**02 # Подаци о Катедрама Одсека за еколошки инжењеринг у заштити земљишних и водних ресурса**

|  |
| --- |
| **Chair** |
| The Chair of Amelioration |
| **Head of Chair, Deputy Head of Chair, Chair Secretary** |
| Dr. Ljubomir Letić, full professor; Dr. Sara Lukić, assistant professor; grad.eng. Vesna Nikolić, teaching assistant |
| **Chair Development** |
| The chair of amelioration is one of 3 Chairs at the Department of Environmental Engineering for soil and water resources protection. Seven members participate in the work of the chair, of which one professor, one associate professor, two assistant professors, 2 teaching assistants and one laboratory technician. The Laboratory for soil quality monitoring and the Center for terrestrial ecosystem critical load assessment are integral parts of this chair.  Teachers and associates of the chair teach in undergraduate and master academic studies, and the teachers actively participate in teaching at doctoral studies. Members of the Chair participate in scientific research and cooperate with numerous institutions and colleagues from home and abroad.  In accordance with the Bologna process, which began at the Faculty of Forestry in Belgrade in 2006/07 with the enrollment of the first generation of students at the undergraduate level, the Chair organizes and conducts classes in 5 compulsory and 4 elective subjects. In master studies within the study program Environmental Engineering for soil and water resources protection in , module 2 - Degradation and protection of soil resources, classes are taught in 3 mandatory and 2 elective subjects of the Chair.  Within different projects the Chair of amelioration is engaged in the study of the following issues: forest and agricultural soils, habitats degraded to different degrees with often extreme environmental conditions, measures and techniques of land reclamation in degraded habitats and selection of species for afforestation, field-protective forest belts and their role in wind erosion control. In addition to studying aquatic ecosystems (water as a biotope) their revitalization and renaturalisation. In the last five years study within the fields at the Chair, are focused on:  - Determining the current state, the level of soil pollution, physical and chemical degradation of soils, soil quality, sediment quality, degradation of soil and water as a result of global changes;  - Research of the impact of air pollution on soil acidification processes and research of the impact of parent rock and plants on the processes of soil acidification;  - Research of the impact of soil moisture regimes on the habitats of hygrophile species in mudflats of large rivers.  Within the study of natural resources, previous research of the Chair points to the necessity and importance of a more complex study of soil and water (as biotopes) aimed at a more relevant formulation of processes in ecosystems, as well as the development and use of model and further development of high quality databases.  Department of Amelioration of the Faculty of Forestry was established in 1949. According to the 1988 statute the following subjects were developed at the Chair : Forest hydrology, Anti erosion agro-ecosystems (current soil conservation), Forest soil reclamation, Amelioration of agricultural land (the current soil amelioration), Use of water in forest areas and Forest and the environment.  According to the latest accreditation the Chair of Amelioration organizes and implements courses in the following compulsory subjects at the undergraduate level: Forest soil ameliorations 1, Forest soil ameliorations 2, soil amelioration, Use of waters in forest areas, Soil conservation; and elective subjects: Soil physics air pollution and forest soil, Tailings reclamation, Soil and bioengineering techniques.  In master studies classes are organized and conducted in the following subjects: Soil and water degradation and global changes, Forest hydrology, Agro-forestry systems, Soil chemistry and the environment, Environmental effects of forest amelioration works.  In doctoral studies teachers of the Chair participating in the teaching of the following subjects: Methodology of scientific and research work , Pollution, quality and protection of soils and Phytoremediation and Hydrologic and psamologic effects of erosion control works.  In many years of work of the Chair of Amelioration a whole series of very important projects have been implemented funded by ministries and economic organizations, so that the results are of great importance and research work got interdisciplinary and multidisciplinary character. Scientific research at the Chair of Amelioration covers many research areas, and some of them are: forest ecosystems and their impact on changes in the environment, research of the effect of erosion processes on the state of soil and vegetation, and sustainable management of soil and water.  