

ISTANBUL UNIVERSITY FACULTY OF SCIENCE

2008-2009 ERASMUS Biology Courses in English

NAME of the COURSE: Animal Physiology

ECTS Credits: ECTS 7

Semester: Fall

Contact: Prof.Dr. Sehnaz Bolkent and Prof.Dr. Cihan Demirci (Biology Department-Zoology Division)

Aims and Objectives: This course presents an up to date and an overview of animal physiology with a thoroughly comparative approach. The basic principles and mechanisms of animal physiology form the central theme of this course. It includes the mechanisms that operate in living organisms at all levels, ranging from molecules to the whole organism.

Course Contents: Animal physiology focuses on the functions of tissues, organs, and organ systems in multicellular animals.

- Cell Motility
- Muscles and Animal Movement
- Reproduction
- Nutrition and Digestion
- Respiration
- Circulation
- Osmoregulation and Excretion
- Nervous Systems
- Sensory Physiology

Text Book/ Recommended Reading:

Handouts are supplied by the Faculty.

Animal Physiology, Knut Schmidt-Nielsen, 1997.

Comparative Animal Physiology, Philip C. Withers, 1992.

Animal Physiology, David Randall, Warren Burggren, Kathleen French, 2002

Assessment Methods :

Midterm (40%), final examination (50%), performance appraisal (10%)

NAME of the COURSE: Radiobiology

ECTS Credits: ECTS 7

Semester: Spring

Contact: Prof. Dr. Tuncay Orta (Biology Department - General Biology Division)

Aims and Objectives:

Providing biology students with the basic knowledge of the effects of radiation in biological material.

Course Contents:

- Absorption of radiation in biological material
- Cell survival curves
- DNA damage
- Linear energy transfer
- Relative biological effectiveness
- Radiosensitivity of the cell cycle
- Radiation damage, repair and dose-rate effect
- Genetic control of the cellular response to ionizing radiation
- The oxygen effect
- Radiosensitizers
- Radioprotectors
- Radiosensitivity of tissues and organs
- Acute effects in whole-body irradiation
- Late effects of radiation: Genetic changes and carcinogenic effect
- Life-shortening effects of radiation
- Effects of radiation on embryo and fetus

Assessment Methods :

Midterm (40%), final examination (50%), performance appraisal (10%)

NAME of the COURSE: General Ecology

ECTS Credits: ECTS 4

Semester: Fall

Contact: Assoc. Prof. Dr. Gulriz Baycu (Biology Department-Botany Division)

Aims and Objectives:

The course aims to give knowledge about basic ecology and environmental science concept covering the interaction of organisms with their living and nonliving environment.

Course Contents:

General ecological concepts and relationships

Energy and biogeochemical cycles

Abiotic and biotic environmental factors

Terrestrial and aquatic ecosystems

Environmental pollution and control

Biological diversity

Importance of environmental protection

Assessment Methods :

Midterm (40%), final examination (50%), performance appraisal (10%)

Brewer, R. (1994) The Science of Ecology. Saunders College Publishing, Orlando.

Schulze E-D., Beck, E., Muller-Hohenstein, K. (2005) Plant Ecology. Springer, Berlin.

NAME of the COURSE: Plant Physiology

ECTS Credits: ECTS 7

Semester: Spring

Contact: Assoc. Prof. Dr. Gulriz Baycu (Biology Department-Botany Division)

Aims and Objectives:

The course aims to give knowledge about the physiology of plant metabolism, plant growth-development and plant movements.

Course Contents:

The Architecture of Plants

Plants and Energy (ATP synthesis, Harvesting Sunlight, Energy Conservation in Photosynthesis, Allocation, Translocation, Cellular Respiration, Nitrogen Assimilation, Carbon Assimilation)

Plants, Water and Minerals (Plant Cells and Water, Plant Water Relations, Inorganic Nutrients, Nutrient Uptake)

Plant Development (Patterns in Plant Development, The Plant Hormones, Photomorphogenesis, Plant Movements, Endogenous Clocks, Temperature)

Stress and Secondary Metabolism (Plant Environmental Stress Physiology, Secondary Plant Metabolites)

Biotechnology

Assessment Methods:

Midterm (40%), final examination (50%), performance appraisal (10%)

Hopkins, W.G. and Huner, N.P.A. (2004) Introduction to Plant Physiology. John Wiley & Sons, Inc., NJ.

Taiz, L., Zeiger, E. (2002) Plant Physiology. Sinauer Associates, Inc., Sunderland.

NAME of the COURSE: Biochemistry

ECTS Credits: Fall-ECTS 8

Semester: Fall

Contact: Asiss. Prof. Dr. Songül Süren Castillo (Biology Department-Zoology Division)

Aims and Objectives:

This course aims to teach the basic characteristics of biomolecules and molecular interactions in the cell.

Course Contents:

Chemical bonds,
Structural properties of biomolecules
Distribution and metabolism of water
Presence of macromolecules in living world,
Nucleotides and derivatives
Presence of macromolecules in living world
Carbohydrates
Polypeptides
Lipids

Assessment Methods :

Midterm (40%), final examination (50%), performance appraisal (10%)

NAME of the COURSE: Microbiology

ECTS Credits: Fall-ECTS 7

Semester: Fall

Contact: Asiss. Prof. Dr. Irfan Türetgen (Biology Department-Fundamental and Industrial Microbiology Division)

Aims and Objectives:

The course aims to understand the structure and the roles microorganisms play in our lives and provides a balanced introduction to all major areas of microbiology for a variety of students.

Course Contents

Scope and history of microbiology

Characteristics of prokaryotic and eukaryotic cells

Sterilization

Microscopy and staining

Growth and culturing of bacteria

Microbial metabolism

The effects of physical and chemical factors on microorganisms

Control of microorganisms

Antimicrobial therapy

Bacterial genetics

Virulence factors of bacteria

Viruses

Protozoa

Fungi

Host-microorganisms interactions

Assessment Methods :

Midterm (40%), final examination (50%), performance appraisal (10%)