Ing. FEANI Engineering quality title
◊ More than 30 years of industrial experience
◊ Lecturer at Delft University of Technology
◊ Worldwide project experience

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ISO 9001
BUREAU VERITAS Certification
**Why you should attend**

- The course allows the participant to be introduced to the world of naval architecture.
- The course enables professionals to gain understanding how naval architecture impacts their work in the maritime industry.
- The participant aspires to work in the maritime industry.

**Who should attend**

This course is suitable for a wide audience. Especially those who need or want to gain more knowledge of the shipbuilding process, but do not have to be a fulltime shipbuilder. E.g.:

- Staff working in maritime companies who want or need basic knowledge of naval architecture.
- All who would like (needs) to master the basic knowledge of naval architecture.
- Field Managers
- Marine Operations Managers
- Marine Superintendents
- Marine Supervisors
- Marine Representative
- Offshore Installation Managers

**Course overview**

The main topics of this two-day course include:

**Ship and shiptypes**
- Functions of a ship
- Basic definitions
- Ship types
- General cargo ship
- Multi-purpose ship
- Bulk-carrier
- Containership
- Ro/Ro ship
- Reefer
- Passenger ship: ferry / cruise ship

**Hullform of a ship**
- Chine and bilge radius
- Ratios and form coefficients
- The lines plan

**Stability**
- Static stability
- Shape- and weight stability
- The GM- value
- Stability judgment
- Longitudinal stability
- Stability tests
- Flooding
- Dynamic stability

**The yard process**
- Building the ship
- Launching the ship
- The yard

**Ship resistance and propulsion**
- Resistance components
- Wave pattern
- Planning
- Model tests
- Modeltheory of Reynolds and Froude
- The tests
- Propulsions
- Cavitation
- Propeller wash water

**Ship constructions**
- Loads on the ship constructions
- Construction examples

**Shipdesign**
- Design methods
- The design spiral
- Requirements to the ship design
- Determining main dimensions and coefficients
- Principal drawings
- Computer programs in the ship design

**Ship motions & vibrations**
- Ship motions
- Steering and maneuvering
- Vibrations
- Noise

**General**
- Tonnage
- Machine installations
- Hull markings
Mr Bos is a highly committed marine consultant, with over 30 years of experience. He attained the titles Master of Science in Naval Architecture and Marine Engineering, Master of Business Administration and European Engineer. The title of European Engineer is an award for high level of knowledge and practical experience.

In 1978 Mr Bos started as an apprentice at the Wijsmuller Group of companies which is a company renown for salvage and towing. In 1982, he graduated as naval architect and marine engineer from the Delft University of Technology in the Netherlands.

Since 1978 Mr Bos is involved in towing, salvage and heavy transport operations. In 1986, Mr Bos established Hydrographic and Marine Consultants (HMC) as an independent engineering company in the field of offshore transport, towing, salvage and anchor handling. HMC’s main services are geared towards improving the safety, quality and efficiency of maritime operations, improving economics of operations and supporting policy decisions.

He has a vast experience as warranty surveyor and has a proven track record as independent marine warranty surveyor:

- Engineering and warranty surveys for ocean towage of floating equipment and ‘dry transport’ of offshore and industrial plant equipment
- Pre- and post towage inspections
- Condition and suitable surveys
- On- and Off hire surveys
- Issuing of certificates of approval pertaining to the surveys and inspections

Dedicated to sharing his knowledge and experience, amongst others, Mr Bos lectures at the Delft University of Technology, teaches several maritime courses at a Nautical college. Furthermore, Mr Bos is vice-president of the DNV working group Heavy transport and lift and president of the subcommittee Designers.

Besides Ocean transportation and design, Mr Bos’s expertise lies in other marine projects and operations such as:

- Salvage
- Anchor handling
- Towage, positioning and installation of FPSO’s and GBS’s
- Semi-submersibles
- Jack-up rigs
- Modules
- Float over
- Inclination tests
- Ship recycling
- Model tests-tank tests TU Delft
- Spar
- Topsides jackets
- Launching-Chemical tankers
- Barges

Publications:

- “Minimize fuel consumption using trim the ships loading computer and alarm monitoring system”, Mr A.J. Bos M.Sc. MBA Eur.Ing, Mr R. Michel, Mr Dr. Ir R. Rosing, Hydrographic and Marine Consultants BV (HMC), Almere, the Netherlands, Paper presented during RINA conference, London, United Kingdom, June 2014
- Marine Services Tool based on satellite observations, Project executed within the framework of the NIVR, Netherlands Agency for Aerospace Programmes, RP_A262, NIVR 52302AR, A267, A.J. Bos M.Sc. MBA Eur. Ing, e.a., 11 August 2004.
- And many more…

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All courses, which are provided by HMC, are the result of over 30 years of practical experience. Below you can find a subset of the companies for which HMC has performed engineering services, within the last decade.

