BELARUSIAN STATE UNIVERSITY
DEPARTMENT OF GEOGRAPHY

Soil Science and Land Resourses

The Program of the University Course for Master Students

Lections	42 academic hours
Laboratory Work	30 academic hours
Controlled Personal Project	12 academic hours

Chapter 1. Factors of Soil Formation 1.1. Parent material 1.2. Climate 1.3. Biota 1.4.Topography 1.5. Time Interactions of Soil Formation Factors Interactions of Soil Formation Factors

Chapter 2.Soil Formation Processes. Soil Horizons & Layers Soil Horizon. Forest humus forms.

Chapter 3. Soil Components. Mineral Components. Composition. Types of primary and secondary minerals. Weathering. Most common elements in soils. Particle and bulk density.Size of soil particles . Soil Texture/ Soil colloids. Types of soil colloids. Specific surface area. Charges on soil colloids. Organic Components. Types of Organic Compounds. Non-humic substances. Humic substances. Soil organisms. Macro-organisms meso-organisms, micro-organisms. Soil animals/

Chapter 4. Soil Water. Soil Water Content. Soil Solution. Soil Water Flow. Qualitative Description of Soil Wetness. Soil water potential. Maximum retentive capacity field capacity. Permanent wilting point. Available water storage capacity. hygroscopic water.

Chapter 5. Soil Air. .Composition of soil air. Movement of gasses within soil . convection Diffusion Soil porosity. Interaction between organic matter & soil air. Organic matter decomposition. Aerobic and Anaerobic Respiration and Fermentation.

Chapter 6. The Interactions Among Soil Components: Adsorption of Ions. Diffuse double layer Cation exchange. Cation Exchange Capacity. Ranges of CEC. Percentage Base Saturation Anion Exchange Capacity .

Chapter 7. Interaction between Water & Air in Soils Pore Space. Types of soil pores. Relationship between water and air in pores Aerobic and Anaerobic Conditions. Aerobic and anaerobic organisms. Effect of water on thermal properties

Chapter 8. Soil Acidity. Common pH ranges in soils. Role of Aluminum in soil acidity. Types of Soil Acidity.

Chapter 9. Chemical composition of soils. Carbon. Potassium. Phosphorus. Sulfur. Nitrogen. Nutrient Cycles.

Chapter 10. System of Soil Classification. Geografie of soils. Land resourses of the wolrd/

Chapter	All academic hours	Lections	Laboratory work	Controlled personal work
Chapter 1. Factors of Soil Formation	8	4	4	
Chapter 2.Soil Formation Processes.	10	4	6	
Chapter 3. Soil Components.	12	4	2	
Chapter 4. Soil Water	16	6	4	6
Chapter 5. Soil Air	4	2	2	
Chapter 6. The Interactions Among Soil Components	10	4	4	2
Chapter 7. Interaction between Water & Air in Soils Pore Space.	6	4	2	
Chapter 8. Soil Acidity.	10	4	2	4
Chapter 9. Chemical composition of soils.	4	4		
Chapter 10. System of Soil Classification. Geografie of soils	10	6	4	
All	84	42	30	12

Information for Reading:

1. Белобров В.П., Замотаев И.В., Овечкин С.В. География почв с основами почвоведения. М., 2004. 352 с.
2. Боул С., Хоул Ф., Мак-Крекен Р. Генезис и классификация почв. М., 1977.
3. Вальков В.Ф., Казеев К.Ш., Колесников С.И. Почвоведение. М.-Ростов-на-Дону. 2004. 496 с.
4. Глазовская М. А. Общее почвоведение и география почв. М., 1981.
5. Добровольский Г.В., Урусевская И.С. География почв. М, 2005.
6. Карпачевский Л.О. Экологическое почвоведение. М, 2005.
7. Орлов Д.С. Химия почв. М, 2005.
8. Почвоведение. / Кауричев И.С. М., 1989.
9. Почвоведение. Ч. 1. Почва и почвообразование./под ред. Ковды В.А., Розанова Б.Г. М 1988.
10. Ahl, C., Becker, K.W., Jörgensen, R.G., Klages, F.-W. & Wildhagen, H. (1998): Aspekte und Grundlagen der Bodenkunde, 26. Aufl.,- Göttingen.
11. Ahnert, F. (1999): Einführung in die Geomorphologie. 2. Aufl.,- Stuttgart.
12. Bardgett R.D. The biology of soil. Oxford, 2005.
13. Blume, H.P., P. Felix-Henningsen & W.R. Fischer (2001): Handbuch der Bodenkunde.-Landsberg.
14. Chesworth W. Encyclopedia of soils science. Dordrecht, 2008.
15. Dongus, H. 1980: Die geomorphologischen Grundstrukturen der Erde.- Stuttgart.
16. Eitel, B. (1999): Bodengeographie.- Braunschweig.
17. Pansu M., Gautheyroy Y. Handbook of soil analyses. Berlin, 2003.
18. Scheffer, F. & P. Schachtschabel (1998): Lehrbuch der Bodenkunde, 14. Aufl.,- Stuttgart.
19. http://www.unep.org/geo/geo3/russian/141.htm
20. http://www.fao.org/ag/agl/agll/wrb/default.stm