Parts of boat
A hull is the watertight body of a ship or boat. Above the hull is the superstructure and/or deckhouse, where present. The line where the hull meets the water surface is called the waterline.

The structure of the hull varies depending on the vessel type.

In a typical wooden sailboat, the hull is constructed of wooden planking, supported by transverse frames.
Types of hull

- Smooth curve hulls are hulls, like S-bottom hulls are shaped like an s. Boats with this hull have a fixed keel.
- A chined hull consists of straight plates, which are set at an angle to each other.

(A) S-bottom hull compared to a (B) hard and (C) soft chine hull.
Other designs of hull

- Flat
- Hydroplane (tunnel hull example shown)
- Shallow Vee
- Deep Vee
Gunwale

- The **gunwale** is a nautical term describing the top edge of the side of a boat.
- In wooden boats, the gunwale remained, mounted inboard of the sheer strake, regardless of the use of gunnery. In modern boats, it is the top edge of the side where there is usually some form of stiffening.
- On a canoe, the gunwale is typically the widened edge at the top of the side of the boat, where the edge is reinforced with wood, plastic or aluminum.
- On a rowing boat (especially in sports), the gunwale is sometimes referred to as the **saxboard**.
Keel

Keel, in shipbuilding, the main structural member and backbone of a ship or boat, running longitudinally along the centre of the bottom of the hull from stem to stern. It may be made of timber, metal, or other strong, stiff material. Traditionally it constituted the principal member to which the ribs were attached on each side and to which the stem and sternpost were also attached.
**Bow**

The **bow** is a nautical term for the forward part of the hull of a ship or boat, the point that is most forward when the vessel is underway. Both of the adjectives *fore* and *forward* mean towards the bow. The opposite end of the boat is called the stern.

The bow is designed to reduce the resistance of the hull cutting through water and should be tall enough to prevent water from easily washing over the top of it.
Stern

- The opposite to the bow of a boat is called the stern.
- The stern is more often found on wooden boats or ships, but not exclusively.
- Stern is imp. in trawlers.
Deck

- A deck is a permanent covering over a compartment or a hull, which forms the 'roof' for the hull, which both strengthens the hull and serves as the primary working surface.
Mast

- The mast of a sailing vessel is a tall, vertical or near vertical spar, or arrangement of spars, which supports the sails. Large ships have several masts, with the size and configuration depending on the style of ship.
Wheel house

- **Wheel house** is observatory and accommodation for a navigator which is equipped with wireless and GPS.
A **winch** is a mechanical device that is used to pull in (wind up) or let out (wind out) or otherwise adjust the "tension" of a rope or wire rope (also called "cable" or "wire cable"). In its simplest form it consists of a spool and attached hand crank. In larger forms, winches stand at the heart of machines as diverse as tow trucks, steam shovels and elevators. The spool can also be called the winch drum.
Propeller and radar

- **Propeller**: A type of fan that transmits power by converting rotational motion into thrust. A pressure difference is produced between the forward and rear surfaces of the airfoil-shaped blade.

- **Radar**: A vertically hinged plate of metal, fiberglass, or wood mounted at the stern of a ship or boat for directing its course.
Design of Fishing Boat

Fishing boat design defines the detailed engineering aspects of boat building like security, storage, dimensions, materials and efficiency.

It secures hydrodynamics, strength, convenience and durability.

FIGURE 1.2 This FAO-developed 8.7-m boat was specifically designed for village fishery use.
Typical trawler design

- C-Trawler 52

Specifications:
LOA: 52'-0"
LWL: 47'-8"
Beam: 13'-6"
Draft fl: 6'-6"
Disp. fl: 105,000 lbs
Ballast: 10,000 lbs
Speed: 9.5 kts top
  8 kts cruise
Range: 800+ knmi
Material used

- Timber (Wood)
- Plywood or laminated timber
- Steel
- Ferro cement
- Aluminium alloy
- Fiber reinforced plastic (FRP)
Timber

Properties
- (a) lightness
- (b) low water absorption
- (c) rot resistance
- (d) good weathering properties,
- (e) long grains for strength to weight.

Trees in use
- Teak
- Bamboo
- Aini
- Chaplash
- Chaghlam
- Mango
- Gurjan
With the availability of plywood suitable for marine use in sheet form, it is now possible to use this material in the construction of boats. However, the stiffness of the panels limits the hull shapes to those that can be ‘developed’ (without compound curvature).
Steel

Steel is well known as ship building material. For small boat construction it is not so popular due to its higher weight. The main problem with steel boats in Indian conditions is the maintenance required due to corrosion.
FRP

FRP uses fibre, usually glass-fibre, as reinforcement in a thermosetting resin matrix. The most common resins used in boat building are polyester resins. Successive layers of reinforcement are individually impregnated with resin during lay-up in a mould. The resin is allowed to cure forming a strong rigid structural laminate.
Ferrocement consists of several layers of steel wiremesh reinforcement in a matrix consisting of a cement mortar comprising a mixture of sand and cement. The strength of ferrocement is related to the weight and distribution of the steel reinforcement. The material has acceptable strength and stiffness, is waterproof, and the basic materials are inexpensive. It lends itself readily to fabrication without expensive equipment or facilities.
Aluminium alloy

- Aluminium alloy has widespread application at present for sheathing timber hulls to protect them against the attack of certain marine worms (borers). Formerly copper was the preferred material but this is now too expensive.

- As a boat building material, aluminium has some attractive properties. The alloys used in shipbuilding have a higher ratio of strength to weight than shipbuilding steels. They have good resistance to impact, punctures and cracking and satisfactory abrasion resistance. Being more ductile than steel, they are easier to form, but welding is more difficult and requires special equipment and skills.
Fouling agents and borers
Biofouling agents

- Refers to marine organisms that attach themselves to objects immersed in salt water, including the hulls and ancillary gear of yachts and other vessels. AIS, including small fish, barnacles, mussels, sponges, algae, crabs, and sea squirts, can attach themselves to ships, fouling the wetted surface areas (WSA).
Borers
CONTROL MEASURES

- Bio fouling controls on exterior measures, three phases of fouling control.
- Protection of wooden ships using metallic sheathing.
- Replacements of wooden hulls by non copper applications produced galvanic problems.
- Anti Fouling paints
THANK YOU