

# Warsash Maritime Academy

## Ship Handling Centre - Timsbury Lake

Warsash Maritime Academy - a faculty of Southampton Solent University - has provided training, research and consultancy to the maritime industry for over 70 years and has a great deal of knowledge and experience immediately on hand. Following pioneering use of ships bridge simulators, Warsash began using manned models for ship handling training in 1980. A fleet of seven models, some of which can be reconfigured to different vessel types, is currently in use providing a realistic training platform for pilots, masters and ships' officers.

This brochure contains the following information on the models, the ship handling courses and the lecturing staff:

- Brief history of the manned models
- Timsbury lake
- Ship Handling courses
- The Models
- Operational guidance
- Other information

For further and more detailed information on the above and to make bookings please contact the Course Administrator, Jackie Basford, on +44 (0)1489 556163 or email [jackie.basford@solent.ac.uk](mailto:jackie.basford@solent.ac.uk)

Visit our website at [www.warsashacademy.co.uk](http://www.warsashacademy.co.uk) or other detailed information on the Models can be found at [www.mannedmodels.com](http://www.mannedmodels.com)



“Endeavour” and “Progress” - Interaction exercise in the Canal

## Brief History of the Manned Models

The first ship simulator was installed at Warsash Maritime Academy (WMA) in 1977 and the Simulation Centre completed the latest major upgrade in January 2010. Whilst ship simulators are excellent for bridge team and bridge resource management training, they do however still have limitations when being used for ship manoeuvring, particularly in confined waters and for berthing and unberthing.

The use of manned models has long been recognised by mariners as the most effective method of developing the knowledge and understanding of pure ship handling and slow speed control. For this reason, WMA has invested significantly in the new Ship Handling Centre at Timsbury Lake, near Romsey in Hampshire, building on the expertise derived from the operation of the Marchwood Ship Handling Centre site from 1980 to 2010.

A manned model is an accurately scaled model of a real ship or class of ship which closely replicates the handling characteristics of the vessel it is based upon. The model ship will normally operate with a crew of two students who can both practise and experience ship manoeuvring scenarios safely and in a relaxed training atmosphere. Scale models allow the ship handler to make mistakes and then to correct those errors. They allow experimentation in how ships behave and for the inexperienced ship handler to develop their knowledge, skills and confidence perhaps prior to taking command.

The random effects of real life situations are present because it is in real life albeit in a scaled world. The unexpected results of wind gusts, shallow water, bank effect and other local conditions call for a safe reaction to a developing situation and if things go wrong the ship will make contact with a real jetty or actually run aground. Hydrodynamic effects are reproduced in similar fashion to those around the real ship and this is particularly important when examining the interaction between ship and berth, banks and shallows. Likewise the effect of wind on ship handling can be demonstrated. This is a fact of every day life for a pilot or ship master and is an important part of the ship handling courses.

A number of new developments have added to the range of ship handling scenarios conducted on the lake. A second 1/25 scale radio controlled tug with steerable Kort nozzles is now operational bringing the tug fleet to four. The other tugs are a Voith water tractor and an Azimuth stern drive. A 1/25 scale jack up oil rig was launched in 2009 to enable rig moves to be practised on the lake. The model "Challenger" can now be converted to replicate a twin screw supply vessel fitted with twin bow thrusters.

There is no doubt that scaled manned models are considered to be the best way after the real ship to develop ship handling skills and competence. Invariably mariners will say at the end of a week on the lake that "this is the best course I have ever attended".

## Timsbury Lake

The new Manned Model Ship Handling Centre at Timsbury will continue to provide first class training to the international shipping industry using various ship models, berths, basins and channels on the new lake. A variety of port scenarios, canal transits and berthing operations can be simulated for ships' officers and pilots under training. Complex and potentially hazardous manoeuvres can be practised in complete safety in the manned models, making them a key training tool for the shipping industry.



Timsbury Lake looking SE from the classroom location

Bringing 21st century maritime training to Timsbury Lake marks the beginning of a new chapter in Timsbury's history. The 9th century lake has been a source of fish for the monks of Winchester, water to drive a medieval water mill and the haunt of carp anglers.



