**ACADEMIC DISCIPLINE OVERVIEW**

1. **Program data**

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| **1.1.** | **GRIGORE T. POPA UNIVERSITY OF MEDICINE AND PHARMACY IASI** |
| **1.2.**  | **FACULTY OF MEDICAL BIOENGINEERING**  |
| **1.3.** | **PROGRAMME:** Physio-kinesiotherapy and rehabilitation |
| **1.4.**  | **STUDY FIELD:** Health |
| **1.5.** | **STUDY CYCLE**: UNDERGRADUATE |
| **1.6.** | **STUDY PROGRAMME:** INENGLISH |
| 1. **Subject data**
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| **2.1.** | **Subject: MEDICAL INFORMATICS and BIOSTATISTICS RE1106** |
| **2.2.** | **Module leader:** Professor Arotaritei Dragos, PhD |
| **2.3.** | **Seminar leader:** Professor Arotaritei Dragos, PhD |
| **2.4. Year of study** | **I** | **2.5. Semester in which is taught** | **I** | **2.6. Evaluation type** | C1 | **2.7. Subject status** | Mandatory |

1. **Estimated total time (hours/semester of didactic activity)**

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| **3.1.Number of hours / week** | 2 | **3.2. Courses number of hours / week** | 1 | **3.3.Seminar / l practical classes** | 1 |
| **3.4. Total number of learning hours** | 28 | **3.5. Courses** | 14 | **3.6. Seminar / practical classes** | 14 |
| **3.7. Distribution of the available time** | Hours |
| **Study based on the manual, lecture support, bibliography and hand notes** | 10 |
| **Supplementary documentation in the library, using specialized platforms via internet and by field work** | 6 |
| **Preparation for seminars / practical classes, study themes, reviews, portfolio, and essays** | 6 |
| **Tutorship** | 2 |
| **Examinations** | 4 |
| **Other activities** |  |
| **3.8. Total hours of individual study** | 22 |
| **3.9. Total hours per semester** | 50 |
| **3.10. Number of credits** | 2 |

1. **Preconditions (where applicable)**

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| **4.1.** of curriculum | Mathematics (algebra), Information and Communications Technology (ICT). |
| **4.2.** of competences | Basic knowledge of computer use. |

1. **Conditions (where applicable)**

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| **5.1.** for lectures | Video logistic support |
| **5.2.** for seminars / practical classes | Hardware (PC) and software (Microsoft Office) support |

1. **Specific competences acquired**

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| Professional competences (expressed as knowledge and abilities) | Knowledge and ability to collect and process data from medicine and kinesiology, analysis and interpretation of statistical data, graphical representation methodologies.Usage of Microsoft Office package (Word and Excel) software applications for collecting organization, processing, representing and statistical analysis of discrete data. |
| Transverse competences (of role, of professional development, personal) | Identification of objectives to be achieved, available resources, conditions for tasks completion, milestones and working times, as well as deadlines and risks.Identification of roles and responsibilities in a multidisciplinary team and application of relational techniques and efficient work within a team and with a patient. |

1. **Objectives of the study discipline (according to the grid of specific competences acquired)**

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| **7.1.** General objective | The knowledge and proper use of subject-specific concepts, the acquisition of knowledge on the design, implementation, use and handling of information from medical and kinesiology records. |
| **7.2.** Specific objectives | The understanding of the ideas underlying the data collection, following the principles of organizing and analyzing information.The learning of the concepts relating to medical information systems.The knowledge of discovery of relationship among data records using specific tools. |