Customers:

- Chevron (USA)
- DEME (Belgium)
- DNV (Norway)
- Fairmount Marine (The Netherlands)
- Fairstar Heavy Transport (The Netherlands)
- Heerema (The Netherlands)
- JF Moore Group (USA)
- Nepa (The Netherlands)
- Royal Shell (The Netherlands, United Kingdom)
- STX PanOcean (Republic Korea)
- Technip (France)
- Total (France)
- TPI Megaline (Republic Korea)

(Above list is only a subset of the complete list of customers)

Projects:

- Chevron / Rockwater (USA): Provision of marine co-ordinator and tow master for the Chevron Alba oil field development, comprising a CDTM pipeline bundle launch, tow and installation and towage of the Alba FSU from NW-Spain to the Alba field plus subsequent FSU hook-up.
- DEME (Belgium): Strength and stability calculation for J.U. Rig Halswijn
- DNV (Norway): Member of hearing committee for new rules and regulations in the field of heavy transport and lift. / Member of the working group of heavy transport and lift.
- Fairmount Marine (The Netherlands): Preparing of the Cribbingplan, docking manual for the dry docking of the Peregrine 1 on Gavea Lifter. Conducting the loading operation.
- Fairstar Heavy Transport: Transport engineering Dry-tow from Kakinada to Sharjah for Perro Negro 3. / Transport engineering including fatigue analyses of the transportation of the Halfdan B jacket, piles and pipe crossing bridge. Conducting the load out. / Transport engineering for the transportation of the Perro Negro 8 from Visakhapatnam to Sharjah, including conducting the loading operation. / Installation of the MQK and FAMON for fatigue analyses during the transport of Halfdan B Jacket from Shenzhen, China to Halfdan, offshore Denmark. / Transport of Jacket and Topside modules for the Halfdan B field Works included ballast plan for 2 skidding operations onto Fjord and Fjell respectively. Transport engineering, finite element calculations, and fatigue analyses. Whole physical operation was conducted by HMC. / Dredge equipment from Jeddah to Sharjah. Whole physical operation was conducted by HMC. / Transport engineering for the transport of the Perro Negro 3 from Visakhapatnam to Jeddah. Whole physical operation was conducted by HMC. / Ballast plan and loading manual for the transportation of 2 modules for the Tombua Landana field / SafeTrans transport simulations of the transportation topside on heavy transport vessels Fjord and Fjell from Singapore to Halfdan field offshore Denmark
- JF Moore Group: Strength and fatigue analyses of the Rig 256, a mat supported rig that is to be converted in a Mobile Production Unit, works include FE modelling in FEMAP with Nastran solver.
- Nepa (The Netherlands): Transport engineering for the transportation of 2 inland vessels on a container ship.
- Royal Shell (The Netherlands): Installation of wind turbine parks, SafeTrans participation, Towages.
- STX PanOcean: Deflection calculations for Ichthys / Stability calculations for Ichthys / Motion analysis for Ichthys / Transport analysis for Ichthys / Deflection calculations for Panama lock gate transport / Stability calculations for Panama lock gate transport / Motion analysis for Panama lock gate transport / Transport analysis for Panama lock gate transport
- Technip (France): Determination of the design parameters of barges for the transportation and float over topsides in the categories weighing upto 10000 ton, between 10000 and 15000 ton, between 15000 and 20000 ton and weighing over 20000 ton
- Total (France): Float-overs and towages of FPSO’s (Dalia, Akpo)
- TPI Megaline (South Korea): SafeTrans analyses Mega Caravan / SafeTrans analyses Mega Trust and hydrodynamic model / Transport analyses for Gorgon Voyages by vessels Mega Caravan and Mega Trust / Model tests for Mega Trust for Gorgon

(Above list is only a subset of the complete list of projects)