Looking NE towards the Great Bend of the Timsbury Canal

Safeguarding the ecology of the lake and its woodland surroundings has, and will continue to be, a major element of the University's project so that, as well as providing world leading maritime training, it will also continue to be a haven for

wildlife and a local natural asset. The lake is approximately 10 acres in area with a maximum depth of 2 metres and a bottom of mainly soft mud. There are several islands, areas of shallow water and a tree covered shore line giving areas of shelter from the prevailing winds. Over 19 different jetties, (both fixed and floating), are placed around the lake giving at least 47 berths to permit a wide range of ship handling scenarios to meet different levels of experience and changing weather conditions.



Looking NE from the entrance to Timsbury canal.

Channels are buoyed on the lake to replicate critical bends and turns whilst there are a number of harbour areas and turning basins. Moveable floating pontoons allow the quick construction of other harbours, training walls and jetties to suit customer requirements. A scaled 4 mile long canal has been constructed at the NE end of the lake to allow for ship handling exercises involving interaction between ships, bank and shallow water effect. The canal has a 2 mile straight reach as well as a major curved section. The dimensions of the lake also permit ship to ship lightering, FSU, CBM and SBM exercises to be conducted. The lake provides a safe and controlled environment to practise and develop ship handling skills in a wide variety of vessels and conditions.



Looking NE from the workshop area.

## Ship Handling Courses

A variety of training courses are offered which are then further tailored to suit individual students.

### **Manned Model Ship Handling Course - recognised by the MCA in the UK**

The 4½ day Standard course includes a wide range of practical exercises as well as lectures which account for approximately 25% of the time and is particularly suitable for Masters and Chief Officers on conventional ships and pilots who are starting out in their career.

Formal assessment of competence can be undertaken for companies on request following completion of the standard ship handling course. This will be carried out on the Friday afternoon of the one week course. The assessment will be against set performance criteria and based on observations made on the manned model assessment exercises at that time and on those observations alone. An extra cost will be involved.

### **Car Carrier Course**

Specialised customer requirements can also be accommodated on this course of 4½ days duration. On the course, students will spend two days in a conventional type vessel with the remainder being in a model which has been adapted to closely replicate the characteristics of a large 225 metre single screw car carrier where a bow thrust and Schilling rudder is also fitted.

### **Manned Model Advanced Ship Handling Course**

This is especially suitable for more experienced pilots and mariners who wish to further develop their skills and knowledge and builds on the basics of the standard course and involves more complex and intricate ship handling.

### **Manned Model Twin Screw Course**

This is a 2½ day course which concentrates solely on the manoeuvring of twin screw vessels of different types and can include manoeuvring of vessels with both inboard and outboard turning propellers, independent rudders and with or without bow thrusters.

### **LNG Twin Screw Course**

With the proliferation of large LNG carriers, this course is designed around a model of roughly similar size to that of a Q-Flex ship and is tailored to the individual operators needs. The model can be configured with either inboard or outboard turning propellers and is fitted with additions to reflect the characteristics of a membrane gas carrier.

### **Ship Handling Appreciation Course**

This course is of two days duration and is aimed at senior management who may be in the shipping, legal or insurance industries who may have little ship handling

experience themselves. The aim is to give them an idea of some of the problems that may be encountered when ship handling and therefore a better understanding of the tasks that their staff may be asked to perform.

#### **Pilots Combined Bridge Simulator and Manned Model Course**

Considered to be part of the pilot professional development programme the course consists of three days on the lake with the manned models followed by two days in one of the bridge simulators at Warsash where further exercises can be practised on a more port specific location.

#### **Pilots Emergency Procedures Course**

A specialised two and a half day course for senior mariners and pilots designed to enable the ship handler to respond safely to various emergency and developing situations. These will include, but are not limited to, engine and rudder failures, emergency stopping in confined waters, interaction scenarios, emergency manoeuvring with anchors and escort towage.

#### **Offshore Oil Operations Course**

This new course covers the handling of rig supply vessels with emphasis on twin screw manoeuvring and specialised operations applicable to the supply boat industry. It will also include practical demonstration of techniques for the positioning and towage of Jack Up Rigs.



