

## Biology 341/4

Winter 2007

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Room SP-401-07

### PHYSIOLOGY OF PLANT GROWTH AND DEVELOPMENT

#### COURSE OUTLINE

The purpose of this course is to introduce the students to the fundamentals of the physiology/biochemistry of plant growth and development.

Particular attention will be placed on plant growth regulators (phytohormones) and their physiological and biochemical affects on plant growth. The role of light on plant development, seed germination and flowering will be studied. Plant responses to temperature and related phenomenon will also be discussed. Generally, it is not possible to cover every topic in detail in the lectures and the student is expected, and is encouraged, to use the library facilities to review and supplement some of the material that may not be covered in depth in the classroom.

#### SECTION I: INTRODUCTION

Chapter 14                      What is growth? Patterns in plant development. Internal and external factors affecting plant growth. Kinetics of growth.

#### SECTION II - ROLE OF PHYTOHORMONES/BIOTECHNOLOGY

Chapter 15-16                Phytohormonal concepts, structure & biosynthesis of various phytohormones. Synthetic compounds which show phytohormonal activity.

Chapter 23                      Plant biotechnology, micropropagation, genetic engineering

#### SECTION III: LIGHT AND PLANT GROWTH

Chapter 17                      Introduction, phytomorphogenesis, role of phytochromes, blue-light responses. Seed germination

Chapter 18-19                Plant movements - phototropism and geotropism

#### SECTION IV: PLANT RESPONSES TO TEMPERATURE

Chapter 20                      Role of temperature in growth & development. Vernalisation, effect of temperature gradients. Seed

germination, dormancy

### TEXTBOOK(S)

Introduction to Plant Physiology, L.G. Hopkins, John Wiley, 3<sup>rd</sup> edition, 2004

### RECOMMENDED READING

#### A. TEXTBOOKS

1. Plant Physiology, L. Taiz and E. Zeiger, Benjamin/Cummings, 3<sup>rd</sup> edition, 2002
2. Light and Plant Growth, J.W. Hart, Unwin Hyman, 1988
3. Plant Physiology, F.B. Salisbury and C.W. Ross, Wadsworth, 1991, 4<sup>th</sup> edition
4. Introductory Plant Physiology, G.R. Noggle and G.J. Fritz, Prentice Hall, 1983, 2<sup>nd</sup> edition.
5. Introduction to Plant Biochemistry, T.W. Goodwin and E.I. Mercer, Pergamon. 1983 2<sup>nd</sup> edition, QK.861 G.66.

#### B. JOURNALS AND PERIODICALS

1. Annual Review of Plant Physiology. QK 710.A48
2. Plant Physiology - A Treatise, F.C. Steward (ed.) Academic Press. QK 711.57
3. J. Experimental Botany. QK1 J45
4. Plant Physiology. QK1 P7
5. Physiological Planetarium. QK1 P48
6. Phytochemistry

### **MARK DISTRIBUTION**

### **TO BE DISCUSSED**