

DEPARTMENT OF SANITARY ENGINEERING

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II. EQUIPMENT

II.1 Teaching and Research Laboratories

- Water chemistry laboratory
- Hydrobiology laboratory
- Analytic chemistry laboratory
- Waste water treatment laboratory
- Computer room

II.2 Special Measuring Instruments

Basic instruments for determining organic pollution in water (BOD, COD), capillary gas chromatography, UV spectrometry (UV-VIS), TOC-Total Organic Carbon, capillary isotachopheresis and apparatus for electrochemical methods, viscometers, ISCO ultrasonic flow meters and automatic samplers, FLOWMATE velocity probe, special equipment and apparatus for LCST measurements (filtration element, separator for microextraction of water), HACH - total nitrite and phosphorus, HYDROLAB - water quality probe, POLAROGRAPH - heavy metal measurements, ISCO - automatic water level probe, ISCO - automatic sampler, TOPCON theodolite with full automatic electronic measurement of lengths and angles, Portable Flowmeter System Controlotron 1010 for flow measurements in pressurised pipes.

III. TEACHING ACTIVITIES

The Department of Sanitary Engineering provides for the education and training of undergraduates for positions as sanitary and environmental engineers. The study program of the Department offers a wide range of both compulsory and optional subjects concerning the chemistry of water and hydrobiology, water supply, water distribution, urban drainage and waste-water collection, water pollution control, water and waste-water treatment, sludge treatment and solid waste disposal. In addition to lectures, design exercises, and laboratory courses, a great deal of attention at the Department is devoted to fieldwork. Students apply their theoretical knowledge of subjects during practical training periods. Before they submit and defend their theses at the end of their studies, students have to specialise in one of several main optional modules (see table below).

III.1 Graduate Study

Subject	Semester	Hours per Week		Lecturer
		Lectures	Seminars	
Environmental Engineering	2	2	1	Oskár Čermák
Water Chemistry and Hydrobiology	4	3	2	Ján Ilavský
Water Management Structures	5	2	2	Dušan Rusnák
Water Pollution Control	6	3	2	Marek Sokáč
Water Mains and Water Treatment Plants	7	3	2	Jozef Martoň
Engineering Networks	7	2	2	M. Čermáková
Sewerage and Waste Water Treatment	8	3	3	Dušan Rusnák
Field Practice	8	2 weeks		Marek Sokáč
Engineering and Water Management Structures	8	2	2	M. Čermáková

Solid Waste Disposal	8	3 - 2	Oskár Čermák
Urban Hygiene	9	2 - 2	Oskár Čermák
Special Topics in Water Treatment and Distribution	9	3 - 2	Jozef Martoň
Special Topics in Sewerage and Waste Water Treatment	9	3 - 2	Dušan Rusnák
Balneotechnics	9	3 - 2	Jozef Kriš
Special Seminar in Sanitary Engineering	10	0 - 6	Jozef Martoň
Construction of Sanitary Engineering Structures	10	3 - 2	Július Hétharši
Legal Aspects of Water Management	10	2 - 2	Július Hétharši

Optional Subjects

Subject	Semester	Hours per Week		Lecturer
		Lectures	Seminars	
Engineering Networks	7	2 - 2		M. Čermáková
Waste Water and Water Treatment Plants	7	2 - 1		Oskár Čermák
Engineering Networks	8	2 - 2		Jozef Kriš
Pumping Stations	9	2 - 2		Oskár Čermák
Industrial and Agricultural Water Pollution Control	9	2 - 2		Július Hétharši
Solid Waste Disposal	9	2 - 2		Oskár Čermák
Land Planning	10	2 - 2		Július Hétharši
Rehabilitation of Waste Disposal Sites	10	2 - 2		Oskár Čermák
Urban Hydrology	10	2 - 2		Daniel Sztruhár
Sanitary Engineering Structures	10	2 - 1		Jozef Kriš

III. 2. Postgraduate Study

Postgraduate courses and seminars are also organised on a regular basis by the Department.

