

**GE310 PHOTOGRAMMETRIC MODELLING**

**EXPERIMENTS and EXPERIMENTAL DESIGN**

**INFORMATIVE NOTE AND MAIN GUIDE**

GE310 Photogrammetric Modelling course aims to provide our undergraduate students the skills of using effective research methods and tools, conducting experiments, designing experimental processes, collecting data, analysing and reporting the results to examine complex engineering problems. Half of the work during the semester will involve experiments, the other half will be on other course-related activities.

The experimental design studies, data collection and reporting will be carried out for approximately 7 work day/lesson, from the beginning of course. The impact of experiment design processes on the total grade has been determined as 50% (%50 midterm and %50 final).

**Experimental Design Informative Notes and Main Steps:**

Experiment design is an integrated process of determining and planning experimental process steps, effectively evaluating the impact of multiple inputs/parameters on output values, and carrying out systemic performance measurements effectively, and conducting validation/verification studies with minimum error.

The steps to be followed in experimental design activities are given as below:

1. Please observe and note the details given in Photogrammetry and Remote Sensing Laboratory/Measurement Technics Laboratory and also in land, the measurement devices and main equipment, other devices and systems in the laboratories, and consumable materials.
2. Plan an experimental design including at least one engineering problem by doing research on the experiments that are not as same as currently carried out in our laboratories but can be conducted with the devices, machines, consumables and measuring instruments in our laboratory infrastructure.

**P.S.** Acceptable subheadings for experiment/system design activities are as follows:

Area selection, needed sub-elements, surveying methods, evaluation application selection, drawing technics, legal restrictions and all other needed parameters for photogrammetric mapping needed to be considered and work must be carried out as follows.

1. Plan the experimental setup/system, taking into account the necessary sub-steps and intermediate processes, and draw the flow diagram.
2. Send details of the proposed flow diagram of the experiment you designed to the relevant faculty member and get approval for its feasibility.
3. Under the supervision of the faculty member and/or relevant research assistant, carry out the experimental study on the predetermined day and time. Collect the system output data and transfer them into a data bank/cloud system.
4. Analyse the experiment/system verification data and prepare a comprehensive final report including your evaluations and conclusions.

**P.S.** Final report must contain the following subsections:

* Title of experiment,
* Objective,
* Figure/Flowchart/Table regarding to experimental setup,
* Measuring instruments/equipment,
* Theoretical background,
* Figures and tables for the results of experimental investigations,
* Discussions and conclusions on findings/results.

The final report will be evaluated instead of a theoretical final exam. The impact of the final report on the final grade has been determined as 40%.

**Final report/presentation evaluation criteria:**

1. Conducting research from academic (literature) and industrial sources regarding the designed experiment/system (**25%**),
2. Planning the experimental setup/system and drawing the flow diagram (**25%**),
3. Performing the scientific investigation, verifying the system and collecting the necessary data (**25%**),
4. Analysis of experiment/system verification data and reporting of results (**25%**)