Requirements and Thematics of Physical and Colloid Chemistry Laboratory Practice

for Pharmacy Students 2025/2026, (GYTKK22A)

The aim of the practice is to experimentally investigate physical and colloid chemical phenomena and laws. The practice is 4h/week. Students cannot leave the laboratory for longer than 15 min without the permission of the instructor. Students shall permanently leave the lab only after handing in a completed lab note with the permission of the instructor. The allotted measurements and required parameters are listed in the separate descriptions of the practices.

If different types of measurements are available, the instructor will select the ones to be performed. Students may find the appropriate theoretical background of the measurements in text books (e.g., P.W. Atkins: Physical Chemistry). In general, the description of the practices, which are available on the department web page, contains all the necessary information. Appendix provides information about the evaluation protocols and error spreading, contains tabulated data and equations, and gives examples for the appropriate presentation of results. The required equipment may be found on the laboratory desks and in their shelves, and under the chemical hood. Each practice has a separate laboratory desk. If additional equipment is needed, students may obtain them with the aid of the instructor or from the technician. The lab note must be prepared on double sided two-column A4 format paper sheets. A student is allowed to enter the lab and start the work only after presenting a lab note -in the format below- which reflects that (s)he is well-prepared to safely and meaningfully perform experiments.

Date Finish Hand-in	Title of practice	Name, group
	Here comes the short and self-phrased summary of the practice description which contains the necessary equations as well. (max. length: 1 side of an A/4 paper; the cover of the lab note)	

If the student cannot present an appropriate lab note, it will result in a failed mark for that particular practice. During the work in the lab, every single measured data, parameter, and result must be noted with a pen into the lab note. If corrections are needed, only strikethrough is allowed (and the use of correction fluid is prohibited). The work must be performed with the equipment provided for the particular practice. Each equipment must be cleaned and returned to the technician by the end of the practice. If this is the case, the technician will sign the student's lab note which then can be given to the instructor for signature and approval.

Evaluation might be performed by any software (typically MS Office) or manual calculator. The lab note must contain the equations used for calculations. Furthermore, a step-by-step calculation must be provided for at least one data series. This also holds if the evaluation is performed with the aid of a software (e.g., Excel data sheet). Each graph and table requested in the practice description must be handed in in printed and electronic format as well. Fitted lines also must be presented on the graphs besides the measured/calculated data points in case of (linear) regression. The final result/data series must appear with the appropriate digits and (if needed) error spreading must be taken into account. The (numerical) results must be interpreted and discussed accordingly; comparison with literature (by properly citing the source) is also needed in many cases. For an objective handling (and marking) of

the lab notes, each deviation from the described practice and any other experimental problem/difficulty must be noted and discussed.

To successfully comply the practice:

- The preparation of the students is checked before the lab work starts by written or oral examination. This includes the Control Questions listed at the end of each description, questions about the theoretical background and technical performance of the practice, and calculations related to equations applied during the evaluation. If the student fails the test, (s)he cannot start the experimental work and the mark of that particular practice is failed. When using different formulae, notations must be defined.
- Only those lab notes can be marked, which were signed by both the technician and the instructor. The completed lab note must be handed in to the technician before next week's practice. After the one week delay, the final mark is decreased by one, whereas one more week delay lowers the final mark by two more (i.e., by 3 in total). Longer delay automatically results in failed mark for the given exercise. The same procedure holds when incomplete lab note is handed in (if returned by the instructor, see below). Each lab note must be finalized by the last but one week (exact date given by the instructor), otherwise each lab note not handed in results in failed mark. The mistakes committed during the measurements, evaluation, and interpretation degrade the final mark according to their weight.
- Every student must evaluate the measured data on its own, the use of preliminary results of any other student is prohibited (including Excel templates or any other sources). If this does not hold for a given practice it comes with a failed mark for that particular practice. During the semester, the instructor is permitted to check whether the student can re-perform an evaluation protocol by her/his own. If not, the final mark of the particular practice is failed. The lab note corrections are weekly (or at least in every two weeks) presented and explained to the students to help their improvement.

The final mark:

The final mark of the course is based on the weighted average of lab notes, demonstrations and examinations. The weight factors are the following: lab notes 3/4, demonstrations and examinations 1/4. If the average is better than 4.45, the mark is 5; above 3.70 it is 4; above 2.86 it is 3, and above 2.00 it is 2.

To obtain the credits assigned to the course, (1) broken lab equipment must be replaced, (2) an average above 2.00 must be reached for both demonstrations and lab notes, separately, and (3) at least 75% of the allotted practices must be successfully carried out (evaluation included). E.g., at least 7 marks better than failed are required in case of 9 working weeks. If the number of the working weeks decreases during the semester (for any reason), it does not decreases the number of the required acceptable lab notes. Missed practices must be justified on the next show-up. Unjustified missing results in failed mark. Only one particular practice can be repeated or complemented during the very last week of the practice. For average calculation, the mark of the complemented practice will replace the missed practice, and the mark of the repeated practice will overwrite the original mark. The evaluation of the practice is based on continuous questioning (weekly demonstrations and lab notes for which the student receives a mark every week). Therefore, there is no possibility to perform or complement any practice during the exam period. The instructor may change the final mark by ±1 based on the general attitude of the student. (Performance resulting in failed mark cannot be rated as passed.)

For thematics, please check the following website:

http://www2.sci.u-szeged.hu/physchem/pharmaphyschemlab.html

The introductory practice held on the first week of the semester is followed by 9 working weeks (spring break excluded). Then comes the last occasion for closing remarks and marking (and for optional/necessary repeating). In the last two (in case of 14 weeks) or three (in case of 15 weeks) weeks of the semester no practice is held, if the 9 working weeks are already completed.

During the practice, each student (student-pair in some cases) carries out separate measurements. The final marks of students working in pair are independent of each other and based on their personal performance and evaluation quality. Students can check their own schedule on the laboratory door after the introductory week, while the topic of their first experiment is announced during the introductory week by the instructor.