Biology 326 – DEVELOPMENT AND GENETICS OF MODEL PLANTS

COURSE OUTLINE - FALL 2017 (TWF, 1:30pm, CUN146; lab F, 2:30-5:20)

Course Instructors:	**Dr. Patrick von Aderkas**	**Dr. Jürgen Ehlting**
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Course Description: Plant cell, tissue and organ differentiation, and the evolution of ecotypes explained through molecular and genetic tools developed using model plants such as Arabidopsis. The genetics of anatomy, development, physiology and ecological differentiation of plants. The role of model species in studies integrating cell biology, anatomy, physiology and ecology. Lab sections will emphasize plant mutants in comparison to wild types.

DATE		LECT/*LAB*	TITLE (tentative)
Sept	6-W	1. (JE)	Introduction to the model system Arabidopsis
	8-F	2. (JE)	Background on mutants, genetics, and molecular tools
	8-F	***Lab 1** (JE)*	***Sowing seed for experiment (for Lab 7)***
	12-T	3. (JE)	Embryogenesis I
	13-W	4. (JE)	Embryogenesis II
	15-F	5. (JE)	Embryogenesis III
	15-F	***Lab 2** (LT)*	***Chop and stain***
	19-T	6. (JE)	Embryogenesis IV
	20-W	7. (JE)	Embryogenesis V
	22-F	8. (JE)	Root development I
	22-F	***Lab 3** (JE)*	***PCR validation of embryo-lethal mutants***
	26-T	9. (JE)	Root development II
	27-W	10. (PvA)	Vascular architecture: cell types
	29-F	11. (JE)	*In silico* tools
	29-F	***Lab 4 (JE)***	***Arabidopsis* in silico *tools***
Oct	3-T	12. (JE)	Vascular architecture: genetics
	4-W	13. (PvA)	Branching I
	6-F	***no lecture & no lab: Thanksgiving weekend***	
	10-T	14. (PvA)	Branching II
	11-W	15. (PvA)	Branching III
	13-F	16. (PvA)	Leaves
	13-F	***Lab 5 (JE)***	***Vascular differentiation***
	17-T	**MIDTERM**	50 minutes – essay style - 20%
	18-W	17. (PvA)	Internodes
	20-F	18. (JE)	Transition from vegetative to reproductive phase I
	20-F	***Lab 6 (PvA)***	***Write like an angel; edit like a demon I***
	24-T	19. (JE)	Flowering transition II (day-length response)
	25-W	20. (JE)	Flower development I (SAM to IM to FM transition)

	27-F	21. (JE)	Flower development II: ABC model
	27-F	***Lab 7 (JE)***	***Variation in stress treatment response***
	31-T	22. (PvA)	Cell division and elongation in pattern formation
Nov	1-W	23. (PvA)	Nectaries
	3-F	24. (PvA)	What virtue in a virtual plant?
	3-F	***Lab 8 (JE)***	***Flower development in wild type and ABC mutants***
	7-T	25. (PvA)	From genotype to phenotype
	8-W	26. (PvA)	Plant-insect coevolution: key innovation in the Brassicales
	10-F	***no lecture & no lab***	
	13-15	**READING BREAK**	
	17-F	27. (PvA)	How to make a sublime presentation for the ages
	17-F	***Lab 9 (PvA)***	***Write like an angel; edit like a demon II***
	21-T	28. (PvA)	Evolutionary and ecological genomics
	22-W	29. (PvA)	In a common garden
	24-F	***1:30-5:20***	***Student Presentations:*** **Hardcopy of essay due at 1:30 pm.**
	28-T	30. (PvA)	Proteomics
	29-W	31.	Guest Lecture
Dec	***1-F***	***1:30-5:20***	***Student Presentations.***

Required texts:

M Northey and P von Aderkas 2015 *Making sense in the life sciences.* Oxford University Press, ppbk ($25-30) Amazon has cheaper copies: previous editions are also available.

Recommended text:

A Smith *et al.* 2010 *Plant Biology.* Garland Science, New York NY ppbk US $135 ebook US $88

Requirements:	Midterm exam	20%
	Essay	20%
	Oral presentation	5%
	Laboratory	20%
	Final exam	35%

Grading system: Percentages converted to letter grades

A+ 90-100	A 85-89	A- 80-84	B+ 77-79	B 73-76	B- 70-72
C+ 65-69	C 60-64	D 50-59	F 0-49		

There will be *no supplemental exams*. No electronic devices will be permitted during any exam.

Please note – the midterm cannot be deferred. If you provide a doctor's note, your final mark will be calculated on the basis of the other completed components of the course, and you will not incur any penalty. We assign an incomplete (not a zero) for any missed elements. Failure to complete too many important parts of the course (missed lab assignments, missed midterm) will result in being banned from the final. Students must abide by academic regulations as set out in the university calendar. They must observe standards of scholarly integrity with regards to plagiarism and cheating. Please refer to UVic Academic Calendar.