



BSc Programme – Forestry

ELA 417 Forest Phytopathology

Compulsory subject – in 3rd /winter/ semester for Bulgarian students

ECTS credits – **4.5** Ability to teach a foreign language – **English**

Syllabus in brief

The major types of tree diseases and deterioration of wood and wood products are studied, with emphasis on principles of plant pathology, disease-causing agents, disease symptoms and pathogen signs, disease cycle, mechanisms of pathogenesis, and disease management.

I. Lectures:

- 1. Introduction to tree disease concepts.** Symptoms of tree diseases. Categorizing types of tree diseases (abiotic, biotic and decline plant diseases).
- 2. Abiotic agents of tree diseases.** Winter damage to trees. Soil conditions affecting tree health. Tree diseases caused by air pollution.
- 3. Biotic agents of tree diseases.** Nematodes as plant parasites. Viruses and bacteria as agents of tree diseases.
- 4. Introduction to fungi.** Saprophytic and parasitic fungi. Characteristics and reproduction of fungi. Disease cycle of pathogenic fungi.
- 5. Fungi as agents of tree diseases:** Foliage diseases.
- 6. Fungi as agents of tree diseases:** Rust diseases.
- 7. Fungi as agents of tree diseases:** Cancer diseases.
- 8. Fungi as agents of tree diseases:** Vascular wilt diseases.
- 8. Fungi as agents of tree diseases:** Wood decay and stain.
- 9. Parasitic flowering plants as agents of tree diseases.**
- 10. Decline disease of complex biotic and abiotic origin:** Oak and pine decline.
- 11. Established and Emerging Phytophthora:** Increasing Threats to Woodland and Forest Ecosystems in Europe.
- 12. Methods of disease control.**

II. Laboratory exercises:

- 1. Preparation and initiating of plant pathology.** Symptoms and signs. Disease sample collection.
- 2. Culture media used in culturing of fungi and preparation of culture media.** Structure and use of the compound microscope.
- 3. Collection and identification of powdery mildew.**
- 4. Isolation of vascular wilt pathogens.**
- 5. Cancer diseases.** Chestnut blight and beech bark disease.
- 6. Wood discoloration and decay.**
- 7. Mistletoe (*Viscum album* L.) impact on the growth of infested silver fir trees (*Abies alba* Mill.): A dendrochronological model.**

III. Practical training:

Training and experimental forest range “Yundola”: Disturbances in coniferous and deciduous forests.

Prepared by:

Assoc. Prof. Dr. Stefan Mirchev

Department of Plant Pathology and Chemistry

Faculty of Ecology and Landscape Architecture

University of Forestry

Sofia, Bulgaria

e-mail: stemir@ltu.bg