EE3FK4 LABORATORIES
Description and Instructions for Students and TAs

1. Laboratory Attendance and Supervision

- Lab TAs must be in the lab at least 5 minutes before the lab starts.

- Students who are late more than 20 min. must not be allowed to attend.

- The TA cannot accept students from other lab sections unless these students have obtained written permission from the Professor.

- Security and Order

    The TA is responsible for the equipment. Please, make sure that everything is left in place at the respective workstation when a student prepares to leave the lab.

    There are NO DRINKS OR FOOD allowed in the lab! The TA must ensure that this is the case.

    In case of serious trouble, contact **security at ext. 24281**. In <u>extreme urgency</u>, dial **88** and leave receiver open so that the line is traced.

- Recording Attendance and Performance

    The TA is responsible to prepare Attendance Sheets and to collect signatures from students in the beginning of the lab session.

    Students must sign the Attendance Sheet. If the TA does not approach them with a request to sign Attendance Sheets, students should prompt him/her to do so.

    Laboratories based on *LabVolt's FACET Magnetism & Electromagnetism* units are fully automated. They do not require pre-labs. Once the student logs in the lab network, the student simply follows the instructions and answers the questions posed by the computerized lab system. Grading of student's performance is fully automated and neither pre-test nor report papers are handed in.

    Laboratories based on the *MEFiSTo-2D software* (TEM Waves and Transmission Lines) require the manual completion of lab workbooks. The pre-test is part of the lab workbook. Each student must print out a copy of the respective workbook (posted on the course webpage), fill it in during the laboratory exercise and hand it in to the TA at the end of the lab session. It is advisable that the student fills in the pre-test portion of the lab workbook before the lab session. This prepares him/her for what is to follow and saves precious time. <u>Take-home and after-class submissions are not allowed</u>.

- Assisting Students

    The TA is obliged to be fluent in both the theory and practice of the laboratory exercises and must be able to answer all questions related to the exercises.

    A feedback on the TA competence and skills may be sought by the professor from the students.

- Keeping Records

    Each TA is responsible of making a copy of attendance and grade sheets and for keeping them for ONE YEAR after the end of the term.

2. Instructions for Students

- 3FK4 labs consist of 4 laboratory sessions each 3 hours in length.

- Two of these labs are based on *LabVolt's FACET Magnetism & Electromagnetism Training System*.

The 1st lab is based on the unit *Magnetism*. The 2nd lab is based on the unit *Electromagnetism*.

- LabVolt's training systems require neither pre-tests nor lab reports. To prepare for the lab, simply read the *Magnetism & Electromagnetism Student Workbook*. The file

    MagnEM_StudentWorkbook.pdf

    is available in the course webpage. You will NOT need this workbook during your lab but it is helpful to read through it in order to know what the subject matter is.

- Labs #3 and #4 are based on the software MEFiSTo-2D. The 3rd lab deals with *Incident Waves*. The 4th lab deals with *Reflection and Transmission of TEM Waves*. To prepare for these labs, you need to read the general theory in the file

    TEM_lab_3FK4_2008_theory.pdf

    which is available for download from the course webpage.

- Labs #3 and #4 require pre-tests and lab reports. Both of these are contained in the so called TEM Lab Workbooks, #1 and #2, whose files are

    TEM_lab_Workbook_1.pdf
    TEM_lab_Workbook_2.pdf

- Completing the pre-test before the lab session is advisable—it saves time. You MUST submit the Workbook at the end of the session, complete or not. Take-home is not allowed. Note that it is your responsibility to print out the Workbook and to bring it to the lab session. The TA is under no obligation to provide you with a Workbook.

- When working with the software MEFiSTo-2D, you will need guidance and instructions. These are found in the files

    TEM_lab_Guide_1.pdf
    TEM_lab_Guide_2.pdf

    You will need the Guide during the lab session—print it out and bring it along.

3. Grading

- *LabVolt's FACET Magnetism & Electromagnetism Training System* grades student performance automatically. Details of the grading scheme are given in **Appendix A**. Here, it suffices to say that you must consider each question carefully before you answer. Although the system will allow you to answer a question many times, <u>it gives you full points only if your answer is correct the 1st time</u>!

- The grading of the TEM Lab Workbooks, which are required in the lab sessions based on the *MEFiSTo-2D software* (TEM Waves and Transmission Lines), is performed manually by the TA. The TA is obliged to return the Workbooks to the students at the next lab session or to arrange another proper time and place for that. The details of the manual grading system are given in **Appendix B**.

