

# Mandatory safety instructions while conducting the cutting experiments on the KUKA LWR 4+

Date and time: Monday, 07. October 2019 02:29PM

## Following conditions must be satisfied before running the experiment:

1. Date, time and duration of the experiments must co-ordinated with the time table of other colleagues, working in manipulation lab.
2. All the colleagues using manipulation lab must be informed about the date, time and duration of the experiments.
3. All the colleagues must be informed about safety procedures written in this document.

## Following steps must be followed in that order during preparation of the experiment:

1. Ensure that no one is present inside the manipulator room.
2. Ensure that emergency stop (E-STOP) on KUKA KCP2 is pressed.
3. Place "Don't enter the lab" sign on the door.
4. Safely attach knife.
5. Remove the knife cover.
6. Switch on the KUKA KRC.
7. Exit the room and close the door.
8. Release E-STOP.
9. Set correct tool using KUKA KCP2 in order to avoid any dangerous behaviour by robot due to erroneous dynamics mode.
10. Test gravity compensation mode to check if the dynamic model is loaded correctly.

## Following conditions must be satisfied while running the experiment:

1. No one enters or present in the room.
2. Manipulator room door must be kept locked.
3. Experiment must be observed through glass window and cameras only.
4. E-STOP button on KCP2 is always accessible to at-least one of the operator/observer all the time.

## Following steps must be followed in that order after the experiment:

1. Make sure that E-STOP is pressed on KCP2.
2. Enter the room and switch off KRC.
3. Place the knife cover.
4. Safely remove the knife and put it in a secure place.

## In case of emergencies like power cut, fire, etc:

1. Press E-STOP on KCP2.
2. Do not enter the room.
3. Lock the manipulator lab.
4. Inform supervisors and colleagues about the situation immediately.

*Please refer to the KUKA LWR 4+ manual for the definition of the terms used.*

