2808120 - Advanced Ship Design

Lesson 0 - Course Information

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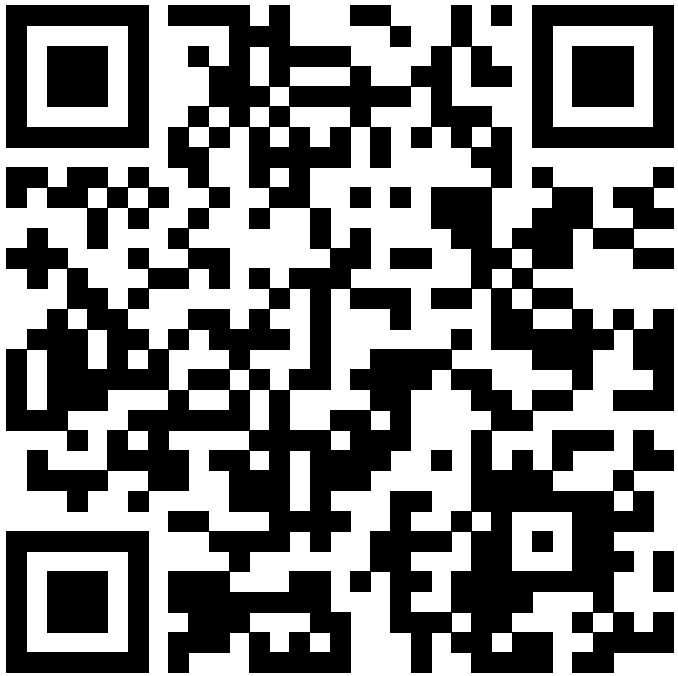
Outline

Classes Miscellanea

1. Total of 45h (39h).
2. 3h per class (2h30min) each Tuesdayin the reserved slot from 17 : 00 h to 20 : 00 h
3. Break around 50% of the lecture.
4. Organise groups of: 6?.

Classes Miscellanea



https://github.com/rpacheco-blazquez/Advanced_Ship_Design_Public

Outline

Syllub

1. Ship Design.
2. Parametric Design.
3. Form Generation.
4. Propulsion.
5. Power.
6. Structure.
7. Stability.
8. Arrangements.
9. Manoeuvre.
10. Management.

Ship Design

1. Introduction to Ship Designing.
2. Ship Designing (Concept, Requirements and Construction).
3. Construction Approach.
4. Technical Office.
5. Mission Requirements.
6. Machine Learning Techniques.

Parametric Design

1. Basic Dimensioning.
2. Regression.
3. Reduced Order Models.
4. Classification.
5. Neural Network.

Form Generation

1. Form Generation.
2. Fluid Mechanics.
3. Optimisation.

1. Drag and Efficiency.
2. Statistical Power Prediction.
3. Element-Blade Theories.
4. Lifting Theories.
5. RANSE based Theories.
6. Propellers.
7. Ducting.
8. Rudders.
9. Optimisation.

Power

1. Power Estimation.
2. Motor Engine.

Structural Design

1. Lightweight ship estimations / Arrangements.
2. Finite Element Analysis/Technology.
3. Modelling.
4. Analysis.
5. Topological Optimisation.

Seakeeping

1. Hydrostatics.
2. Hydrodynamics.
3. Freeboard.
4. Intact Stability.
5. Damage Stability.
6. Passive Stability / Arrangements.
7. Active Stability.

Manoeuvre

1. Bearing.
2. Cruising.
3. Control.

Management

1. Economical.
2. Environmental.
3. Quality.

Outline

Activities

1. Parametric Design.
2. Form Generation/Propulsion/Power.
3. Structure.
4. Seakeeping.
5. Manoeuvre.
6. Management.

- Dates will be fixed a posteriori.
- Deadlines are fixed, however **extra submission** is allowed in exchange of a penalty ponderation on the overall mark of the activity. Generally the penalty is 10%per each extra day after the deadline submission.

Activities

- Generally activities shall be submitted no later than the deadline date at **23:59:59**. Failing to achieve this is equivalent as an extra submission.
- Group activities are undertaken with the very same and initial group.
- Plagiarism shall never occur amongst groups.
- Particular activities can offer extra credit rewards for categories such as : *best*, *creative*, *etc.* submissions. This should be announced in class and in the activity itself. Extra credits cannot not be multiply awarded in the same activity.

Outline

Examination

No exam, there will be a final report and presentation instead. The presentation will consist of 2 to 4 of these different topics

1. Parametric Design
2. Form Generation
3. Propulsion System
4. Power
5. Structure
6. Stability
7. Arrangements
8. Manoeuvre
9. Management

Outline

Rubric

Assessment of the understanding of concepts. Correctness of the results are a plus – the goal of each student should always be excellency – and appreciated, nevertheless the application of concepts explained in class is the primordial focus on the assessment of an activity.

Specially in this subject there is no unique solution as long as the assumptions and procedure is correct.

Outline

Grading

Final grade consists of :

$$G_F = 0.5 G_{CW} + 0.5 G_{FE} \tag{1}$$

where:

- G_F : Final Grade
- G_{CW} : Coursework Grade
- G_{FE} : Final Examination Grade

Submission of the **Final Examination** is mandatory.

Outline

Professor Office Hours

1. Every non-festive Tuesday from 11:00h to 13:00h.
2. By previous appointment in all the cases.
3. In officce E013 (CIMNE NAVAL) - NT3.

Useful remarks for a better communication, e-mail me to:

- rafael.pacheco@upc.edu
- use the following code:
  [280812]*space*<message title>

QUESTIONS?

THE END

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