



## Course Syllabus: Advanced Plant Growth & Development - PS 301

<b>Division</b>	Biological and Environmental Sciences & Engineering Division
<b>Course Number</b>	PS 301
<b>Course Title</b>	Advanced Plant Growth & Development
<b>Academic Semester</b>	Spring
<b>Academic Year</b>	2016/2017
<b>Semester Start Date</b>	01/22/2017
<b>Semester End Date</b>	05/18/2017
<b>Class Schedule</b> (Days & Time)	02:30 PM - 04:00 PM   Mon Thu

### Instructor(s)

Name	Email	Phone	Office Location	Office Hours
Heribert Hirt	heribert.hirt@kaust.edu.sa	+966128082959		Wed 9-12

### Teaching Assistant(s)

Name	Email
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### Course Information

<b>Comprehensive Course Description</b>	Advanced concepts of general growth and development concepts will be developed, treating how specific plant organs develop as the plant grows from an embryo to a flowering plant. How does the cell cycle and growth control contribute to plant development and how is cell cycle and growth controlled, how are cell walls and metabolism integrated into development. How do stresses impact on growth and development and what kind of molecular mechanisms underly these processes.
<b>Course Description from Program Guide</b>	The course will include latest methods to analyse genes involved in and regulating plant growth and development, in particular, latest developments in the control of cell cycle and cell expansion at the cellular, tissue, and organismic level. Furthermore, the role of hormones and environmental factors on the development of roots, leaves and flowers will be discussed in a seminar style.
<b>Goals and Objectives</b>	Students will be able to describe current concepts in advanced plant growth and development and explain the genetics and molecular basis underlying plant growth, reproduction, development, nutrition, cell signaling, abiotic stress adaptation. Students will be able to develop critical thinking, analysis and evaluation skills in applying knowledge in the class to solve research questions. Students will be able to develop skills and expertise in searching literature as well as reading, writing and evaluating research publications.
<b>Required Knowledge</b>	PS201 Plant Growth and Development
<b>Reference Texts</b>	Textbook: Biochemistry and Molecular Biology of Plants, B.Buchanan, W. Gruissem and R.L. Jones Wiley ISBN 9780470714218 Chapters dealt with: 1 structure and membrane organelles, 2 The cell wall, 5 The cytoskeleton, 11 Cell Division, 18 Signal Transduction, 121 response to Pathogens, 22 Responses to Abiotic Stress.
<b>Method of evaluation</b>	<b>50.00%</b> - Oral presentation <b>20.00%</b> - Attendance <b>30.00%</b> - Active participation

<b>Nature of the assignments</b>	A. Class Presentations B. Weekly Reviews, and Discussions
<b>Course Policies</b>	Absences will be taken into account into final grading (see above). Active participation in discussions and questions will be important.
<b>Additional Information</b>	

### Tentative Course Schedule

*(Time, topic/emphasis & resources)*

Week	Lectures	Topic
1	Mon 01/23/2017 Thu 01/26/2017	Cell structure
2	Mon 01/30/2017 Thu 02/02/2017	The cell wall and prtein sorting
3	Mon 02/06/2017 Thu 02/09/2017	Vesicle traffic, secretion and endocytosis
4	Mon 02/13/2017 Thu 02/16/2017	Plant nucleic acids and organelles
5	Mon 02/20/2017 Thu 02/23/2017	plant genome structure and organisation
6	Mon 02/27/2017 Thu 03/02/2017	long distance transport
7	Mon 03/06/2017 Thu 03/09/2017	hormones
8	Mon 03/13/2017 Thu 03/16/2017	siganling processes
9	Mon 03/20/2017 Thu 03/23/2017	cell death
10	Mon 03/27/2017 Thu 03/30/2017	plant pathogens
11	Mon 04/03/2017 Thu 04/06/2017	plant beneficial microbes
12	Mon 04/10/2017 Thu 04/13/2017	PAMP triggered immunity
13	Mon 04/17/2017 Thu 04/20/2017	effectros and effector-triggered immunity
14	Mon 04/24/2017 Thu 04/27/2017	water and dehydration
15	Mon 05/01/2017 Thu 05/04/2017	temperature
16	Mon 05/08/2017 Thu 05/11/2017	oxidateive stress
17	Mon 05/15/2017 Thu 05/18/2017	minerals
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#### Note

The instructor reserves the right to make changes to this syllabus as necessary.