U Wroclaw, Fall 2015
Applied Stats
DISCUSSION/LAB2: Modeling intro- ECDF, probability and QQ plots

We will use three data sets: MBODY.MTW, FOOT.MTW and IQLEAD.MTW

TO DO:

1. **Use ECDF and Probability Plot to decide the distribution that the following samples are coming from:**
    a. **Sample 100 observations from N(10, 5) (normal distribution with mean 10 and standard dev iation 5). Compare with standard normal and normal with parameters estimated from the sample. Conclusions regarding the sample? Conclusions regarding the methods?**
    b. **Use the sample from a) as check if it comes from an exponential distribution with mean = sample mean. Conclusion?**
    c. **Generate 100 observation from Gamma distribution with shape parameter=1, and scale parameter equal to 5. Compare it with a Gamma models with shape =1 and scale =5. Compare it with a Gamma model with shape=5 and scale =1.**
    d. **Generate a sample of 100 obs from an exponential distribution with mean 10. Check the fit of the following models:**
        i. **Exponential with mean 10, and**
        ii. **Exponential with mean = sample mean.**

    Conclusions?

2. **Use ECDF and Probability Plots to fit a reasonable model to the WT=weight and HT= height data sets in MBODY.MTW.**
3. **Are WT and HT coming from the same distribution?**
4. **Use data set FOOT.MTW. Are the foot lengths of men and women coming from the same distribution? From the same family (type) of distributions?**
5. **Location and scale families: Consider exponential and Gamma distributions. Check experimentally if they are likely to be "location and/or scale families".**