Module title: Plant physiology III (Growth and Development)

Term: First Term 1398-99

Lecturer: A. Einali (assistant prof.)

Assessments: 40% mid-term exam
50% final exam
10% Quiz

References:

1. Plant Physiology, 2002
Lincoln Taiz and Eduardo Zieger

2. Introduction to Plant Physiology, 4th edition, 2008
William G. Hopkins and. Norman P. A. Huner

3. Introductory Plant Physiology, 1983
Glenn Ray Noggle, George John Fritz

Module subjects:

1. Growth and development

1st week: General concepts: growth, differentiation, and development
2nd week: Control of development, gene structure and expression
3rd week: Signal perception and transduction, G-proteins, second messengers
4th week: Kinetic analysis of growth in unicellular and multicultural organisms
5th week: Senescence and programmed cell death

2. Hormones

6th week: The hormone concept in plants, the emergence of the auxin concept, the principal auxin in higher plants
7th week: Auxin metabolism, Auxin transport, *mid-term exam*
8th week: Physiological effects of auxin: Cell elongation
9th week: Physiological effects of auxin: Phototropism and gravitropism
10th week: Developmental effects of auxin: Apical dominance, formation of lateral and adventitious roots, leaf abscission, vascular differentiation
11th week: Gibberellins, gibberellins structure and biosynthesis, deactivation of gibberellins
12th week: Physiological effects of gibberellins, physiological mechanisms of gibberellins action
13th week: Cytokinins structure, biosynthesis and metabolism, Physiological effects of Cytokinins
14th week: Abscisic Acid, Ethylene, and Brassinosteroids

3. Reproductive development

15th week: Photomorphogenesis, Control of flowering
16th week: Seed development, *Preparation for final exam*