Basic Marine Engine Course (Irish Sailing)

Basic Marine Engine Care

Checklist for **Irish Sailing Training**

Unstarted

Previous Knowledge / Experience

No previous knowledge or mechanical experience are required or assumed.

Duration

Courses covering either Inboard or Outboard engine installations must be run over at least 8 hours.
Courses covering both Inboard and Outboard engine installations must be run over at least 12 hours.

Objective

By the end of the courses you will have gained an understanding of how marine diesel & petrol engines work.
You will also have developed the skills and knowledge necessary to undertake basic;
- fault finding,
- fault rectification,
- routine care and maintenance,
- end of season care and maintenance.

on either inboard or outboard engines and at least one associated propulsion system.

Assessment

Assessment is continuous throughout the course. However, instructors may at their discretion require the use of a formal practical assessment

Types of Engine

Identify here the Type(s) of engine covered during the training course

Type of engine	☐ Diesel ☐ Petrol ☐ Inboard ☐ Outboard

Engine Types, Installations and Propulsion

Identify the principal types of engines, instillation types and propulsion systems (Drives) commonly found in the marine environment.

Types of Engines (can Identify)	☐ Diesel ☐ Petrol 4-Stroke ☐ Petrol 2-Stroke ☐ Advantages and disadvantages of each
Types of Engine Instillation (can identify)	☐ Inboard ☐ Outboard ☐ Characteristics of each ☐ Advantages and disadvantages of each
Types of propulsion systems (can identify)	☐ Shaft Drive ☐ Stern (out) Drive ☐ Jet Drive ☐ Azipod ☐ Characteristics of each ☐ Advantages and disadvantages of each

Safety, Workshop Practice & Tools

Identify the good practices, hazards and tools required to create a safe and effective working environment.

Identify Hazards	☐ Hazardous or flammable fluids / gasses ☐ Moving parts ☐ Electrical systems ☐ Cooling systems ☐ Pressurised systems ☐ Noise
PPE and Safety equipment	☐ Overalls ☐ Footwear ☐ Safety glasses ☐ Gloves ☐ Fire extinguisher ☐ First aid kit
Basic Tool Kit	☐ Assemble a basic tool kit ☐ Describe proper usage of tools
Waste Disposal	☐ Segregation of waste types ☐ Awareness of environmental hazard ☐ Proper disposal of different waste types

Fuel & Air System

Identify the components in the fuel and air intake system of an engine and describe their functions

Fuel System	☐ Fuel Tank ☐ Fuel Lines ☐ Water separator ☐ Fuel Filter ☐ Fuel Pump ☐ Carburettor or Injectors
Air System	☐ Air Intake ☐ Air filter ☐ Turbo Charger ☐ Supercharger
Fault Finding & Care	☐ Fuel Contamination ☐ Air Locks ☐ Change a fuel filter ☐ Bleed a fuel System

Cooling System

Identify Components	☐ Intake ☐ Filter ☐ Pump ☐ Heat exchanger ☐ Thermostat ☐ Coolant ☐ Telltale
Fault Finding & Care	☐ Awareness of overheating ☐ Clean a filter ☐ Change an impeller

Lubrication System

Identify key components, trouble shoot and carry out basic care of the lubrication system

Identify Components	☐ Lubricants ☐ Pumps ☐ Sump ☐ Filters ☐ Oil cooler ☐ Guages ☐ Indicator lights
Undertake Routine Checks	☐ Describe when to change oil & filters ☐ Describe how to change oil & filters. ☐ Identify tools required.

Electrical System

Identify Components	☐ Battery ☐ Cables and terminals ☐ Switches ☐ Fuses ☐ Starter motor ☐ Charging system ☐ Gauges and indicator lights
Undertake Routine Checks	☐ Maintain a battery and connections ☐ Use a battery pack to start an engine ☐ Identify manual start proceedure for an outboard engine ☐ Change an alternator drive belt ☐ Identify hazards associated with batteries and live electrical systems

Drive System and Gearbox

Identify the components in the drive train and describe their functions.

Identify Components	☐ Propeller ☐ Drive shaft / Prop shaft ☐ Gearbox ☐ Gear selector ☐ Trim / Lift / Tilt/ Lock mechanism
Undertake Routine Checks	☐ Inspect propeller ☐ Change a propeller ☐ Describe when and how to change the gearbox oil ☐ Fit an outboard engine ☐ Describe effect depth of propeller has on performance ☐ Describe the effect pitch, diameter, materials and damage have on propeller performance.
Steering	☐ Identify components of a cable system ☐ Identify components of a hydraulic system ☐ Conduct routine checks and maintenance ☐ Fit an outboard engine ☐ Describe effect depth of propeller has on performance ☐ Describe the effect pitch, diameter, materials and damage have on propeller performance.

Pre-Start Checks

Carry Out Pre-Start Checks On The Following	☐ Steering ☐ Throttle / Gear selector ☐ Killcord ☐ Fuel system ☐ Lubrication ☐ Propeller ☐ Engine fitting (outboard) ☐ Cooling once started

Trouble Shooting

Describe what checks and action to take when	☐ Engine won't turn over ☐ Engine turns over but won't start ☐ Engine starts then stops immediately ☐ Engine starts then stops when put in gear ☐ Engine runs rough / lacks power ☐ Propeller fails to turn ☐ Steering fails ☐ Engine is overheating ☐ Tell tale blocked ☐ Propeller cavitates
Carry Out The Following Procedures	☐ Start an engine using emergency pull cord ☐ Jump start an engine ☐ Manually lift hydraulic tilt engine on recovery

Laying Up

Describe the procedures to carry out when laying up an engine for a period of time

Describe How To Lay Up An Engine	☐ Flush and drain cooling system ☐ Draining the fuel system ☐ Impeller care ☐ Removing propeller and greasing shaft ☐ Lubricate and grease points ☐ Check and replace anodes ☐ Battery care