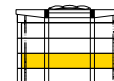
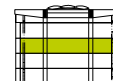


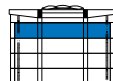
Physik



Chemie



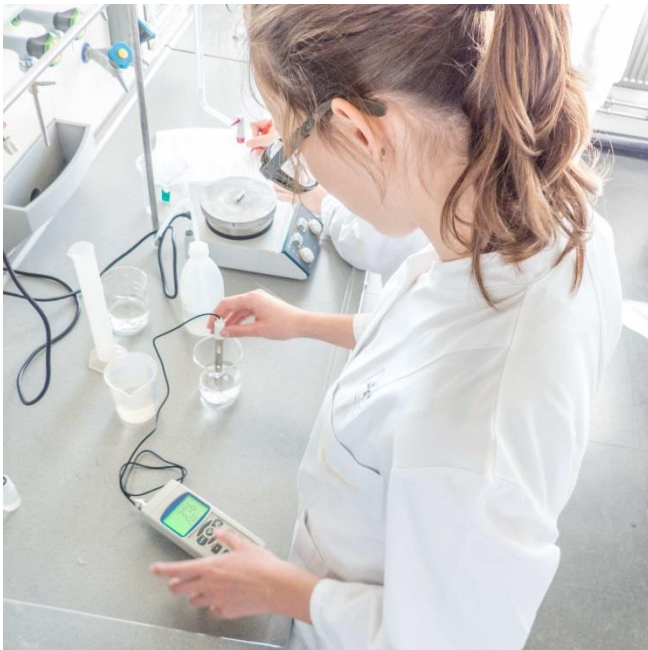
Biologie



Neurobiologie

Application report PCE-PHD 1 Measuring instruments

The XLAB - the Göttingen experimental laboratory for young people (registered association) is an educational institution at the interface between school and university. With approx. 12.000 students per year it is the largest student laboratory in Germany. For over ten years it has been conducting experimental courses on particular topics for school classes and five days camps during the holidays. Besides the high school students from Germany the XLAB is attended by high school students from around the world.



In the curriculum of the upper level of the gymnasium the acid-base chemistry plays an important role. The XLAB therefore offers a course for studying and detailed investigation of acids and bases.

During this course different titrations are carried out. The students use the potentiometric titration to differentiate strong and weak acids and bases based on the titrations curve. By means of the thermometric titration they measure the concentration of household vinegar and with the help of a titration they determine carbonate or hydrogen carbonate content in a water sample.

Besides the acid-base analysis the pH meters find their application also in the titrimetric determination of the concentration of acetylsalicylic acid as well and in the process of pH measurements of tannic acid in tea extracts.

For these student courses nine PCE-PHD1 measuring instruments were purchased by XLAB, which has been used for six weeks. Samples are aqueous solutions of various acids and bases in a 100 ml scale, stirred with a magnetic stirrer in a beaker. Compact design and ease of operation played a decisive role for us, in our decision to purchase the devices. The instruments do not occupy much space on the laboratory bench and in the cabinet and can be easily moved back and forth. The units are equipped with a pH electrode and a conductivity probe. In addition, there is an option to connect to a temperature probe which we, however, are not using at the moment. Because of that, in principle, three different measurements can be carried out with a single device.



Within a few minutes we can instruct even inexperienced pupils how to use the devices. The device allows data storage on the SD card, which offers such an advantage that the measurements can be taken in the laboratory and analyzed in the classroom on the computer. So far we can say that the devices can be easily calibrated. As for life of the devices we cannot say anything at the moment.



Conclusion: after our first experience we can say that the devices fulfill their purpose in terms of functions and operation completely, which is why we are planning to order more devices.

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