

Fishing Boat Layout

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Type: Design Problem
Student time: Two weeks
Location: Home

Summary

This creative design problem may be given to first year engineering students after the second week of class. It introduces the student to creative system design where he/she must seek outside sources for other data such as cost. The project involves obtaining the plan layout of a fishing boat and designing customized features into the boat that the student desires. He/she then makes a layout of the customized design, outlines the cost of each added feature and writes a final report.

The student is expected to work alone. This problem may be used as a starting point for further discussion of design, economical tradeoffs and safety.

ABET Descriptors

Engr Sci Content: First Year Engineering
Type: System
Elements: Evaluation
Features: Design methodology, creativity
Constraints: Start with commercially available boat, maximum of three
adults in boat
Effort: Individual

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Summary:

Most people who fish have ideas of what features an ideal fishing boat should have and how the boat should be configured. Boats they find for sale rarely meet their expectations. As a student you now have the opportunity to specify the features in a boat that you have always wanted.

First, you must select, as a starting point, a commercially available “bare-bones” fishing boat that would normally use a 10 hp or less outboard motor.

Second, modify (or customize) the layout of the boat you have selected by adding features that you want. For example, you may want to build in some features. Estimate the material and manufacturing costs for the features you have added.

Submit a final report within two weeks. The report should include a discussion of each modification and why you made it, the advantages and limitations of the layout of your modified boat, the modified layout on a separate sheet of paper and a table that lists the estimated cost of each modification.

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Engineering Notes:

Objectives/Comments

This project encourages the student to think creatively about a product that he/she understands. If the student is not a fisher this presents an opportunity for him/her to make a survey of those who do fish and find out desirable customized features.

Expected Outcomes

Some of the features that the student may want to build in are:

- o Life-saver vest
- o Paddles (or oars)
- o Cooler
- o Tackle box
- o Rod and reel storage

An item that may serve a dual purpose is:

- o Cooler/Seat

Discussion/Follow-on

Additional discussion may involve design methodology, safety, buoyancy and stability. Additional discussion could mention an experiment that involves modeling the shape of the boat and determining its drag in a tow tank.

A follow on problem in the same semester may involve making a critical examination of an outboard motor suitable for the boat. In a subsequent fluid mechanics course a physical model of the boat could be tested in a tow tank to determine its drag so that properly sized outboard motor could be selected.