

Outline and Evaluation

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Instituto Superior de Agronomia
Universidade de Lisboa

▪ Professors



Margarida Tomé
Forest Models Coordinator



Susana Barreiro
Forest Models professor



Joana A. Paulo
Forest Models professor

▪ Outline

- ✓ *(Forest Inventory)*
- ✓ Overview of forest models
- ✓ Data for the development of forest models
- ✓ Tree and stand growth modelling
- ✓ Forest productivity and productivity management
- ✓ Forest Models Typology
- ✓ Growth functions
- ✓ Empirical models:
 - Site quality evaluation
 - Modelling stand basal area growth and evolution of N
 - Modelling diameter and height distribution
 - Modelling inter-tree competition
 - Modelling diameter increment and tree mortality
 - Modelling new plantations and natural regeneration
- ✓ Process-based models:
 - the 3-PG

▪ Study Material

- ✓ There is the course website where you will find:
 - A pdf version of the PowerPoint presented in class
 - Additional support material (if required)
 - The instructions and data for the exercises
 - The solutions for the exercises
 - Recommended bibliography: books chapters (and/or articles if needed)
- ✓ Burkhart and Tomé, 2012. Modelling Forest Trees and Stands, Springer

Study Material

<http://www.forestmodels.eu>

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Forest Models Course

Coordinator: Margarida Tomé

This course on **Forest Models** has three main objectives:

1. To have the students proficient in the understanding of the different methods to develop management oriented forest models, from traditional growth and yield models to simple process-based models, including models based on different units of simulation: whole stand, diameter distribution, gaps and individual trees. At least one example of each one of the model types will be studied in depth, including several exercises with application of the models for decision support in stand level forest management problems.
2. To initiate the students in the development of empirical growth and yield models. The development of some of the components of different models will be explored by the students using the R statistical software.
3. To initiate the students in the calibration of process based models using the calibration of the 3PG model for *Eucalyptus globulus* for Portuguese plantations as an example.

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1 Overview

Powerpoint:

[1 ForestModels-AnOverview](#)

Required reading:

Further reading:

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Study Material

2 Data

Class materials

Powerpoints:

[2_DataForGrowthStudies](#)

Exercises - instructions:

[2_Data for forest models development - Exercises](#)

Exercises - EXCEL data files:

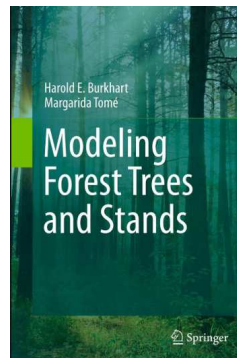
[Ex.1.1-PermanentPlots-Fc-S-data](#)
[Ex.1.2-PermanentPlots-Fc-Nel-data](#)
[Ex.2.1-StandTableProjection-Pb-data](#)
[Ex.3.1-StemAnalysis-Pb-data](#)

Exercises - solutions from selected exercises:

[Ex.1.1-PermanentPlots-Fc-S-solution](#)
[Ex.2.1-StandTableProjection-solution](#)
[Ex.3.1-StemAnalysis-Pb-solution](#)
[Ex.3.1-StemAnalysis_JustHeightGrowth](#)

Required reading

Burkhardt and Tomé (2012), pages 133-137 and 239-242



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 - › [3 Mixed topics](#)
 - › [3.1 Concepts on tree and stand growth](#)

Study Material

**DO NOT print
yet!**

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**We will be
updating it
soon!**

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▪ Evaluation

Class
attendance
< 80 %

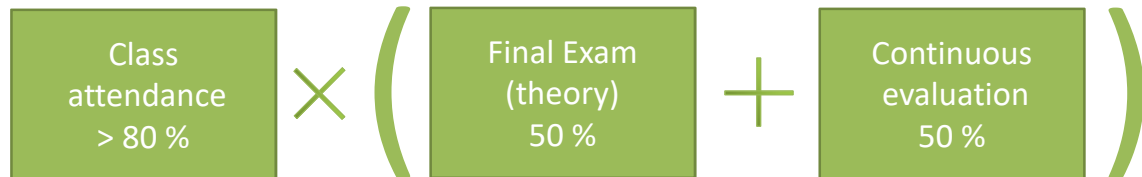
~~Final Exam
(theory)~~

▪ Evaluation

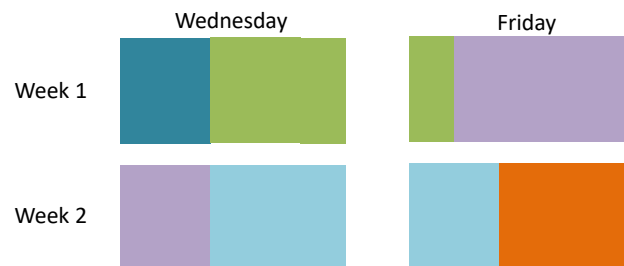
Class
attendance
> 80 %

Final Exam
(theory)

