

**SEMESTER I**  
**LSM4251 PLANT GROWTH AND DEVELOPMENT**

**Prerequisite:** LSM3233 or LSM3258

Students with other background may contact Module Coordinator Prof Yu Hao.

**Workload: 34 hr lectures and 16 hrs term paper and presentation**

**Course description:**

This module aims to provide an overall view on growth and development of higher vascular plants through their life cycles. Discussion in this module includes selected topics in gamete development, fertilization, embryo development, seed germination, development of various plant organs and flowering, the role of plant growth regulators, and the cellular, physiological and molecular basis of plant morphogenesis. The molecular genetic mechanisms of various stages of plant development will be discussed.

S/N	Topics	Lecture hours
1	<b>Introduction</b>	2 Yu H
2	<b>Flowering time control and flower development</b> <i>-Physiological and genetic control of flowering</i> <i>-Floral meristem specification</i> <i>-Flower development</i>	8 Yu H
3	<b>Fruit development and ripening</b> <i>-Biochemistry, physiology and molecular biology of fruit growth and ripening</i> <i>-Role of ethylene in fruit development</i>	4 Yu H
4	<b>Microsporogenesis, megasporogenesis and gametogenesis</b> <i>-Anther differentiation</i> <i>-Pollen development and maturation</i> <i>-Male gametogenesis</i> <i>-Pollen germination and growth of the pollen tube</i> <i>-Ovule determination and development</i> <i>-Megasporogenesis</i>	2 Xu J
5	<b>Root development</b> <i>-Origin and development of the root in the embryo</i> <i>-Postembryonic root structure and physiological function (primary root and lateral roots)</i> <i>-Genetic control of root development (transcription factors)</i> <i>-Root systems biology (gene regulatory network; root map)</i>	4 Xu J
6	<b>Hormonal control of root development</b> <i>-Plant hormones</i> <i>-Auxin control of root development</i> <i>-Control of root development by other hormones</i>	2 Xu J
7	<b>Epigenetic regulation of plant development</b> <i>-Histone (de)acetylation</i> <i>-Long non-coding RNAs</i>	2 Xu J
8	<b>Embryo Development</b> <i>- Mutants in zygotic embryogenesis</i>	4 Kumar P
9	<b>Growth and differentiation of the shoot</b> <i>-Vegetative shoot apices</i> <i>-Tissue differentiation in the shoot</i> <i>-Leaf growth and development</i> <i>-Development of specialized cells and organs</i>	6 Kumar P
<b>Total Lectures: 34 hr</b>		
<b>Assignments and presentations: 16 hr</b>		
<b>Total hours:</b>		50 hr

**TEXT BOOK:**

Selected scientific papers

**MODE OF ASSESSMENT:**

Final examination: 50%; CA (term paper and presentation): 50%

**MODULE CO-ORDINATOR:**

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**LECTURERS:**

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