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NETCHEM



NETCHEM Remote Access Laboratory Guide

Storage, preparation and basic physico-chemical analysis of water samples

In this exercise, student will:

- ✓ Be introduced to the water monitoring protocol – planning of monitoring.
- ✓ Learn about principles of good laboratory practice.
- ✓ Learn the basic principles of physico-chemical analysis (multiparameter device, turbidimeter, UV-VIS, AAS).
- ✓ Develop the knowledge to interpret the results in accordance with the requirements of the legislation related to the groundwater and leachate from landfill sites.





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Performing of lesson

This lesson will be performed after the courses Groundwater sampling and Leachate sampling.

Students will be in the classroom while the performer will be in the lab, connected with them via skype. The performer will introduce students to the basic principles of good laboratory practice and laboratory equipment which will be used during the lecture and he/she will perform the analysis.

Finally, performer will conduct the measuring of basic physico-chemical parameters using multiparameter device, turbidimeter, UV-VIS spectrophotometer and AAS.



DESCRIPTION OF REMOTE ACCESS	
1. NETCHEM COMMUNICATION SIDES	
(NOTE: NETCHEM Communication is defined as event that involves all kinds of internet interactions (in real time and not in real time) between participants via devices (PCs, laptops, tablets and mobilephones))	
host side (NOTE: Host side of NETCHEM Communication is defined as PC who invites other users to join the session)	participant's PC in classroom
guest side (NOTE: Guest side of NETCHEM Communication is defined as PC who joins the invitation to session)	participant's PC in laboratory
2. COMMUNICATION SOFTWARE	
Team Viewer	Meeting: No
	Remote control: No
	Meeting and Remote control simultaneously: No
Skype	Call 1:1: No
	Conference Call: Yes
3. COMMUNICATION HARDWARE	
on host side	1 PC for each participant
on guest side	1 PC, 1 headsets with microphone, camera
4. INFORMATION EXCHANGE TYPE	
Educational (one side is dominantly receptive)	Yes
	Place of Educator participant: guest side
	Number of educator(s): 1
	Place of student participant: host side
Consultative (two sides are equal in giving-receiving information)	Number of student participant(s): 5
	Number of host side participant(s): No
	Number of guest side participant(s): No





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Remote Access Connection Instructions

What makes these labs different and unique from other classroom experiments is that we have incorporated a section in each activity to remotely characterize your samples from your classroom.

Request a remote lab session specifying information such as: the day, the time, and the instrument you are interested in using by visiting our web site:

<http://netchem.ac.rs/remote-access>

You will see the list of partners with the instruments provided to choose from.

You will be contacted by a Remote Access staff member to set up a test run to ensure you are set up properly and have the required infrastructure.

Send samples or verify the in-house sample you would like us to prepare and load for characterization.

Send your samples to the Remote Access center that you chose on your request.

There are two communications software packages, that will allow us to communicate instructions and answer questions during the session.

- **TeamViewer: You can obtain a free download at:**

<https://www.teamviewer.com/en/index.aspx>

- **Skype**





Remote Access Connection Instructions

You will need:

- a) Computer with administrator access to install plug-ins and software**
- b) An internet connection**
- c) Speakers**
- d) Microphone**
- e) Projector connected to the same computer**
- f) Web browser (Firefox preferred)**

During the test run you can refer to this guide to perform the following steps, but it's very important that you only proceed with these steps during your scheduled times. You may interfere with other remote sessions and potentially damage equipment if you log in at other times.

a) Open and logon to your Zoom/Team-viewer account. You will be given the access code to enter at the time of your test and then again during the remote session.

- If you are using the Zoom software, Remote Access staff will give you the access code.
- If you are using the Team-viewer software, Remote Access staff will give you the ID & password.

b) You should soon see the Remote Access desktop and at this point you can interact with the icons on the screen as if it were your desktop.

c) Switch to full screen mode by selecting the maximize screen option in the top right corner of the screen.

d) Upon completion of the session, move your mouse to the top right corner of the screen, and click on the X to disconnect the remote session. It will ask if you want to end the remote session. Click Yes.





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Author, Editor and Referee References

This remote access laboratory was created thanks to work done primarily at University of Niš.

Contributors to this material were: Maja Petrović

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Refereeing of this material was done by: _____

Editing into NETCHEM Format and onto NETCHEM platform was completed by: _____





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References and Supplemental Material

The NETCHEM platform was established at the University of Nis in 2016-2019 through the Erasmus Programme.

Please contact a NETCHEM representatives at your institution or visit our website for an expanded contact list.

The work included had been led by the NETCHEM staff at your institution.

