



# **TA201A PROJECT REPORT** **(THE COLUMBUS)**

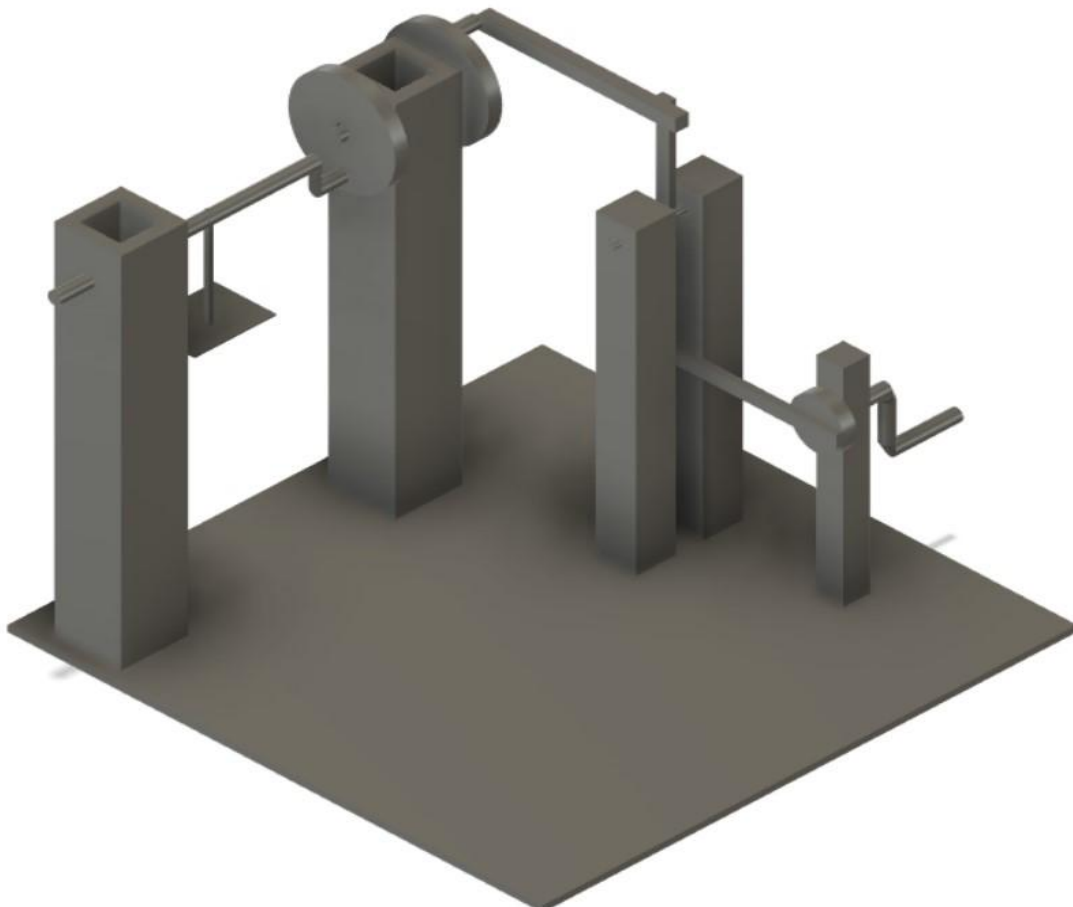
Group 12 (FG-12)

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*Course instructor: Prof. Niraj Chawake*

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# **INDEX**

CONTENTS	PAGE
Acknowledgement	3
Introduction	4
Motivation	5
Material List	6
Work Distribution	7
Orthographic and Isometric View of Columbus Machine	8
Isometric Views of Components	9-23

# **ACKNOWLEDGEMENT**

We sincerely express our gratitude to the lab-in-charge and tutor, for their valuable support and advice in this project. Without their moral and technical support, we would not have been able to complete this effortful and tedious task. We would also like to express our gratitude to all the lab staff, whose constant supervision and encouragement has played a very important role in making this project.

We would like to thank Prof. Indra Pal Singh, Prof. Niraj Chawake, Prof. Shikhar Misra and Prof. Anil Kumar Verma.

# **INTRODUCTION**

## **What's in a name?**

The name of our project is "The Columbus," and the initial impression is of a ship or something pertaining to Christopher Columbus. The name alludes to our project's major attraction, the Columbus ship, which is usually seen as a ride at fairs.

## **What is this project?**

This project focuses primarily on converting a rotary motion to a periodic one. The project may appear to be pointless aside from being a great operating showcase piece of art, but the mechanism utilized in it of how one may convert the full circular motion to trace a motion in an arc up to a specific angle is significant in manufacturing.