IV. RESEARCH ACTIVITIES

The Department provides scientific research and services in the following fields:

- human-induced pollution of water resources (contact: Prof. Martoň),
- disinfection of water in water supply mains (contact: Dr. Kriš),
- corrosion of water distribution pipes (contact: Prof. Martoň),
- urban hydrology and sewer system modelling (contact: Dr. Sokáč, Dr. Sztruhár),
- waste water treatment plant modelling (contact: Dr. Námer, Dr. Holienčin),
- thickening, dewatering and hygienisation of biosolids (contact: Dr. Námer),
- determination of organic substances in water (contact: Dr. Ilavský),
- upgrading the efficiency of water and waste-water treatment plants and assessment and inspection of their performance (contact: Dr. Rusnák),
- degradation of organic materials at solid waste disposal sites (contact: Dr. Čermák).
- hydraulic analysis of water distribution networks (contact: Dr. Tóthová)

V. RESEARCH PROJECTS

1. Monitoring waste disposal sites as potential sources of environmental pollution (2000-2002, O. Čermák)
2. Reduction of nutrients in secondary settling tanks of municipal waste water treatment plants (2000-2002, A. Holienčín)
3. Effect of pipe materials and chemicals on the quality of transported drinking water (2000-2002, J. Kriš)

VI. COOPERATION

VI.1 Cooperation in Slovakia

1. Slovak Technical University - Faculty of Civil Engineering, Bratislava
2. Slovak Technical University - Faculty of Chemical Technology, Bratislava
3. Technical University of Košice - Faculty of Electrotechnical Engineering, Košice
4. West Slovakia Water Board - Trenčín Water Board, Trenčín
5. Ministry of Land Management of the Slovak Republic, Bratislava
6. Ministry of the Environment of the Slovak Republic, Bratislava
7. Water Research Institute, Bratislava
8. Slovak Institute of Civil Engineers, Bratislava
9. Slovak Inspectorate of the Environment
10. Slovak Committee of the International Association on Water Quality, Bratislava
11. Slovak National Committee of the International Water Supply Association, Bratislava
12. West Slovakia Water Board - Bratislava Directorate
13. North Slovakia Water Board - Žilina Directorate
14. Central Slovakia Water Board - Banská Bystrica Directorate
15. East Slovakia Water Board - Košice Directorate
16. Bratislava Water Board
17. Danube River Basin Authority, Bratislava
18. Váh River Basin Authority, Piešťany
19. Hron River Basin Authority, Banská Bystrica
20. Bodrog and Hornád River Basin Authority, Košice

VI.2 International Cooperation

1. Technical University, Prague, Czech Republic
2. Technical University, Brno, Czech Republic
3. Technical University, Vienna, Austria
4. Danish Hydraulic Institute, Horsholm, Denmark, and Prague, Czech Republic
5. National Water Research Institute, Burlington, Canada

