## Biometrics and Multiparameter Diagnostics

| Module Code | Workload | Credits | Semester | Frequency of Module | Duration |
|---|---|---|---|---|---|
| | 180 hrs. | 6 | 1 | Each semester | 1 Semester |

| 1 | Module Components | Teaching Language | Contact Hours | Self Study | Class Size |
|---|---|---|---|---|---|
| | a) Biometrics and Multiparameter Diagnostics<br>b) Design of Clinical Trials | a) English<br>b) English | a) 33,75 hrs.<br>b) 22,5 hrs. | a) 86,25 hrs.<br>b) 37,5 hrs. | a) 15<br>b) 15 |

**2 Learning Outcomes**

After successful participation in the module the students

**Analysis (4)**
... plan a straightforward clinical trial
... analyse multivariate data with appropriate statistical procedures
... validate statistical results and models

**Synthesis (5)**
... write a report for a straightforward clinical trial

**Evaluation (6)**
... evaluate a clinical trial
... question the validity of the results of a clinical trial
... select appropriate methods for the statistical analysis

**3 Individual Component Content**

a) Statistical software R, confidence intervals, statistical tests, linear regression, ANOVA, ANCOVA, logistic regression

b) Sample size estimation, randomization and blinding, statistical monitoring and data management, quality requirements, individual study designs, specificities e.g. in studies in surgery or drug trials

**4 Teaching Methods**

a) Seminar

b) Lecture

**5 Prerequisites**

Knowledge in mathematics and statistics

| | |
|---|---|
| **6** | **Methods of Assessment**<br>a) Graded Assessment 1sbL (Laboratory) (4 LP)<br>b) Graded Assessment 1K (Written Exam) (2 LP) |
| **7** | **Applicability of Module**<br>Precision Medicine Diagnostics M.Sc. (PMD) |
| **8** | **Person Responsible for Module**<br>Prof. Dr. Matthias Kohl (Module Responsible)<br>Prof. Dr. Matthias Kohl (Lecturer) |
| **9** | **Reading List (Core Texts and Recommended Texts)**<br>a) Hastie, Tibshirani and Friedman (2009). The Elements of Statistical Learning. Springer Verlag.<br>Izenman (2008). Modern Multivariate Statistical Techniques. Springer Verlag.<br>Venables and Ripley (2010). Modern Applied Statistics with S. Springer Verlag.<br>b) Friedman LM, Furberg CD, DeMets DL (2010). Fundamentals of clinical trials. Springer Verlag.<br>Chow, Shao and Wang (2008). Sample size calculations in clinical research. Chapman & Hall.<br>Higgins JPT, Green S (editors). Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0 [updated March 2011]. The Cochrane Collaboration, 2011. Available from www.cochrane-handbook.org. |