Design Project

Mechatronics

SS 24

Group 14

**Topic**

Design of a driving system including controller for a cart of a gantry crane

# Description:

Below a sketch of a gantry crane is shown. The load must be transferred over the path s=20 m. While travelling and at the destination the load should not swing, φ << 1.

Design a driving system for the cart including controlling devices and sensors to fulfill the requirement stated above.

|  |  |  |
| --- | --- | --- |
| Cart mass | mC | 8 to |
| Load | mL | 25 to |
| Rope length | l | 8 m |
| Rope mass | neglected |  |

s

Load with mass mL

Length of rope l

mass of cart mC

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T



The design includes:

* Specification of all required components (BOM)
* Set of drawings
* Simulation of the system in order to verify the correct functionality of the designed system. The simulation must show all values along s including values from the driving system.

Remark:

Based on your design the system can be build w/o any further calculation or design steps. So all components must be exactly specified. In case of components being bought, specify manufacturer and component selected including all significant product data. In case you need to design components a full set of drawings and a description is mandatory.

**Task 0**

To be filled

**Task 1**

To be filled

tbc

# Time Line: All dates are strict. Delay will result in failed project and

# course.

Select and describe the industrial project. Set up a project schedule.

To be handed in not later than April 21, 2024.

Deadline/Final Report Due: July 15, 2024

Oral Examination: July 20, 2024