



SAKARYA UNIVERSITY
FACULTY OF
ENGINEERING/SCIENCE 2026-
2027 FALL SEMESTER
PHYSICS-I LABORATORY
EXPERIMENT REPORT

DEPARTMENT:

NAME-SURNAME– SIGNATURE:

GROUP
NUMBER:

EXPERIMENT NO 2

EXPERIMENT TITLE : TWO-DIMENSIONAL MOTION

OBJECTIVE OF THE EXPERIMENT (10 points)

MEASUREMENTS AND CALCULATIONS

- 1) Measure the values of **h** (the height of the wedge from the ground) and **d** (the hypotenuse length of the inclined plane) of the setup used during the experiment. (5 points)

h=.....cm

d= cm

- 2) Fill the table below appropriately using the data you obtained.
(10points)

Table 1

Point No	X_n	Y_n	t_n	V_{xn}	V_{yn}	V_n
0					---	
1						
2						
3						
4						
5						
6						

- 3) Calculate the y- components of the velocity at each point, using the equation $V_{yn} = \frac{y_{n+1} - y_{n-1}}{t_{n+1} - t_{n-1}}$ and record them in the table . (V_{y0} excluded) **(10 points)**
- 4) Draw an x-t graph on graph paper using the data from the table. Find the horizontal velocity value (V_{xn}) of the moving object (which is the same at every point) from the slope of graph and record it in table. **(15 points)**
- 5) Calculate the speed (V_n) of the object as it passes through each point using the Pythagorean theorem and record it in table. **(5 points)**
- 6) Find the initial velocity component V_{y0} using the equation $V_{y0} = V_{x0} \tan \alpha$ **(5 points)**
- 7) Draw a **Vy -t** graph on graph paper and find the acceleration of the moving object **Y**- direction from the slope of the graph. **(15 points)**

- 8) Calculate the error between the experimental acceleration value and the theoretical acceleration value you found. **(5 points)**
- 9) Draw a $y - t$ graph on graph paper using the data from the table and read the maximum height (h_{max}) from the graph. **(15 points)**
- 10) Find the maximum height the object can reach using the formula $h_{max} = \frac{v_{0y}^2}{2a}$ and compare it with value you read from the graph. **(5 points)**