VII. THESES

VII. 1 Graduate Theses

No.	Student	Title	Supervisor
1.	Beseda, M.	Design of a Water Supply Network for Závod	Kriš, J.
2.	Boháčová, D.	Hydraulic Assessment of Municipal Water Distribution Networks	Tóthová, K.
3.	Brtko, P.	Connection of the Local Network of Veľké Držkovce to the Regional Water Distribution Network	Čermáková, M.
4.	Cifrič, S.	Dynamic Simulation of the Activated Sludge Process	Holienčin, A.
5.	Drongová, A.	Reconstruction of the Waste Water Treatment Plant in Rabča	Holienčin, A.
6.	Flimel, J.	Design of Municipal Sewerage Systems	Rusnák, D.
7.	Gibala, T.	Combined Sewer Overflow Assessment	Rusnák, D.
8.	Guliš, M.	Design of Alternative Sewer Systems	Stanko, Š.
9.	Halgoš, P.	Assessment of Changes in Groundwater Quality	Martoň, J.
10.	Hluzák, R.	Design of Waste Water Collection Systems for Čadca	Rusnák, D.
11.	Hruška, M.	Water Management at the Thermal Springs of Stará Lesná	Božíková, J.
12.	Jancek, M.	Design of Sewerage Systems for the Liptov Region	Sztruhár, D.
13.	Martvoň, M.	Design of Sewerage Systems for Hruštín	Sokáč, M.
14.	Medveď, M.	Design of a Waste Disposal Site for Banská Bystrica	Horanová, L.
15.	Pavlíková, L.	Design of Sewerage Systems for the Žitný ostrov Region	Sztruhár, D.
16.	Prusák, J.	Design of Sewerage Systems for the Nové Zámky District	Hétharši, J.
17.	Styk, L.	Design of Engineering Networks for Popudinské Močidlany	Čermáková, M.
18.	Szetei, M.	Design of an Indoor Pool at Dolné Vestenice	Kriš, J.
19.	Vanko, M.	Waste Collection in Towns	Čermák, O.
20.	Vaško, M.	Design of a Waste Disposal Site	Škultétyová, I.
21.	Zajac, P.	Waste Disposal Sites	Čermák, O.
22.	Zima, K.	Water Supply Network Design for Jahodná	Martoň, J.
23.	Žolková, A.	Municipal Water Distribution Systems in Malé Leváre	Božíková, J.

VIII. OTHER ACTIVITIES

VIII. 1 Commercial Activities

The Department provides consulting and project services in the following fields:

- chemical and physical analysis of drinking water, groundwater, waste water and sludge
- design projects of water and waste water treatment plants, water distribution networks and sewer systems, solid waste disposal sites
- on-site monitoring and hydraulic assessment of existing water and waste water treatment plants, water mains and sewer systems
- expert studies of water and waste water treatment plants, water mains and sewer systems, solid waste disposal sites
- monitoring groundwater quality

– developing sanitary engineering software

IX. PUBLICATIONS

IX.1 Journals

Scientific Articles in Slovak Journals

- [1] BOŽÍKOVÁ, J.: Thermal Mineral Waters - Balneotechnical Problems. In: *Slov. J. of Civ. Eng.*, Vol. 8, No. 4, 2000, 30-35.
- [1] ČERMÁK, O.: The New Law on Waste, In: *Stavba*, No.10, 2001, 60-61.
- [2] FRANKOVÁ, E., TÓTHOVÁ, L., ŠIMONOVIČOVÁ, A.: The Occurrence of Micromycetes in the Region of VD Gabčíkovo. In: *Slov. J. of Civ. Eng.*, Vol. 8, No. 4, 2000, 1-5.
- [3] HOLIENČIN, A. (2001): The Oxidation of Ammonia to Nitrite - A Mathematical Model Based on Enzyme Kinetics. In: *Slov. J. of Civ. Eng.*, Vol. 8, No. 4, 2000, 12-20.
- [2] KRIŠ, J.: Saunas – Materials and Construction. In: *Projekt a stavba*, Vol. 3, No. 1, 2001, 21-24.
- [4] KRIŠ, J., MAHRÍKOVÁ, I.: Current State of the Water Supply in Slovakia. In: *EUROSTAV*, Vol. 7, No. 10, 2001, 6-7.
- [5] SZTRUHÁR, D., SOKÁČ, M.: Integrated Urban Drainage Modelling. In: *Slov. J. of Civ. Eng.*, Vol. 8, No. 4, 2000, 6-11.
- [6] SZTRUHÁR, D., SOKÁČ, M., MARKOVIČ, A., LÁBSKA, I.: Evaluation of Combined Sewer Overflows in Slovakia. In: *Slov. J. of Civ. Eng.*, Vol. 7, Nos. 1-2, 2000, 19-25.
- [7] TÓTHOVÁ, K., DUBOVÁ, V.: Losses in Water Distribution Networks. In: *Projekt a stavba*, Vol. 3, Nos. 7-8, 2001, 51-53.

