Doctoral School: **Biology Doctoral School**
Doctoral Program: Neuroscience and Human Biology

Subject code: **BIO/7/30**
Subject title: **Human ecology: Man and environment L**
Teacher and Neptun code: **Dr. Zsákai Annamária (D5223E)**
Credits: 4
Class hours: 2 hours/week, lecture

Aim of the course
The lecture reviews the interactions between man and his environment (e.g., human adaptation to different environments, diseases, pollution, food production, energy management).
Course contents
1. Introduction to human ecology, general characteristics of ecosystems. Related scientific braches, historical overview, definitions, concepts; ecosystems: biosphere, basic components and types of ecosystems; spatial networks, the ecological territorial division of the Earth; ecological disasters, crisis situations; ecosystem dynamics and stability; ecosystem productivity.
2. Ecological phenomena on the population level, dynamics of human populations. Population characteristics: population density, birth rate, mortality rate, population structure, age, sex ratio, life expectancy, spatial structure.
3. Population genetics. Hardy-Weinberg rule, mutation, selection, evolution, population dynamics, population movement, population regulation.
4. Processes of ecological and cultural adaptation, interactions of man and his environment. The place of man in the ecosystem: human adaptation, modeling of responses; abiotic factors: light, temperature, air, water, soil, human adaptation (to arctic conditions, high altitudes, drought, high humidity tropical conditions); the role of geophysical factors.
5. Biotic factors. Inter-species interactions, intra-species interactions; human biorhythm; biological daily rhythm; annual rhythms; cultural adaptation: harms of civilization, consequences of urbanization.
6. The role of environmental factors in secular growth change. From cultural ecology to ecological anthropology (Steward's ecology, cultural ecological methods, aspects of ecological anthropology, ethnoecological approaches).
7. Human impact on the biosphere. Environmental change through the use of environmental factors; environmental change through the burden on the environment; ecosystem changes: microenvironment transformation, soil transformation, transformation effect on water balance, transformation effect on atmosphere.
8. Active substances of human origin. Pesticides, garbage and waste, radioactive radiation, radiation exposure, electromagnetic effects; biological indicators, environment and nature protection.
9. Conventional methods of food acquisition. Human ecological aspects of human nutrition; plant production, animal biological production, new / alternative food sources, food supplements, biosynthesis.
10. Human nutrition. Calorie requirements, energy turnover, metabolism, essential nutrients, pre- and postnatal development, nutrient requirements for survival, physical activity, social aspects of nutrition: lifestyle, role of social and social factors, differences and consequences in the diets of human populations.
11. Ecology of diseases. Health effects and risks of effects on the environment; population differences in the incidence of infectious and non-infectious diseases; biological (congenital and acquired) responses to infectious and non-infectious diseases.
12. Parasitism. Epidemiology of parasitism; infections; invasions; diseases transmitted by parasites, parasites and parasitism.
13. Poisonings and allergens; immunity. Groups of human diseases (schistosomiasis, filariasis, malaria, amoebiasis, cholera, other diarrheal diseases, TB, leprosy, diphtheria, venereal diseases, measles, smallpox, yellow fever, tropical colds, bronchitis, influenza, respiratory distress diseases, mental disorders, tumors, deficiency diseases); prevention.
14. Human ecological aspects of world energy supply. Problems and perspectives: energy and material circulation in the biosphere; information flow; human energy consumption; energy sources: types, conventional and alternative energy sources, advantages and disadvantages of the sources; nature conservation.
Requirements
written exam

Literature

Bodzsár, É. (1992) Humánökológia (jegyzet). ELTE TTK Embertani Tanszék, Budapest
Dodd, J.R., Stanton, R.J. (1990) Paleoecology. Concepts and applications. John Wiley and Sons, New York.
Freye, H-A. (1985) Humanökologie. Fischer Verlag, Jena.
Pap, M. (1998) Humánökológia és Humánbiológia. Kossuth Egyetem Kiadó, Debrecen
lecture slides available