## **How does it work?**

The mechanism is rather simple. We rotate the handle attached to a narrow vertical cylinder, and the rotation is transferred to a flywheel in the same plane. The Z-shaped structure is made up of three arms, one of which is coupled to the flywheel and the other to the larger wheel behind the ship. The three arms are connected by a central arm pivoting at its centre between the two-pillar arrangement. When the first arm is moved to and fro across the diameter of the flywheel, the central arm rotates about the pivot up to a certain angle, causing the third arm to trace an arc.

# **MOTIVATION**

## **“COLUMBUS MACHINE”**

We came across this idea while seeking some inspiration for our TA201 project. When we saw the image of the idea, it caught our attention. We decided that we will apply our TA201 theory and physics to make this image into a working 3d mechanical model.

Our disposition to share this experiment with others also had some part in our project.

We hope to achieve satisfaction and sharpen our skills while making this project.

# MATERIAL LIST

Serial No.	Material	Length (mm)	Diameter (mm)	Width (mm)	Thickness (mm)
1	Mild Steel Round Pipe	90	10	-	-
3	Mild Steel Round Pipe	220	10	-	-
4	Mild Steel Round Pipe	20	10	-	-
5	Mild Steel Round Pipe	80	5	-	-
6	Mild Steel Disk	-	80	-	10
7	Mild Steel Disk	-	40	-	10
8	Galvanized Iron Sheet / Mild Steel Sheet  (400*400 + 300*200 + 250*120 + 150*40 + 200*30 + 140*30 + 46*61)	1500	-	900	0.35

# WORK DISTRIBUTION

WEEK	1	2	3	4	5	6
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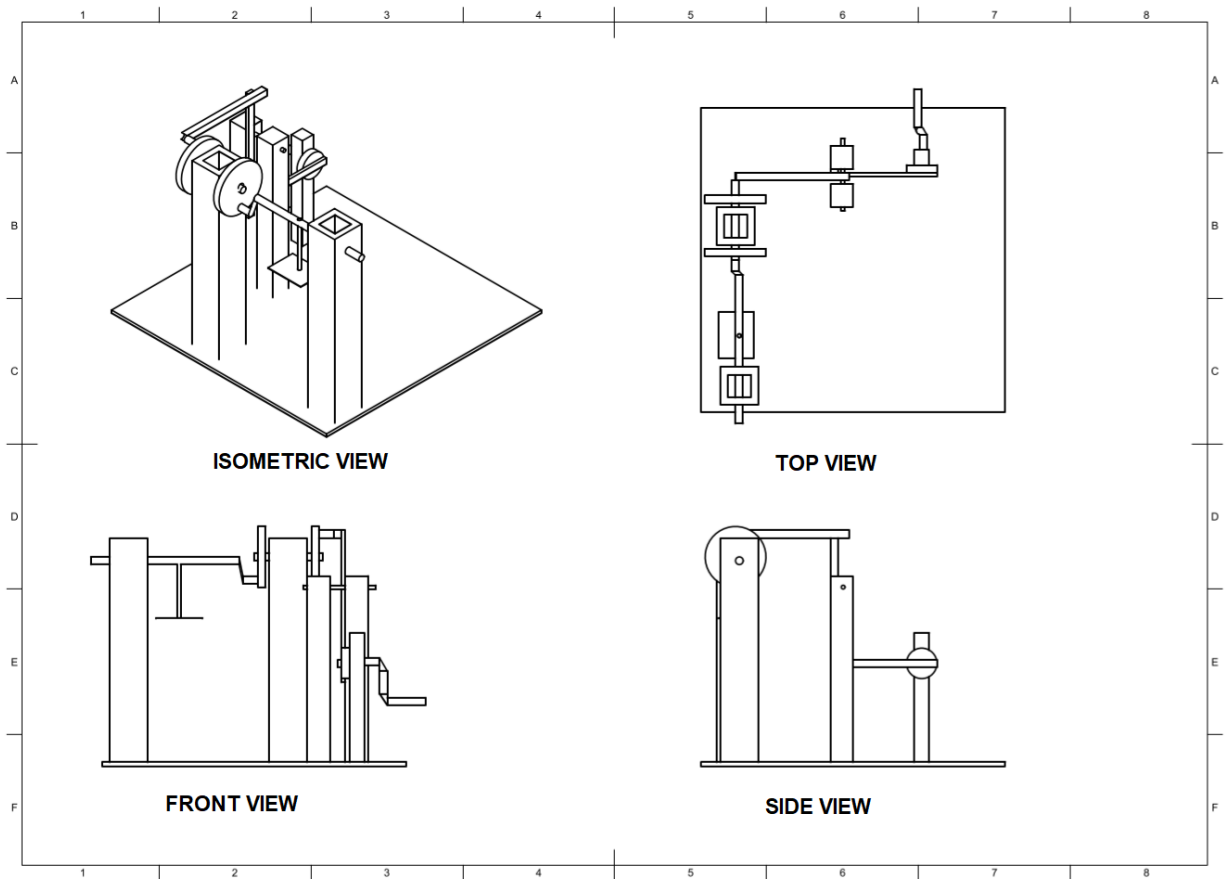
<b>210951</b>	Rotating handle	Pivot Rod	Columbus Connecting Rods	Discs	Assembly	Testing
<b>210954</b>	Rotating handle	Pivot Rod	Supporting Stand	Discs	Testing	Assembly
<b>210958</b>	Welding	Arm (I)	Welding	Columbus Body	Assembly	Testing
<b>210991</b>	Welding	Arm (II)	Welding	Columbus Body	Testing	Assembly
<b>210994</b>	Supporting Stand	Supporting Stand	Flywheel	Columbus Body	Assembly	Testing
<b>211010</b>	Supporting Stand	Supporting Stand	Flywheel	Columbus Fulcrum	Testing	Assembly
<b>211012</b>	FlyWheel	Arm (III)	Welding	Columbus Fulcrum	Assembly	Testing
<b>211021</b>	FlyWheel	Arm	Welding	Columbus Fulcrum	Testing	Assembly