**Jack Up Rig under tow**

### **Course Hours**

Standard hours for all courses are 0830 hrs to 1715 hrs on day 1 - 4 and 0830 to 1230 hrs on day 5. Actual timings for shorter courses can be discussed at the time of booking and do not necessarily have to start on a Monday.

The courses, by their nature, are generally relaxed, informal and enjoyable as well as instructive. It is hoped that even the most experienced ship handler will find the course useful in improving their knowledge of a highly skilled and necessarily professional task.

### **Course Objectives**

All the manned model ship handling courses offer a number of objectives that will be achieved throughout the duration of the course. These may, depending on the course, include turning manoeuvres, berthing manoeuvres, effects of wind and anchor work in addition to interaction in the canal.

A number of additional objectives are available to allow maximum benefit to be gained in relation to the delegates' specific sphere of operations. These can include bow thruster operations, single/conventional buoy mooring approaches, lightering operations, use of tugs as well as engine or rudder failures.

### **Training and Development on the Manned Models**

The courses delivered on the manned models are based around the 'slow-speed control' of a range of vessels. The emphasis is to develop skills and understanding of the behaviour and handling of ships.

A concentrated period of practical exercises are supported by a series of lectures that focus the course delegates on the objectives of the course whilst also encouraging the use new or improved techniques.

### **Who should attend the courses?**

Manned models have a wide range of training applications that make the courses suitable for a number of differing operational functions within the maritime industry.

Pilots, masters, senior officers, superyacht officers and berthing/mooring masters, amongst others, have all attended the ship handling courses.

The nature of the training, with two-to-one interaction between delegates and lecturing staff mean that courses can be developed to suit specific training requirements, whether as an introduction to ship handling, pre-promotion or to refresh and practise existing skills.

## The Models

The models are scaled from real ships or ship types. Onboard logic systems ensure that engine output, delivery and response times and rudder response times are correctly scaled. Power for the systems is provided by heavy duty batteries, which give up to a week of operations before overnight charging is required.

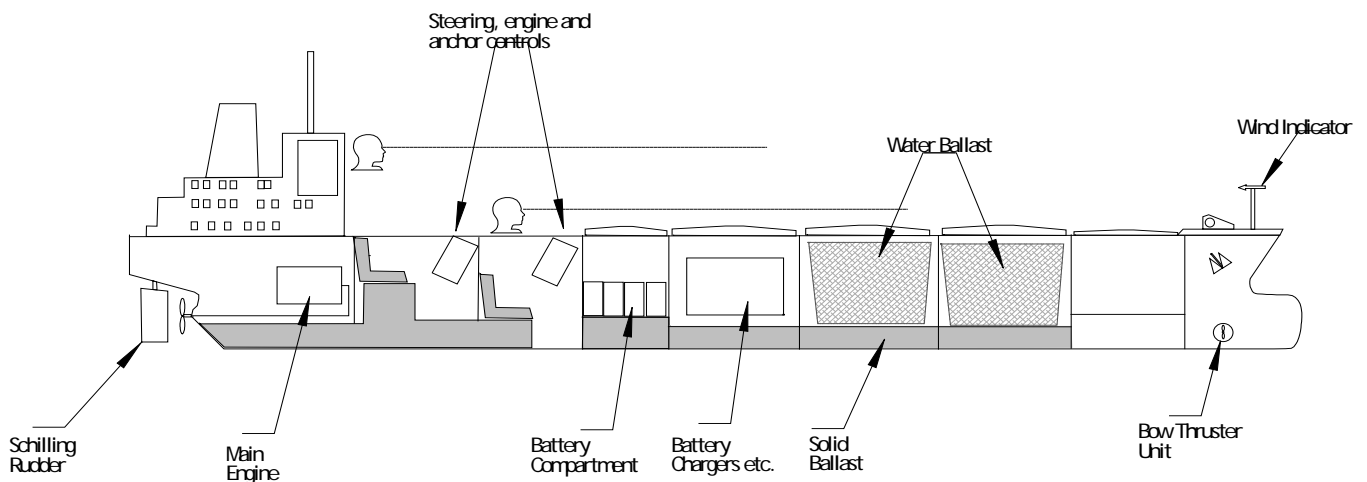
The average dimensions of the models are:

