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Goal: Learn principles in fluid mechanics related to ship propulsion

Language: English (and partial Chinese, if all students are Taiwanese.)

Prerequisite: fluid mechanics, engineering mathematics

Outline:

1. History and introduction to Propellers 推進器種類與歷史
2. Relationship among hull, engine, and propeller 船體、主機與螺槳的關係
3. Geometry of Wings 翼形幾何(HW#1)
4. Propeller Geometry and Manufacture 螺槳幾何與製造(HW#2)
5. Propeller Performance and Series Propeller Design 螺槳性能與系列螺槳設計  
   (HW#3: Design by Chart and/or GA code)
6. Early Theories 早期理論與數學複習
7. Incompressible (potential) flow 勢流理論(HW #4: Ideal flow machine)
8. 2D Lift Theory 二維翼升力理論(HW #5: Flying baseball)
9. Wing Problem 翼形問題
10. Thin foil Theory 薄翼理論
11. Finite Wing Theory 有限翼升力線理論(Mid-term)
12. Engineering Examples 相關工程實例
13. Numerical Methods 數值方法
14. Lifting Surface Theory 升力面理論
15. Propeller Lifting line and Lifting surface Theory 螺槳升力線與升力面理論
16. Theoretical Propeller Design 理論螺槳設計(Design Project)

Textbook: Course Notes

Reference:

   University of Michigan, 1988.

Evaluation:

1. Homework  5*5%=25%
2. Design Project  25%
3. Midterm Exams  30%
4. Final Oral Exam  20%

Design Project: design a propeller using lifting surface codes based on experimental data  
   or simulation studies