

HUMAN FACTORS ENGINEERING
IE 442
LABORATORY MANUAL

LAB – 2

**DETERMINATION OF REACTION TIME WITH MULTIPLE
ALTERNATIVES**



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Objective:

The objective of this Experiment is to test effect of multiple alternatives on reaction times.

Experiment description

Reaction time is composed the speed of nervous signal transmission and reaction speed of muscle. The reaction time can be determined only if there are several alternatives to decide between (in Biocord: three different LEDs and the equivalent push buttons), otherwise some kind of reflex arc between nervous system and muscle would establish after a short period of exercise, causing reaction times similar to the times of true reflex arcs.

Equipment list

1	Basic Unit	662100
2	Reaction Test module	662141
3	Reaction Time module	662142



Figure 1.1 Experimental setup for measuring Reaction time

Experiment setup (see figure 1.1)

Basic unit: equipped with Reaction Test module and display Reaction time module.

Reaction test module: Three LEDs 1, different in color are operated by chance (random generator). Upon lamination of one of the LEDs the push button 2 has to push. The

delay time between lamination of the LED and pushing the button is displayed by the reaction time module as 1/100 sec.

Reaction time module: Red, 26-mm, 3-digit LED display 3 (1/100) that can be read from a distance of 10 m.

Carrying out the experiment

- Determination of the Reaction time without alternatives

Determine the mean value of 10 reaction time measurements of a test person using the single push button (without alternative buttons).

- Determination of the Reaction time with multiple alternatives

Determine the mean value of 10 reaction time measurement of test person using multiple alternative push buttons. Upon lamination of one LED the push button 2 of the equivalent color has to be pushed.

- Compare the mean value without alternative Vs the mean value with multiple alternatives.

Evaluation

The individual mean reaction time determined without alternative can be changed drastically with multiple alternatives. Especially multiple alternative increases the reaction time significantly. As the reaction time is, at least with certain restrictions, a measure for the ability to concentrate, the experiments demonstrate that multiple alternative considerably affect the ability to concentrate.