1. **Contents**

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| **8.1. Lecture** | **Teaching methods** | **Observations** |
| 1. Information in data and hyperdata, structured and unstructured data. The notion of information. Organisation and displaying data.
 | Interactive lectures,Discussions, Explanations | 2h |
| 1. Applied Informatics in physio-kinesiotherapy and rehabilitation. Current problems and tendency. Statistic packages with examples: EXCEL, R-Language, Minitab.
 | Interactive lectures,Discussions, Explanations | 2h |
| 1. Elements of general statistics. General presentation. Population. The sample. Data Types. Frequency distribution. Class interval. Frequencies diagram. Descriptive statistical indicators.
 | Interactive lectures,Discussions, Explanations | 2h |
| 1. Statistical inference. Percentiles. Measures of central tendency: the mode, the median and the mean.
 | Interactive lectures,Discussions, Explanations | 2h |
| 1. Measures of Variability. Calculating Standard Deviation for a Sample.
 | Interactive lectures,Discussions, Explanations | 2h |
| 1. The normal curve and sampling error. Levels of confidence and probability of error. Calculating skewness and kurtosis.
 | Interactive lectures,Discussions, Explanations | 2h |
| 1. Regression models. Correlation, bivariate regression, and multiple regression.
 | Interactive lectures,Discussions, Explanations | 2h |
| **Bibliography****mandatory**1. Joseph P. Weir , William J. Vincent, *Statistics in Kinesiology*, Human Kinetics Publishers, 2012.
2. Edward H. Shortliffe, James J.Cimino, *Biomedical Informatics*, Springer, 2014.

**selective**1. *Kathleen F. Weaver, Vanessa C. Morales, Sarah L. Dunn, Kanya Godde, Pablo F. Weaver, An Introduction to Statistical Analysis in Research: With Applications in the Biological and Life Sciences*, Wiley, 2017.
2. James E. Veney, John F. Kros, David A. Rosenthal, *Statistics for Health Care Professionals: Working With Excel*, Jossey-Bass, 2009.
3. Brian S. Everitt, *Modern Medical Statistics*, Oxford University Press Inc., New York, 2003.
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| **8.2. Seminar / practical classes** | **Teaching methods** | **Observations** |
| 1. Informatics. General concepts. Types of data. Internet databases. Tools for statistical computing and graphics.
 | Practical applications, discussion, explanation | 2h |
| 1. EXCEL, general presentation. Data and types of data. Built-in statistical functions.
 | Practical applications, discussion, explanation | 2h |
| 1. EXCEL,construction of custom formulas. Example of calculation for ROC curve.
 | Practical applications, discussion, explanation | 2h |
| 1. Application using the normal curve and sampling error.
 | Practical applications, discussion, explanation | 2h |
| 1. Prevalence and incidence. Epidimiological approach translated in physio-kinesiotherapy and rehabilitation.
 | Practical applications, discussion, explanation | 2h |
| 1. Relationships among the Mode, Median, and Mean. Problems solved using EXCEL.
 | Practical applications, discussion, explanation | 2h |
| 1. EXCEL example for Regression models. Mini-project.
 | Practical applications, discussion, explanation | 2h |
| **Bibliography****mandatory**1. Joseph P. Weir , William J. Vincent, *Statistics in Kinesiology*, Human Kinetics Publishers, 2012.
2. Ted A. Baumgartner, Andrew S. Jackson, Matthew T. Mahar, David A. Rowe, Measurement for Evaluation in Kinesiology, Jones & Bartlett Learning, 9th Edition, 2016

**selective**1. Thomas J. Quirk, Meghan Quirk, Howard Horton, Excel 2010 for Biological and Life Sciences Statistics: A Guide to Solving Practical Problems, Springer-Verlag New York, 2013.
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1. **Correlation of the discipline contents with the expectations of the epistemic community, professional associations, and representative employers from the afferent program field**

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| Knowledge and abilities are established as didactic objectives and specified as such in the analytic programs that are revised yearly. After their analysis by the study discipline staff, these are discussed and approved in the Curricular Committee, towards curricular harmonization among the various study disciplines. Along this entire process systematic evaluation is performed, directly if possible, regarding the correspondence of the contents to the expectations of the academic community and of the representatives of the social community, professional associations, and employers. |

1. **Evaluation**

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| **Type of activity** | **Type of activity** | **Evaluation methods** | **Contribution to the final grade** |
| **Lecture** | Learning the theoretical notions and aspects presented in the course | The written test | 50% |
| **Seminar/practical classes** | Learning the concepts and theoretical aspects presented in the laboratory | Colloquium practical activity | 40% |
| Learning the concepts and theoretical aspects presented in the course/ laboratory | Activity during the year | 10% |
| **Minimal performance standard:** Knowledge of descriptive statistical indicators. Implementation in EXCEL a statistical analysis for a given dataset, and a simple linear regression model |

**Date Signature of head of discipline**

18.10.2019 Professor Dragos Arotaritei, Ph.D

**Department approval date**

  **Signature of department director**

Lecturer Daniela-Viorelia Matei, Ph.D