

**DEPARTMENT OF MECHANICAL AND AEROSPACE ENGINEERING**  
**UNIVERSITY OF TEXAS AT ARLINGTON**  
**INTRODUCTION TO ROBOTICS - ME 5337**  
**PROJECT #4**  
**TOPIC: REAL WORLD APPLICATION ON**  
**EXPERIMENTATION WITH GMF S-110 INDUSTRIAL ROBOT AND**  
**UNDERSTANDING OF THE STATION FRAME CONCEPT**  
**DUE DATE: FIFTH CLASS MEETINGS FROM ASSIGNED DATE**

The main element of this project is the experimentation with an articulated robot, a GMF S-110. The main objective of this project is the understanding of the concept of the station frame as relates to robotics.

**Project requirements:**

- All previous safety rules and project requirements as defined in project 3 apply to this project as well.
- Understand the setup in the robotic cell as it relates to the table with the holes.
- Understand the process in KAREL that allows a user to define a USER frame.
- Learn how to teach and define a user frame.

You will program the robot to perform a pick and place operation. The pick and place points are not always at the same locations. Therefore, you need to teach both of these points to the robot. Once the robot knows the pick and the first place points, you are to instruct the robot to pick up objects/parts and place them in a pattern.

The robot will have to pick up parts from the conveyor system. The place points are to be defined relative to the station frame that is to be defined per my instructions. Your program should be flexible so that you can define any station frame using three of the four posts on the table and then place the parts at designated locations relative to the station frame.

You must observe robot structured programming principles. Your program should be a modular and expandable as possible. Write your program assuming that you do not have a-priori knowledge of the number of parts to be manipulated.

- You are to turn in a formal project report.
- The demonstrations are to be performed at a day to be defined later.