- Bring discrepancies and errors in marking to the attention of the TA first. In case of disagreement, arrange to meet with the Professor.

NOTE TO TAs: A FAILURE OF THE TEACHING ASSISTANT TO FOLLOW THE RULES WILL RESULT IN FILING AN OFFICIAL COMPLAINT BY THE INSTRUCTOR TO THE DEPARTMENT CHAIR WITH A COPY TO THE SUPERVISOR.

APPENDIX A

DETAILS OF MARKING PERFORMED BY LABVOLT'S FACET MAGNETISM &
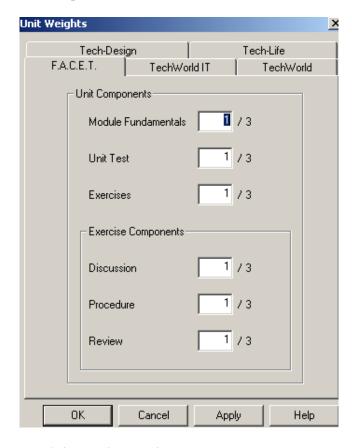ELECTROMAGNETISM TRAINING SYSTEM

1. Unit Grading

Each **Unit** (e.g. Magnetism) consists of 3 grading components: 1) *Module Fundamentals*, 2) *Unit Test*, and 3) *Exercises*.

Module Fundamentals grades questions, which come after the system introduces you to the fundamentals themselves. If you pay attention during the introductory screens, you should have no problem answering the questions, which follow immediately after.

The *Exercises* stage of the laboratory is a combination of practical work and questions related to this practical work. Each exercise consists of the following stages: (a) *preliminary discussion*, (b) *practical procedure*, and (c) *review*. Each stage has a varying number of questions, which the student must answer. If the student does not answer, the system prohibits him/her from proceeding forward. As long as the student answers (correct or wrong), he/she is allowed to proceed.

The *Unit Test* follows after the completion of the exercises. It tests what you have learned during the Module Fundamentals and during the Exercises. The default grading scheme is illustrated in the screen capture below. This is also the setup for 3FK4.

The grading scheme of *Module Fundamentals* grades with a "100" or a "0" <u>only the first attempt at a correct answer</u>. Any subsequent attempts are irrelevant to the student's grade.

Unit Test allows indefinite number of attempts by the student. The grading will take the average for a maximum of 5 scores. If the student takes the test more than 5 times the average will be calculated using the first 4 times and the final time.

The grading rules in *Exercises* are identical to those in *Module Fundamentals*.

Using the above scheme, the system calculates an overall Unit Grade, which is also called the <u>Workbook Grade</u>.

2. Overall Grading

Once the student completes both units, *Magnetism* <u>and</u> *Electromagnetism*, the student must take the so called **Post Test**. The **Post Test** completes the whole Module *Magnetism & Electromagnetism*. Its weight is set at 25% in 3FK4. The two Workbook Grades from the two units are averaged to form an overall Workbook Grade, which is set as 75%. In summary, the overall grade for the Module *Magnetism & Electromagnetism* (labs #1 and #2) is formed as

$$G_{MEM} = 0.25G_{PT} + 0.75G_{WB}$$

where G_{PT} is the post-test grade and G_{WB} is the workbook grade.

APPENDIX B

DETAILS OF MARKING "TEM WAVES AND TRANSMISSION LINES" LABORATORIES

Each **Lab Grade** consists of a ***Pretest Grade*** and a ***Workbook Grade***. The weight of the ***Pretest Grade*** is 10% and the weight of the ***Workbook Grade*** is 90%.

The ***Pretest Grade*** is the average of the *Question Grades*. The *Question Grades* are typically "0" (wrong) or "100" (correct) although partial marks are allowed as per the discretion of the TA.

The ***Workbook Grade*** is the average of all *Question Grades* and *Table Grades*. *Question Grades* are the same as in the ***Pretest***. *Table Grades* are usually based on partial marking. Deviations in the measured values recorded in the Tables are possible and should be allowed for by the TA. Deviations smaller than or equal to 10% of the known correct value should be considered correct.

The overall grade for the Module *TEM Wave & Transmission Lines* is the average of the two **Lab Grades** (for Lab #3 and Lab #4). There is no post-test for this module.