Length	8.5 metres
Beam	1.3 metres
Draught	0.5 metres
Weight	5.0 tonnes

### An example model ship: "Progress" 1:25

Panamax	Loaded
Deadweight	60,000dwt
Length	225 metres
Beam	32 metres
Draft Forward	12.5 metres
Draft Aft	12.5 metres
Main Engine	Motor ship
Propeller	Single 4 bladed right-handed
Single Rudder	Schilling Monovec
Optional Bow Thruster	
Anchors	AC14 high holding power
Cables	12 shackles each anchor

## Progress 1/25 Scale Panamax Vessel



"Progress" 1:25



This model is reconfigurable to a car carrier by adding additional superstructure and repositioning the navigational bridge conning position forward complete with engine and thruster controls.



Car Carrier Superstructure

## Operational Guidance

Manned Models are a form of simulation and, as such, are subject to some limitations and differences compared with a real ship, which have to be taken into account:

### Time

Due to the scaling factor, ship-handling manoeuvres are carried out in a shorter timescale than the real ship (or a real time ship simulator). This permits each participant on the course to conduct a large number of individual berthing and channel manoeuvres within the week, including re-runs when difficulty has been experienced. It also means that an individual has to think very quickly and thus the concentration and observation that is important to the ship handler is emphasised.

### Speed

The scale of the models also means that speed is very low in real terms. An approach speed of 3 knots at one mile from berth is approximately 0.5 knots on the model and, as ships speed reduces, becomes progressively less as the berth is approached. It is therefore quite normal for course participant to experience problems on the first day in adjusting to this extremely low-scale speed. To overcome this problem the models are being progressively fitted with a highly accurate speed readout which is then scaled to show real ships speed.

### Distance

The need to estimate distance is a fundamental factor in establishing correct approach speed, and can be aided by using "ships lengths" as a yardstick. For example in a 1:25 scale model: 4 ships lengths = 5 cables approx.

### Wind

The wind cannot be scaled, but the lake has been laid out to give optimum berth and channel protection from various wind directions. Even in gale conditions, areas of calm can be found behind screens of trees and hedging and useful exercises conducted. The effect of wind on a ship is an integral objective of a ship handling course and is not advantageous to work exclusively in calm conditions. Every effort is made however, to start with basic manoeuvres in calm conditions. As individual participants progress they will be subjected to stronger winds to concentrate on specific objectives in this subject area. Lecturers will endeavour to conduct ship handling operations in the most appropriate scaled wind conditions for a particular objective.

### Briefings/Debriefings

All participants are fully briefed by their lecturer before each exercise commences. Once an exercise is underway the lecturer remains on hand and does not intercede unless absolutely necessary. This is to avoid breaking the concentration required during a ship handling manoeuvre, to let the participant learn from experience and, if necessary, by observing the results of his mistakes. When the exercise is completed a comprehensive debriefing is conducted on the dockside to discuss the results. Such debriefs are considered to be a most important part of the course.

## Other Information

### Lecturing Staff

The lecturers are all either practising pilots, ex pilots or senior mariners typically with command or a wide range of ship handling background and experience. It is essential that the course aim and objectives are achieved. A rapport is built up between lecturer and student which assists the development of confidence as well as knowledge and skill. On courses of this nature such development must occur to the satisfaction of both lecturers and their students, whatever their level of experience.

### Joining Instructions

Once the course fee has been paid, all course delegates will be sent a detailed set of joining information detailing how they go about completing the course successfully in terms of arrival times and venues.

### Accommodation

WMA recommend local hotel accommodation details of which can be provided when booking courses.

### Daily Travelling Arrangements

The hotel makes daily arrangements for a taxi to collect and return delegates to the lake facility.

### Clothing

The courses are primarily outdoors and operate in all weather conditions from March to November. Casual clothing should be worn suitable for boat-work together with warm clothing in the event of cold weather. Waterproofs, boots and additional warm weather clothing are provided on site. For protection from the effects of the sun, a suitable hat, sunglasses and sun cream are recommended.

### Course Award

Upon satisfactory completion of the course, participants will be awarded a 'Manned Model Ship Handling' certificate of attendance.



VLCC "Pioneer"



Handimax "Diligence"