FACULTY OF SPORTS MEDICINE & PHYSIOTHERAPY

SYLLABUS

FOR

Pre Ph.D. Course in
PHYSIOTHERAPY

Examinations: 2019-20

GURU NANAK DEV UNIVERSITY
AMRITSAR

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            Please visit the University website time to time.
(PRE Ph.D. COURSE IN PHYSIOTHERAPY)

Scheme of Examination

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<tr>
<th>Course No.</th>
<th>C/E/I/A</th>
<th>Course Title</th>
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<th>Total Credits</th>
<th>Marks (Mid Semester + Major Exam)</th>
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<td>Core Courses</td>
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<td>PPL901</td>
<td>C</td>
<td>Advance Research &amp; Biostatistics</td>
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<td>Work Physiology and Nutrition</td>
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<td>PPL904</td>
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<td>Advanced Physiotherapeutic Approaches</td>
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(PRE Ph.D. COURSE IN PHYSIOTHERAPY)

PPL901: ADVANCE RESEARCH & BIOSTATISTICS

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Max. Marks: 100

Internal: 20

External: 80

Mid Semester Examination: 20% Weightage
End Semester Examination: 80% Weightage

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section-A

Research Methodology:
1. Introduction
   a. Importance of research in clinical practice
   b. Scientific approach
   c. Characteristics
   d. Purposes and limitations.
2. Ethical issues in research.
3. Structure, formulation and implementation of a research project
4. Research questions
   a. Selection and statement of problem
   b. Literature review
   c. Meta-analysis.

Section-B

1. Types of research
   a. Basic and Applied
   b. Qualitative & Quantitative
   c. Descriptive & Experimental
   d. Longitudinal & Cross-sectional
2. Experimental Research
   a. Types of Sampling
   b. Variables
   c. Experimental design
   d. Factorial design

Section-C

Survey research:
   a. Conducting a survey
   b. Questionnaires
   c. Steps in conducting survey research
   d. Epidemiological research
(PRE Ph.D. COURSE IN PHYSIOTHERAPY)

**Section-D**

Biostatistics

- a. Mean, Mode, Median
- b. Standard deviation
- c. Correlation and regression
- d. ANOVA and its application
- e. Validity and reliability
- f. Parametric (Student ‘t’ test, Paired ‘t’ test, Probability)
- g. Non-parametric statistics (Chi square test, Wilcoxon’s signed rank test)
- h. Sample size determination

**References**

2. Colton: Statistics in medicine, Little Brown Company, Boston. 3rd Ed.
5. Hicks: Research for Physiotherapists, Churchill Livingstone. 2nd Ed., 1995
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Section- A
1. Cardiovascular adaptation to exercise:
   a. Cardiovascular adaptations to sustained aerobic exercises.
   b. Regulation of circulation during exercise.
   c. Circulatory responses to various types of exercise regulation of cardiovascular system during exercise.

Section- B
1. Respiratory responses to exercise:
   a. Regulation of Respiration during exercise.
   b. Ventilation at Rest and during Exercise.
   c. Static and dynamic lung volume.
   d. Adaptive changes in the respiratory systems due to regular physical activities.

Section- C
1. Musculoskeletal responses to exercises:
   a. Growth and Exercise.
   b. Training for Muscular Strength and Endurance.
2. Endocrine system responses to exercise:
   a. Effects of exercise on various Hormones in the body.
   b. Hormone regulation of fluid and electrolytes during exercise.
   c. Exercise and Menstrual Cycle.
(PRE Ph.D. COURSE IN PHYSIOTHERAPY)

Section - D

1. Nutrition
   a. Carbohydrates, Fats, Proteins.
   b. Vitamins, Minerals and Water.
   c. Optimal Nutrition for Physical activity.

2. Energy Transfer in Physical activity:
   b. Energy transfer in exercise.
   c. Energy expenditure during various activities.
   d. Fatigue.

References
1. Mc Ardle, Katch, Katch: Exercise Physiology, 5th Ed.
(PRE Ph.D. COURSE IN PHYSIOTHERAPY)

**PPL903: APPLIED MEDICAL SCIENCES**

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**Section-A**

2. Inflammation

**Section-B**

1. Repair, wound healing by primary and secondary union, factors promoting and delaying the process. Healing in specific site including bone healing. “Failed” healing responses.
2. Repair of soft tissue injuries.
4. Basic pharmacokinetics and Pharmacodynamics.

**Section-C**

1. The use of drugs in various musculoskeletal disorders.
2. The use of drugs in various cardiovascular disorders.
3. The use of drugs in various neurological disorders.
4. The use of drugs in various Respiratory disorders.

**Section-D**

1. A review of organization and regulation of motor system.
   a) Types of movement and factors affecting contact and range of motion at synovial joints
   b) Skeletal muscle fibers: composition, structure and characteristics
   c) Muscle metabolism, contraction and relaxation of muscle
2. Anatomy of certain diseases
   a) Common dislocations
   b) Low back pain
   c) Anatomical and Physiological loss resulting from nerve injury.
Peripheral nerve entrapment (such as carpel tunnel syndrome, cubital tunnel syndrome, tarsal tunnel syndrome, morton neuroma)

References:
2. Gray’s Anatomy - Williams & Warwick - Churchill Livingstone. 35th ed. 2007
8. Mc Ardle, Katch, Katch: Exercise Physiology, 5th Ed.
(PRE Ph.D. COURSE IN PHYSIOTHERAPY)

**PPL904: ADVANCED PHYSIOTHERAPEUTIC APPROACHES**

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**Section- A**
1. Principles and application of neuromuscular facilitation techniques including PNF
2. Principles of different soft tissue mobilizations (such as Myofacial Techniques)
3. Methods for improving neuromuscular control, proprioception and kinesthetic sensation following different injuries.

**Section- B**
1. Neural Tissue Mobilization
2. Muscle Energy Technique
3. Positional release technique
4. Principles of Taping and application- Rigid & Dynamic Taping

**Section- C**
1. Manual Therapy: Introduction, Classification, Assessment for mobilization and manipulation. The concepts of mobilization, such as:
   a. Maitland
   b. Cyriax,
   c. Kaltenborn
   d. Mennel
   e. Mulligan
   f. McKenzie
(PRE Ph.D. COURSE IN PHYSIOTHERAPY)

Section- D

1. Segmental Stabilization Concepts of Spine:
   a. Muscle function in spinal stabilization
   b. Contribution of various muscles to spinal stabilization
   c. Local Muscle dysfunction in Low back pain

References:

8. Clinical Orthopedic Rehabilitation, Brent Brotzman.
10. Physical Rehabilitation Assessment and Treatment, Susan O Sullivan, Jaypee brothers