

# OUTLIER DATA POINTS

CHEM 25 | SDSU

# OUTLIER DATA POINTS

- When there are data points that are inconsistent with the rest of the data are termed **outliers**.
- The reasons for an outlier may vary (e.g. from different populations, contamination, analytical error...)
- The data cannot be rejected without cause, a null hypothesis test should be applied to the suspect data point.
- The Grubb's test can be used as a test statistic to evaluate the outlier.

| Trail   | Value |
|---------|-------|
| 1       | 4.065 |
| 2       | 4.072 |
| 3       | 4.059 |
| 4       | 4.091 |
| 5       | 4.068 |
| Average | 4.071 |
| Std Dev | 0.012 |

# GRUBB'S TEST

- $X_{out}$  is the outlier data point
- If  $G_{exp} > G(\alpha, n)$  the data point may be rejected
- Note that the Grubb's test uses the total number of measurements not degrees of freedom.

$$G_{exp} = \frac{|X_{out} - \bar{X}|}{s}$$

Table 4.18 Grubb's Test

| $n$ | $G(0.05, n)$ |
|-----|--------------|
| 3   | 1.115        |
| 4   | 1.481        |
| 5   | 1.715        |
| 6   | 1.887        |
| 7   | 2.020        |
| 8   | 2.126        |
| 9   | 2.215        |
| 10  | 2.290        |