Journals, Articles Abroad

- [1] GÓDYOVÁ, M., ŠIMONOVIČOVÁ, A., FRANKOVÁ, E.: Biodeterioration of Stone Monuments by Soil Microfungi. In: *Czech. Mycol.*, No. 74, 2000, 17-22.
- [2] KRIŠ, J., BRŤKO, J.: Water Management in the New Millenium. In: *SOVAK*, Vol. 10, No. 9, 2001, 5-7.
- [3] URCIKÁN, P., RUSNÁK, D., STANKO, Š.: Design of Combined Sewer Overflows. In: *Vodní hospodářství*, No. 5, 2001, 119-123.

IX.2 Books and Textbooks

Books and Textbooks, Slovak Articles.

- [1] ČERMÁK O., BARLOKOVÁ D., SOKÁČ M.: Pumping Installations. STU Bratislava, 2001.
- [2] ČERMÁKOVÁ M., KRIŠ J.: Engineering Networks. STU Bratislava 2001.

IX.3 Conferences

Domestic Conferences

- [1] BARLOKOVÁ, D.: The Need for Disinfection of Drinking Water. In: Proceedings of

- Drinking Water* Conference, Trenčianské Teplice, October 2001, 99-105.
- [2] BOŽÍKOVÁ, J., MELIORIS, L.: The Use of Plastic Materials in Balneological Installations. In: Proceedings of *Balneotechnical Days 2001* Conference, Trenčianské Teplice, November 2001, 63-71.
- [3] ČERMÁK, O.: Waste Disposal and Emission of Greenhouse Gases. In: Proceedings of Conference: *Towards an Acceptable Environment*, Bratislava, November 2001, 11-18.
- [4] HÉTHARŠI, J.: New Trends in Industrial Water Management. In: Proceedings of *33rd Conference of Water Managers in Industry*, Liptovský Ján, November 2001, 49-53.
- [5] HOLIENČIN, A.: Application of Dynamic Simulation in Waste Water Treatment Processes. In: Proceedings of *33rd Conference of Water Managers in Industry*, Liptovský Ján, November 2001, 150-156.
- [6] ILAVSKÝ, J.: By-Products of Water Disinfection. In: Proceedings of *Drinking Water* Conference, Trenčianské Teplice, October 2001, 82-89.
- [7] JANKOVIČOVÁ, K.: Determination of the Filtration Velocity of Soils at Waste Disposal Sites. In: Proceedings of Seminar on *New Waste Disposal Legislation*, Bratislava, October 2001, 25-28.
- [8] KRIŠ, J.: The EC Bathing Water Directive. In: Proceedings of *AQUA 2001* Conference, Trenčín, June 2001, 147-158.
- [9] RUSNÁK, D., SOKÁČ, M.: Design of Small-Scale Sewerage and Waste Water Treatment Systems. In: Proceedings of Seminar on *New Aspects of Waste Water Management in Small Communities*, Trenčín, November 2001, 47-57.
- [10] SOKÁČ, M., SZTRUHÁR, D.: New Legislation on Storm Water Management in Urban Areas. In: Proceedings of *33rd Conference of Water Managers in Industry*, Liptovský Ján, November 2001, 65-74.
- [11] STANKO, Š.: Modelling Waste Disposal Sites. Proceedings of Seminar on *New Waste Disposal Legislation*, Bratislava, October 2001, 29-32.
- [12] ŠKULTÉTYOVÁ, I.: New Waste Disposal Legislation. In: Proceedings of Seminar on *New Waste Disposal Legislation*, Bratislava, October 2001, 33-39.
- [13] TÓTHOVÁ, K.: Losses in Water Distribution Networks. In: Proceedings of *Drinking Water* Conference, Trenčianské Teplice, October 2001, 105-111.