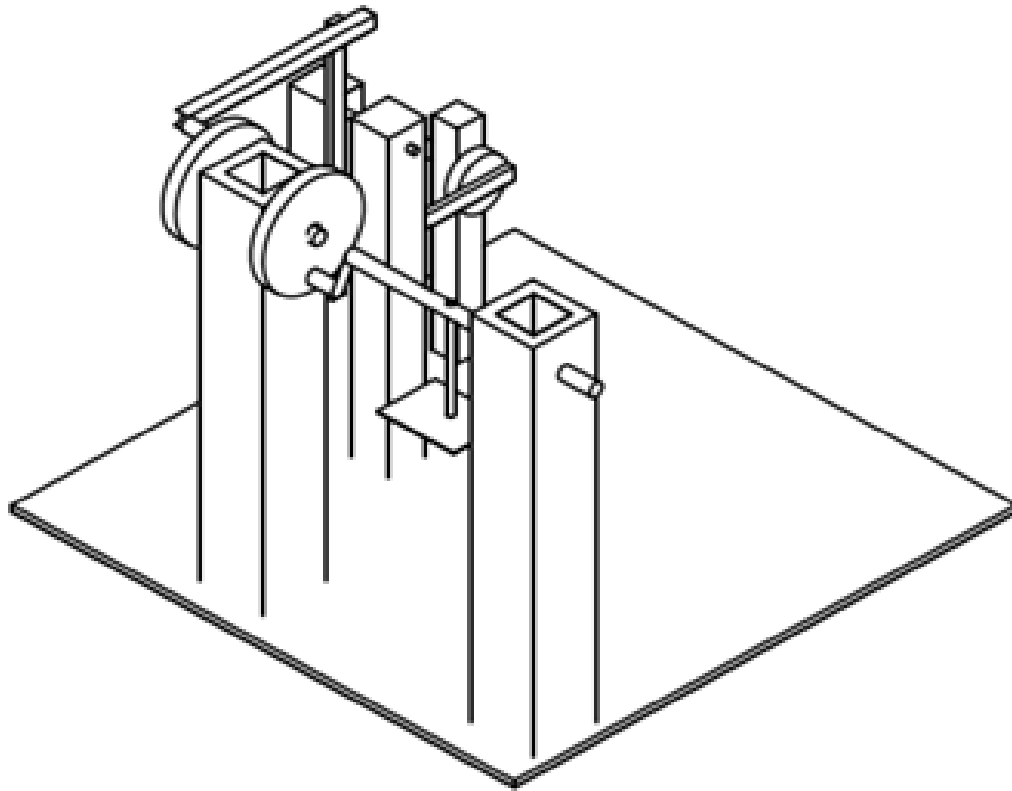
# ORTHOGRAPHIC AND ISOMETRIC VIEW



# OF COLUMBUS

# MACHINE





**ISOMETRIC VIEW**

# **ISOMETRIC VIEWS OF** **COMPONENTS**

