



Benha University
Benha Faculty of Engineering
Mechanical Engineering Department

Research Project

Description and Instructions

Academic Year	2019/2020
Semester	Two
Study Year	Y-3
Module Code	M1392
Module Title	Introduction to Mechatronics
Description	Project to replace Unseen Exam
Assessed ILOs	1, 2, 5
Duration	10 Days
Module Leader	Dr. Mahmoud Magdy

General Instructions

- This project replaces the unseen exam
- Submission cover page will be uploaded by the department.
- Follow the structure and description that will be uploaded by the department
- Similarity shall not exceed 20%

Offered Research Topics

Regarding the research project for "**Introduction to Mechatronics - M1392**".

The idea of the project is "An Egyptian company request a fully automated packing/ filling solution that replaces the manual packing/filing for predefine products "

Each student should submit a full **technical** and **commercial** proposal for the company. This project must include the course topics as:

- Sensors for (positioning, counter, velocity.....)
- Actuators (Selection of motor for the conveyor)
- DAQ system and type of signal (analogue or digital)
- Pneumatic system (as rejection mechanism for overload product, closing the product)
- Define the number of I/O for the system
- Controller

Technical Proposal:

- The student should submit his idea for a packing/filling solution form his perspective view.
- Explain each process separately in the solution.
- The student should explain each item in his project and the selection criteria.
- The student should explain the benefit of his design over the other competitors.
- The student should submit a full drawing (2D or 3D) for his project (Mechanical, Electrical, Pneumatic.....)

Commercial Proposal:

- The list of components with the price from the online market.
- The list of the suppliers of these components.
- Finally, the total budgetary offer of this project must be submitted to the customer.

EVALUATION:**Evaluation form for the report:**

No.	Items	Grade
1	Background and introduction (Literature review) <ul style="list-style-type: none"> Collect the same project ideas have done before. 	10 %
2	Description of selected project, including labeled and figures <ul style="list-style-type: none"> Explain the process of your project step by step 	20%
3	Detailed product technical specifications <ul style="list-style-type: none"> List of parts with the principle of work and technical specifications in your project (motors, sensor....._) 	25%
4	All mechanical/electrical drawings of the developed project <ul style="list-style-type: none"> Use CAD software as Solid work to represent the mechanical drawing Use Proteus software to represent your electrical connection Use your favorite software to represent your project. 	20%
5	Controller simulation and implementation <ul style="list-style-type: none"> Define the Input and Output to the controller Explain your code step by step 	10%
6	Recommendations for improvement <ul style="list-style-type: none"> Your idea about any improvement for your project to increase the functionality 	10%
7	References	5%
	Total	100%