International Conferences

- [1] BARLOKOVÁ, D.: Membrane Processes in Water Treatment. In: Proceedings of International *Drinking Water 2001* Conference, Tábor, Czech Republic, May 2001, 127-132.
- [2] BOŽÍKOVÁ, J.: Disposal of Waste from Mineral and Thermal Waters. Proceedings of International Workshop on *Current Problems in Urban Water Management*, Prague, Czech Republic, November 2001, 141-145.
- [3] ČERMÁK O., ČERMÁKOVÁ, M., KRIŠ, J.: Regeneration of Vertical Abstraction Facilities. In: Proceedings of International Conference on *Water is Life – Take Care of It*, Bratislava, September 2001, 436-442.
- [4] FRANKOVÁ, E.: Invasive Micromycetes in Drinking Waters. In: Proceedings of International Conference on *Invasion and Invasive Organisms III*, Nitra, September 2001, 29-30.
- [5] HÉTHARŠI, J.: Factors Affecting Water Management in Slovakia. In: Proceedings of International Conference on *Water is Life – Take Care of It*, Bratislava, September 2001, 294-296.
- [6] HOLIENČIN, A.: Oxidation of Ammonia to Nitrite - A Mathematical Model of Nitrification. In: Proceedings of International Conference on *Water is Life – Take Care of It*, Bratislava,

- September 2001, 173-176.
- [7] HORANOVÁ, L.: Packaging Strategy. In: Proceedings of International *Ekotech 2001* Conference, Bratislava 2001, 140-148.
- [8] ILAVSKÝ, J.: Removal of Triazines from Water by UV Radiation. In: Proceedings of International *Drinking Water 2001* Conference, Tábor, Czech Republic, May 2001, 195-200.
- [9] JANKOVIČOVÁ, K.: Protecting the Surrounding Environment from the Impact of Landfills. In: Proceedings of International Workshop on *Current Problems in Urban Water Management*, Prague, Czech Republic, November 2001, 130-133.
- [10] KRÍŠ, J., ČERMÁK, O., ČERMÁKOVÁ, M.: Water Losses in Water Distribution Systems in Slovakia and Planned Measures Aimed at Reducing These Losses. In: Proceedings of IWA Specialised Conference on *Systematic Approach to Leakage Control and Water Distribution Systems Management*, Brno, Czech Republic, May 2001, 213-220.
- [11] KRÍŠ, J., DUBOVÁ, V.: Economic Use of Water. In: Proceedings of International Workshop on *Current Problems in Urban Water Management*, Prague, Czech Republic, November 2001, 17-24.
- [12] RUSNÁK, D.: Tasks of the Slovak Republic until 2005 in the Area of Sewerage and Waste Water Treatment. In: Proceedings of International Conference on *Water is Life – Take Care of It*, Bratislava, September 2001, Bratislava
- [13] SOKÁČ, M., SZTRUHÁR, D.: Proposal of a Comprehensive Urban Runoff Management Plan for Banská Bystrica, Slovakia. In: Proceedings of International *Wastewater 2001* Conference, Mladá Boleslav, Czech Republic, May 2001, 291-296.
- [14] STANKO, Š.: Simulation of Municipal Landfills by VisualHELP. In: Proceedings of International Workshop on *Current Problems in Urban Water Management*, Prague, Czech Republic, November 2001, 133-135.
- [15] SZTRUHÁR, D., SOKÁČ, M., MARKOVIČ, A., LÁBSKA, I.: Wet Weather Pollution Transport in Combined Sewer Systems. In: Proceedings of International Conference on *Water is Life – Take Care of It*, Bratislava, September 2001, 194-198.
- [16] ŠKULTÉTYOVÁ, I.: Bioreactor Landfill Technology, In: Proceedings of International Workshop on *Current Problems in Urban Water Management*, Prague, Czech Republic, November 2001, 136 – 140.
- [17] TÓTHOVÁ, K., DUBOVÁ, V.: Systematic Approach to Leakage Control in the City of Lučenec. In: Proceedings of IWA Specialised Conference on *Systematic Approach to Leakage Control and Water Distribution Systems Management*, Brno, May 2001, 241-245.