The results of research conducted at the Chair of Amelioration are available in the form of published papers, reports and database of stored data. The results are also available in the form of reports, studies and projects carried out in cooperation with economic subjects.  In the period from 1978 to 1989 studies of ecosystems disturbance and environmental degradation were conducted at the Chair. Then, from 1991 to 2001 studied issues were forest ecosystems in terms of the impact of air polluters on forest ecosystems and the importance of forest ecosystems for the preservation of basic natural resources in Serbia as well as study of the improvement of their protective and regulatory functions.  After 2001, the research work has been characterized by two groups of projects: projects of national programs and projects of technological development. In the group of projects in the field of technological development research has been focused on the solving of current problems in controlling degradation and mitigation of its consequences, which should significantly contribute to the improvement of production, economic benefits and advanced theoretical and material basis for improving the state of forests and forest plantations. |
| **Chair members** |
| **Teaching staff**  Dr. Ljubomir Letić, full profesor  Dr. Snežana Belanović Simić, associate professor  Dr. Sara Lukić, assistant professor  Dr. Jelena Beloica, assistant professor  Grad. eng. Vesna Nikolić, teaching assistant  Msc Predrag Miljković, teaching assistant  **Non-teaching staff**  Grad. eng. Branislava Mihajlović, laboratory technician |
| **Chair subjects** |
| **Undergraduate studies**  *Compulsory subjects*  • Use of water ecosystems in forest areas  • Forest ameliorations 1  • Forest ameliorations 2  • Soil ameliorations  • Soil conservation  *Elective subjects*  • Forest hydrology  • Tailing reclamation  • Soil physics  • Аir pollution and forest soil  • Soil and bioengineering techniques  **Master studies**  *Compulsory subjects*  • Forest hydrology  • Agroforestry systems  • Soil and water degradation and global changes  *Elective subjects*  • Use of water in forest areas  • Environmental effects of forest amelioration works  • Soil chemistry and the environment  • Soil degradation models  **Doctoral studies**  • Methodology of scientific and research work  • Pollution, quality and protection of soils  • Phytoremediation |
| **Selected student papers / final papers/ master papers / dissertations/ field training** |
|  |
| **Research / Projects** |
| **Scientific and research projects:**   1. Projekat: „Monitoring šumskih zemljišta za nivo I”, u okviru praćenja uticaja zagađenja vazduha kao faktora stresa i njegovih efekata u Šumskim ekosistemima Republike Srbije u 2003. i 2004. godini. Rukovodilac: dr Ratko Kadović, redovni profesor. 2. Istraživanje klimatskih promena i njihov uticaj na životnu sredinu – praćenje uticaja, adaptacija i ublažavanje (ev. br. III43007) (2011‒2014), članovi Katedre učestvovali u potprojektu 9: „Učestalost bujičnih poplava, degradacija zemljišta i voda kao posledica globalnih promena”. Rukovodilac: dr Ratko Kadović. 3. Projekat tehnološkog razvoja: BT 20118 – Unapređenje tehnologije podizanja zaštitnih šumskih pojaseva (2008‒2010). Rukovodilac projekta: dr Stevan Dožić. 4. General Master Plan for Transport in Serbia - Final report (2009), Environmentalist – koordinator dela istraživačkog tima: dr Snežana Belanović Simić (Project Manager: Enrico Maglia). 5. Istraživanje nivoa podzemnih voda na području Š.G. „Sremska Mitrovica” u periodu 2009‒2018. godine. Rukovodilac: dr Ljubomir Letić. 6. Program istraživanja abrazije na ribnjačkim površinama u Vršačkim Ritovima od 2009. godine, Šumarski fakultet, Beograd. Rukovodilac: dr Ljubomir Letić. 7. „Intenzivni monitoring nivoa II na Kopaoniku”, 2010. godina. Rukovodilac istraživačkog zadatka Projekat organizacije oglednog polja nivoa II - N.P. „Kopaonik”: dr Snežana Belanović. 8. Održivo gazdovanje ukupnim potencijalima šuma u Republici Srbiji, 2011‒2015. godina, Šumarski fakultet, Beograd. Rukovodilac: dr Ljubomir Letić. 9. Ispitivanje uticaja podzemnih voda na pojavu sušenja šuma, 2012 godina, Šumarski fakultet, Beograd. Rukovodilac: dr Ljubomir Letić. 10. Uticaj režima podzemnih voda na stanište hrasta lužnjaka u ravnom Sremu, 2013 godina, Šumarski fakultet, Beograd. Rukovodilac: dr Ljubomir Letić. 11. Monitoring zemljišta ‒ recentno stanje kvaliteta zemljišta u plavnim zonama reke Kolubare', 2013. godina. Rukovodilac: dr Snežana Belanović Simić. 12. Rezerve ugljenika u zemljištima travnih ekosistema visokoplaninskih regiona Srbije, 2015. godina. Rukovodilac: dr Snežana Belanović Simić. 13. Istraživanje nivoa podzemnih voda na podruju Š.G. „Sombor”, Naučno-razvojna istraživanja u šumarstvu (2015/16. godina). Rukovodilac: dr Ljubomir Letić.   **Studies and projects in cooperation with economic subjects:**   1. Belanović, S. i sar. (2007): „Biološka rekultivacija i predlog mera održavanja zasada”, koji je deo glavnog projekta „Projekat rekultivacije površina zemljišta degradiranih rudarskim radovima otkrivanja, odlaganja kopovske raskrivke i odlaganjem flotacijske jalovine”, tehnička dokumentacija glavnog projekta. 