RK University (Pre-registration coursework for PhD program)

Program – PhD (Physiotherapy)

Concerned Dean – Dr. Priyanshu Rathod (email – priyanshu.rathod@rku.ac.in)

Sr. No.	Subjects	Contents	Method of evaluation	Credits
1.	Research Methodology & Biostatistics	As per syllabus mentioned below	Written examination (3 hrs)	4
2.	Subject of specialization:* 1. 2.	Research topic specific	Written examination (3 hrs)	4
3.	Review of literature	Review of literature for the PhD research topic	Presentation + Detailed report in hard copy	3
Total				**11**

(*Shall be decided by the Dean of Faculty, individually, for each PhD scholar)

Notes –

1. The admission process of PhD program will comprise of 2 stages viz. (a) admission to PhD program (b) final registration in PhD program.
2. A successful PhD candidate (RAT examination) will be admitted to PhD program after paying admission fees (Rs. 50,000/-) and upon allocation of a PhD guide by RK University.
3. An admitted PhD candidate will have to submit synopsis and presentation of his/her actual research project (in consultation with the PhD guide approved and allocated by RK university) before Doctoral Research Committee (DRC) within 6 months from date of admission (date will be declared by university).
4. An admitted PhD candidate will be registered after earning minimum of 11 credits as per above mentioned course-work structure.
5. The candidate will acquire credit of a subject on passing the examination that will be conducted at the end of 6 months (date will be declared by university).
6. On acquiring required credits, an admitted candidate will be issued a certificate of registration (along with project title) by RK University.

Course Title	Research Methodology & Biostatistics
Course Code	
Course Credit	Total :4

Course objectives:

On completion of the study of this subject, the research student should be able to:

- To understand and practice the types and criteria of Research in physiotherapy.
- To acquire skills on research process including developing research proposal, problem design, sampling, reviewing literature, formulating a hypothesis, collect data, writing research proposal etc…
- To develop the skills to write research reports, manuscript and publish research critically.
- To understand and practice the role of biostatistics in research including data analysis and mining.
- To have basic knowledge on patent practice.

Section I - Research Methodology

Following are the topics to be included but not limited to:

1. **Research in Physiotherapy**
    a. Introduction
    b. Research for Physiotherapist: Why? How? And When?
    c. Research – Definition, concept, purpose, approaches
    d. Internet sites for Physiotherapist

2. **Research Fundamentals**
    a. Define measurement
    b. Measurement framework
    c. Scales of measurement
    d. Pilot Study
    e. Types of variables
    f. Reliability & Validity
    g. Drawing Tables, graphs, master chart etc
3. **Writing a Research Proposal, Critiquing a research article**
    a. Defining a problem
    b. Review of Literature
    c. Formulating a question, Operational Definition
    d. Inclusion & Exclusion criteria
    e. Forming groups
    f. Data collection & analysis
    g. Results, Interpretation, conclusion, discussion
    h. Informed Consent
    i. Limitations
4. **Research Design**
    a. Principle of Designing
    b. Design, instrumentation & analysis for qualitative research
    c. Design, instrumentation & analysis for quantitative research
    d. Design, instrumentation & analysis for quasi-experimental research
    e. Design models utilized in Physiotherapy
5. **Research Ethics**

a. Importance of Ethics in Research
b. Main ethical issues in human subjects' research
c. Main ethical principles that govern research with human subjects
d. Components of an ethically valid informed consent for research

Reference :

1. Rehabilitation research: 3rd edition. Elizabeth Domholt. Saunders 2004
2. Research Methods for clinical therapist: 5th edition. Hicks C. Churchill Livingstone 2009
3. Research for health professionals – Bailey DM. F.A. Davis Company 1991
4. Elements of Health Statistics: Rao. N.S.N. Tara Book Agency
5. Research in Physical Therapy. Bork CE. Lippincott Williams and Wilkins

Section II - Biostatistics and Patent Practice

Following are the topics to be included but not limited to:

1. **Biostatistics**
   a. Introduction
   b. Definition
   c. Types
   d. Application in Physiotherapy
2. **Data**
   a. Definition
   b. Types
   c. Presentation
   d. Collection methods
3. **Measures of central value**
   a. Arithmetic mean, median, mode. Relationship among
   b. Partitioned values- Quatertiles, Deciles, Percentiles
   c. Graphical determination
4. **Measures of Dispersion**
   a. Range
   b. Mean Deviation
   c. Standard Deviation
5. **Normal Distribution Curve**
   a. Properties of normal distribution
   b. Standard normal distribution
   c. Transformation of normal random variables.
   d. Inverse transformation
   e. Normal approximation of Bioaxial distribution.
6. **Correlation analysis**
   a. Bivariate distribution
   b. Scatter Diagram
   c. Coefficient of correlation
   d. Calculation & interpretation of correlation coefficient
   e. T-test, Z-test, P-value
7. **Regression analysis**
   a. Lines of regression
   b. Calculation of Regression coefficient
8. **Sampling**
   a. Methods of Sampling
   b. Sampling distribution
   c. Standard error
   d. Types I & II error

9. **Probability**
10. **Hypothesis Testing**
    a. Null Hypothesis
    b. Alternative hypothesis
    c. Acceptance & rejection of null Hypothesis
    d. Level of significance
11. **Parametric & non Parametric tests**
    a. Chi square test
    b. Mann-Whitney U test
    c. Wilcoxon Signed test
    d. Kruskal-Wallis test
    e. Friednam test
    f. T-test/student T test
    g. Analysis of variance
12. **Computing in Data analysis and Data mining**
13. **Patent Practice –**

Patent is the most significant form of Intellectual Property to encourage creativity in Health science and technology and protect invention and development and creation of new technology and health care system throughout the world. The objective of the Program is to provide learners in-depth knowledge of The Indian patent law, training in writing of patent application, and to develop expertise in patent search.

a. Overview of Intellectual Property Rights
b. International Framework for Patents
c. Indian Patent Law and Procedures

References:

1. Methods in Bio-Statistics for medical students. 7th edition. B.K. Mahajan. Jaypee Publication 2010
2. Handbook of Research Methods: A Guide for Practitioners and Students in the Social Sciences. 2nd edition. Scroull NL. Scarecrow Press 1995
3. Elements of Research in Physical Therapy. 2nd edition. Currier DP. Lippincott Williams and Wilkins 1984
4. An Introduction to Biostatistics. Gurumani N. NJP Publishers 2011