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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> (ii) Subject to change in the syllabi at any time. Please visit the University website time to time.

Scheme of Examination

Semester – I:							
Course No.	C/E/I/A	Course Title	L	Τ	Р	Total Credits	Marks (Mid Semester + Major Exam)
Core Courses							
PPL901	С	Advance Research & Biostatistics	4	_	_	4	20+80=100
PPL902	С	Work Physiology and Nutrition	3	_	—	3	20+80=100
PPL903	С	Applied Medical Sciences	3	-	-	3	20+80=100
PPL904	C	Advanced Physiotherapeutic Approaches	3	_	_	3	20+80=100
	C	Seminar	_	-	1	1	
Interdisciplinary Course (to be offered from outside the department)							
	Ι	Interdisciplinary Course	3	_	_	3	20+80=100

PPL901: ADVANCE RESEARCH & BIOSTATISTICS

L T P 4 0 0

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

- 1. Mohsin S.M.: Research Methods in Behavioral Sciences: Orient Publications. 2nd Ed.
- 2. Colton: Statistics in medicine, Little Brown Company, Boston. 3rd Ed.
- 3. Mahajan: Methods in Biostatistics, Jay Pee Brothers. 3rd Ed., 2002
- 4. Vincent: Statistics in Kinesiology, Human Kinetics. 3rd Ed., 2005
- 5. Hicks: Research for Physiotherapists, Churchill Livingstone. 2nd Ed., 1995

PPL902: WORK PHYSIOLOGY AND NUTRITION

LTP

3 0 0

Max. Marks: 100 Internal: 20 External: 80

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

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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.

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:
 - a. Energy transfer in Body.
 - b. Energy transfer in exercise.
 - c. Energy expenditure during various activities.
 - d. Fatigue.

References

- 1. Mc Ardle, Katch, Katch: Exercise Physiology, 5th Ed.
- George A. Brooks, Thomas D. Fahey: Exercise Physiology Human Bioenergetics and its applications 1984, John Wiley & Sons, New York, 4th Ed.
- 3. Astrand & Rodahl: Text Book of Work Physiology, McGraw Hill, 2003.
- Fox and Mathews The Physiological Basis of Physical Education and athletics Holt Saunders, 4th Ed.
- 5. Levick, J.R. (1998). An introduction to Cardiovascular Physiology. 2nd ed. Butterworth Heinemann.
- 6. Koley- Essentials of Exercise Physiology, Jaypee brothers' publication, NewDelhi, 2018.

PPL903: APPLIED MEDICAL SCIENCES

L T P 3 0 0

Mid Semester Examination: 20% Weightage End Semester Examination: 80% Weightage Instructions for the Paper Setters:

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Section-A

- 1. Cell injuries: Aetiology and Pathogenesis with a brief recall of important aspects of normal cell structure, Reversible cell injury, Irreversible cell injury, Pathologic calcification.
- 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.
- 3. Principles of drug action.
- 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.

Max. Marks: 100 Internal: 20 External: 80 d) Peripheral nerve entrapment(such as carpel tunnel syndrome, cubital tunnel syndrome, tarsal tunnel syndrome, morton neuroma)

References:

- 1. Synopsis of Surgical Anatomy John Wright & Sons, Bristol 1970 Ed.
- 2. Gray's Anatomy Williams & Warwick Churchill Livingstone. 35th ed. 2007
- 3. Clinical Anatomy for Medical Students Snell Lippincott. 6th ed., 2000
- 4. Textbook of Medical Physiology Guyton Mosby. 10th Ed 2000
- 5. Pathologic Basis of Diseases Robbins, Kotran and Kumar W.B. Saunders. 7th ed, 2004
- 6. Pathology implications for Physical Therapists Goodmann & Boissonnault- W. B. Saunders. 1999
- 7. Tureks Orthopedics Weinsteil & Buckwalter Lippincott Publications.2004
- 8. Mc Ardle, Katch, Katch: Exercise Physiology, 5th Ed.
- George A. Brooks, Thomas D. Fahey: Exercise Physiology Human Bioenergetics and its applications 1984, John Wiley & Sons, New York, 4th Ed.
- 10. Astrand & Rodahl: Text Book of Work Physiology, McGraw Hill, 2003.
- Fox and Mathews The Physiological Basis of Physical Education and athletics Holt Saunders, 4th Ed.
- 12. Levick, J.R. (1998). An introduction to Cardiovascular Physiology. 2nd ed. Butterworth Heinemann

PPL904: ADVANCED PHYSIOTHERAPEUTIC APPROACHES

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3 0 0

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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

Max. Marks: 100 Internal: 20 External: 80

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
 - d. Principles of clinical management of deep muscle system for segmental Stabilization.

References:

- 1. Gardiner M. Dena: The Principles of Exercise Therapy CBS Publishers, Delhi, 3rd Ed.
- Kisner and Colby: Therapeutic Exercises Foundations and Techniques, F.A. Davis, 5th Ed.
- 3. Basmajian John V.: Therapeutic Exercise, Williams & Wilkins, 2004.
- 4. Thomson et al Tidy's Physiotherapy: Butterworth Heinmann, 13th Ed.
- 5. Kendall: Muscles Testing and Function Williams & Wilkins, 4th Ed.
- 6. William E. Prentice: Rehabilitation Techniques Mosby, 4th Ed, 2003.
- Norkin & White: Measurement of Joint Motion A Guide to Goniometry F.A. Davis, 2002.
- 8. Clinical Orthopedic Rehabilitation, Brent Brotzman.
- 9. Orthopedic Physiotherapy, Robert A Donatelli, Churchill Livingstone.
- 10. Physical Rehabilitation Assessment and Treatment, Susan O Sullivan, Jaypee brothers
- 11. Therapeutic Exercise for Spinal Segmental Stabilization in Low back Pain, C. Richardson, G. Jull, Churchill Livingstone.