2. Dožić, S. i sar. (2008): *Tehnička dokumentacija – Glavni projekat podizanja vetrozaštitnih pojaseva na teritoriji opštine Pančevo*, knjiga I‒XI, Univerzitet u Beogradu ‒ Šumarski fakultet, Beograd. 3. Dožić, S. i sar. (2010): *Tehnička dokumentacija – Projekat podizanja poljozaštitnih pojaseva u opštini Novi Kneževac*, Knjiga I‒VI, Univerzitet u Beogradu ‒ Šumarski fakultet, Beograd. 4. Dožić, S. i sar. (2010): *Projekat podizanja vetrozaštitnih pojaseva na teritoriji grada Subotice*, Gradska uprava grada Subotice, Univerzitet u Beogradu ‒ Šumarski fakultet Beograd. 5. Letić LJ. i sar. (2010): Podizanje zaštitnih zasada na području ribnjaka „Vršački Ritovi” (Plan pošumljavanja), Šumarski fakultet, Beograd. 6. Letić LJ. i sar. (2012): Kaptiranje izvora i rekonstrukcija postojećih kaptaža u Nacionalnom parku „Fruška Gora” ŠU „Vrdnik” ‒ Česma Terazije, idejni projekat, Šumarski fakultet Beograd. 7. Letić LJ. i sar. (2012): Osnivanje akvatorije „Lovačka priča”, idejni projekat, Šumarski fakultet, Beograd. |
| **Centers / Laboratories** |
| **Laboratory for Soil Quality Monitoring**  The Laboratory for Soil Quality Monitoringbelongs to the Chair of Amelioration and the Department of Ecological engineering for soil and water resources protection.  In collaboration with other laboratories of the Faculty (Soil Laboratory, Phytopathological Laboratory, etc.) the Laboratory for Soil Quality Monitoring performs analyses of soil, sediment and plant material primarily in order to define the quality of soil and sediment. The laboratory is equipped with modern equipment for teaching activity, and is used for the realization of research projects of the Ministry of Education and Science, as well as other projects of the Faculty. Thanks to the exceptionally high staff engagement of the Laboratory for Soil Quality Monitoring in cooperation with the pedological laboratory and their modern equipment, there is a possibility for students of all levels of study (undergraduate, master's and doctoral), as well as researchers from other institutions to successfully implement their experimental tasks.  The Laboratory for Soil Quality Monitoring performs the analysis of intensive study of soils, sediment and plant material including: - Determination of the total, pseudo-total and accessible contents of trace elements and heavy metals (Cu, Zn, Pb, Cd, Ni, Cr, Co, Fe, Mn, Ca, Mg, Hg) method AAS from prepared samples; - Determination of the content of exchangeable Ca, Mg, Mn, Fe; - Determination of oxalate aluminum; - Determination of total carbon and nitrogen; - Determination of DOC.  The most important equipment: microwave oven for the destruction of the samples (Mars 5 Microwave unit), atomic absorption spectrophotometer (SOLAAR MkII M5 Dual AA Spectrometer) centrifuge with cooling (4K15, SIGMA LABOR ZENTRIFUGEN) shaker for Erlenmeyer flasks, scales, dryer Sutjeska, digester.  Head of Laboratory: Dr. Snežana Belanović Simić, Assoc. prof. e-mail: [snezana.belanovic@sfb.bg.ac.rs](mailto:snezana.belanovic@sfb.bg.ac.rs)  Cooperate: Measurement and sample reception – Grad eng. Branislava Mihajlović.  Contact:011/3053934  e-mail: [branislava.mihajlović@sfb.bg.ac.rs](mailto:branislava.mihajlović@sfb.bg.ac.rs)  **Center for Terrestrial Ecosystem Critical Load Assessment**  The Center was established to implement a modern, integrated concept in the study of soils of terrestrial ecosystems, as well as to define the guidelines for long-term protection and preservation of soil functions in the Republic of Serbia. The center will promote and implement a methodology to assess the quality and the threat of soils that are in compliance with EU methodologies. A special aspect of the work of the Centre is the implementation of modern and dynamic models of geoinformation systems in the study area of ​​terrestrial ecosystems.  **Objectives:** ▪ definition of sensitive components of soil ecosystems in the function of preserving biodiversity, soil productivity, as well as other functions and services of forest ecosystems; ▪ the program of necessary scientific research in the field of soil science; ▪ establishment of the information systems (collection, compilation and harmonization of relevant data on forest soils in an integrated information system); ▪ establishment of international scientific cooperation (networking, projects, conferences); ▪ development of a program of continuous monitoring of the physical and chemical degradation of soil pollutants of terrestrial ecosystems; ▪ guidelines for the conservation, protection and enhancement of productive capacity of soils in terrestrial ecosystems; ▪ development of professional projects; ▪ education, information (organization of courses, lectures, etc.). ▪ development of official documents and strategic frameworks in the field of environmental protection.  Office no. 111 Head of Center: Dr. Jelena Beloica, assistant professor |