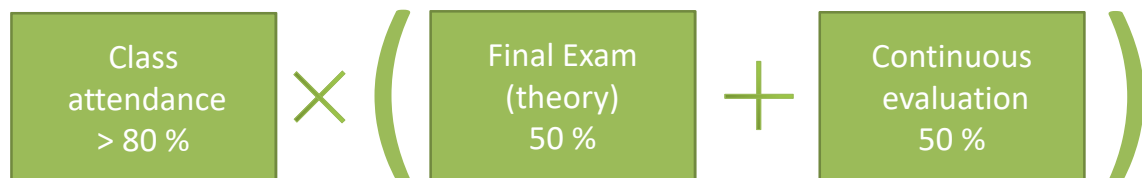
▪ Evaluation



- ✓ In each class students will be asked to **answer question(s)** or **solve an exercise** on the topics of the previous class.

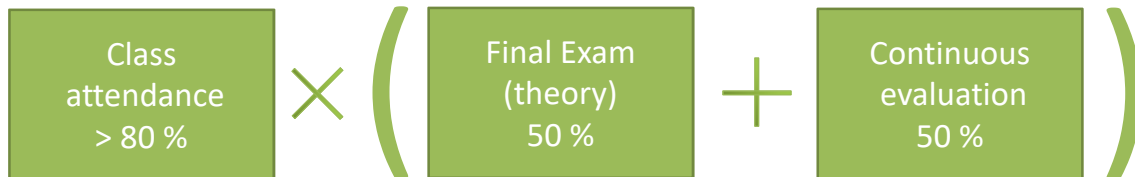


▪ Evaluation



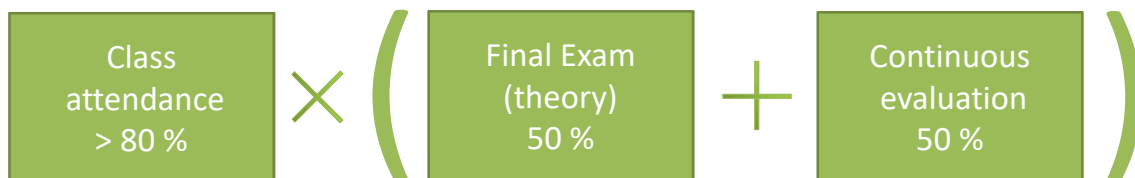
- ✓ In each class students will be asked to **answer question(s)** or **solve an exercise** on the topics of the previous class.
- ✓ The **question(s)** are to be answered by **student A** during 10 minutes, after which these will be randomly assigned to **student B** who will have another 10 minutes to correct/comment the answer(s) provided. Each student will be graded both for the answers and the corrections/comments to their colleagues. A 10 minutes discussion will follow to clear any doubts that might arise.
- ✓ Students will be provided the **instructions and data to solve an exercise** and have 1 hour to complete it. The professor will assist the student and the student will be graded according to its performance in class and the results.

▪ Evaluation



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- ✓ Students are invited to take **additional assignments** of their choice to present their colleagues by the end of the semester. Alternatively, topics will be suggested in each class.

▪ Evaluation





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- ✓ Students are invited to take **additional assignments** of their choice to present their colleagues by the end of the semester. Alternatively, topics will be suggested in each class.
- ✓ All essays/exercises have to be properly identified when submitted to the professor: [id_exercise_id_student.xls/.doc](#)
- ✓ **100 % of attendance will allow the 5 lowest grades to be excluded from the average.**

▪ Any Other Business

	M	T	W	T	F	S	S
Sept	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
Oct	30	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	31	1	2	3
Nov	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	1
Dec	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	31					

 Conference

 Final Exam

 Assignments and presentations

After discussion with the students regarding extra classes and after-class help:

MEFRN students proposed **Wednesday 11:00-13:30**

MEDFOR students will have to check their schedules and propose a day and time by emailing me to:

smb@isa.ulisboa.pt