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# Biostatistics with R – I: Statistical Hypothesis Tests

## Curriculum Overview – Public Health Research Centre (PHRC) NYUAD

## Course Descriptions

A statistical hypothesis is a researcher's assumption about the population data collected for a conduct experiment. However, it is not necessary that this made assumption be true every time. Testing hypotheses is a formal process to validate the researcher's hypothesis.

The aim of this course is to offer the course participants 14 statistics modules on the topic of "statistical hypothesis tests" with open source, powerful and highly extensible free software (R Project) and RStudio (RStudio Interface). This course assumes that the course participants have been given an "Introduction To R".

## Course Planning

These 14 courses modules are

- Theoretical distributions in R (2 sessions, each session lasts circa 90 minutes)
    - Probability Distribution
    - The Normal Distribution
    - The Central Limits Theory
- Statistical Hypothesis Tests in R (6 sessions, each session lasts circa 90 minutes)
    - One-sample and paired t-test
    - Two-sample Student's t-test
    - Two-sample Welch's test
    - One Way Analysis of Variance (ANOVA)
    - Prometric Pairwise Group Comparison Using t-test

- Statistical Hypothesis Tests in R (6 sessions, each session lasts circa 90 minutes)
    - One-sample and Paired Wilcoxon test
    - Two-sample Wilcoxon test
    - Non-parametric ANOVA
    - Non-parametric Pairwise Group Comparison Using Wilcoxon test