



# Mooring Systems

## Lesson 0 - Course Information

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- 1 Classes Miscellanea
- 2 Syllub
- 3 Activities
- 4 Examination
- 5 Rubric
- 6 Grading
- 7 Professor Office Hours



# Classes Miscellanea



Classes  
Miscellanea

Syllub

Activities

Examination

Rubric

Grading

Professor  
Office Hours

- 1 Total of 45h (45h).
- 2 3h per class (2h30min) each Thursday in the reserved slot from 18 : 00 h to 21 : 00 h
- 3 Break around 50% of the lecture.
- 4 Organise groups of: ?.



# Outline

- 1 Classes Miscellanea
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- 1 Mooring System Concepts.
- 2 Line Modelling.
- 3 Design.
- 4 Dynamic Position.



# Mooring System Concepts



Classes  
Miscellanea  
**Syllub**  
Activities  
Examination  
Rubric  
Grading  
Professor  
Office Hours

- 1 Introduction to the concept of Mooring (Terminology).
- 2 Applications (Platforms and wind turbines).
- 3 Types (Tendon, Spred, Turret, Monobuoy).
- 4 Elements (Anchorage, Anchorage Line, Connectors).



- 1 Linear Wave Theory (Airy Wave, Potential Flow) (Marine Hydromechanics).
- 2 Catenary Model (Parabolic/Quadratic Approximation, Catenary, Boundary Conditions).
- 3 Finite Element Analysis (Truss, Direct Method, Cable, Iterative Scheme (N-R), Fatigue).

What's the average student level (MATLAB/FEM)?



- 1 Requirements.
- 2 Forces.
- 3 Analysis.
- 4 Regulations.

Useful references [Ore09][Gay14][20118][19995][20116]





- 1 Inertial/Non-Inertial Frame of Reference.
- 2 Rigid Body Movement.
- 3 Path Finding.
- 4 Actuators/Monitoring.

Have you ever used SIMULINK?



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1 Catenary (Individual).

2 FEM (Group).

3 DPS (Group).

- 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.
- 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.



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Two tests:

- 1 Mid-term.
- 2 Final.

Individual open-book examination. Exchange of information is forbidden, anyone found guilty of copying shall be awarded a 0% mark.



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*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.





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Final grade consists of :

$$G_F = 0.2G_{MT} + 0.4G_{CW} + 0.4G_{FE} \quad (1)$$

where:

- $G_F$  : Final Grade
- $G_{MT}$  : Mid-Term Examination Grade
- $G_{CW}$  : Coursework Grade
- $G_{FE}$  : Final Examination Grade

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



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# Professor Office Hours



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

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

- [rafael.pacheco@upc.edu](mailto:rafael.pacheco@upc.edu)
- use the following code:  
`[280823]*space*<message title>`



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# QUESTIONS?



Classes  
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# THE END



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# References



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*ASCE Manuals and Reports on Engineering Practice*, 2014.

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