

FACULTY OF SPORTS MEDICINE & PHYSIOTHERAPY

SYLLABUS

FOR

Pre Ph.D. Course in SPORTS SCIENCES & MEDICINE

Examinations: 2019-20



GURU NANAK DEV UNIVERSITY AMRITSAR

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(Pre Ph.D. Course in Sports Sciences & Medicine)
(Credit Based Evaluation and Grading System)

Programme Code: SMZ

Scheme of Examination

Semester – I:

Course No.	C/E/I/A	Course Title	L	T	P	Total Credits
Core Courses						
SML 906	C	Life Style Medicine	3	–	–	3
SML907	C	Exercise Physiology	3	–	–	3
SML 908	C	Sports Injuries and Management	3	–	–	3
LSL 901	C	Research Methodology (offered in the dept. of Botanical & Environmental Sciences)	3	–	–	3
SMS 905		Seminar	-	-	1	1
Interdisciplinary Course (to be offered from outside the department)						
	I	Interdisciplinary Course	4	–	-	4
Total			16	–	1	17

- Students who have done M.D. /M.S. will have to complete three courses and seminar including course on Research Methodology.

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SML 906- LIFE STYLE MEDICINE

Credits 3-0-0

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

1. Introduction to Lifestyle Medicine
2. Definition of Health and Foundations for good Health
3. Environmental lifestyle factors
4. Effects of Sedentary Lifestyle

SECTION B

1. Physical Activity and Health
2. Recommendations on Physical Activity
3. Components of Physical Activity
4. Exercise Prescription

SECTION C

Life Style Disorders and its Management

1. Obesity and its Management
2. Diabetes and its Management
3. Hypertension and its Management
4. Osteoporosis and its Management

SECTION D

1. Sleep Medicine
2. Nutrition in Health and Disease
3. Geriatric Medicine
4. Aging Science

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References:

1. K. Park: Preventive and Social Medicine – Banarsi Dass Bhanot – Jabalpur..
2. Textbook of Medical Physiology – Guyton – Mosby.
3. Davidsons – Principles and Practice of Medicine– Edward – Churchill Livingstone.
4. Lifestyle Medicine - James M. Rippe – CRC Press
5. Lifestyle Medicine Garry Egger, Andrew Binns,Stephan Rossner - McGraw-Hill Education
6. Harrison’s Principles of Internal Medicine - 20th Edition: - Volume I & Volume II by J. Larry Jameson , Anthony S. Fauci, et al. McGraw Hill Education; Twentieth edition (2018)
7. Mc Ardle, Katch, Katch: Exercise Physiology Edition IV.
8. Era Volinski: Nutrition and exercise in Sports – CRC Press, New York.

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SML 907- EXERCISE PHYSIOLOGY

Credits 3-0-0

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

1. Nutrition & Energy Transfer for Physical Activity:

- a. Optimal Nutrition for exercise.
- b. Pre-Game meal, Carbohydrate loading.
- c. Fluid and energy replacement in prolonged exercise.
- d. Effects of exercise on various Hormones in the body.

SECTION B

2. Cardio Pulmonary System and Exercise:

- a. Cardio Vascular adaptations to sustained aerobic exercises.
- b. Sudden cardiac death in sports.
- c. Regulation of circulation during exercise.
- d. Regulation of Respiration during exercise.

SECTION C

3. Temperature Regulation

- a. Effects of Exercise on Temperature Regulation.
- b. Acclimatisation.
- c. Heat illness.
- d. Exercises in cold.

4. Misc. Topics

- a. High Altitude Training.
- c. Warm up and Cool down
- d. Flexibility and stretching

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SECTION D

5. Principles of Training

- a. Principles of endurance training
- b. Principles of strength training
- c. Recovery training intensities in heart rate
- d. Analysis of Training

References:

1. Mc Ardle, Katch, Katch: Exercise Physiology Edition IV.
2. Era Volinski: Nutrition and exercise in Sports – CRC Press, New York.
3. George A. Brooks, Thomas D. Fahey: Exercise Physiology – Human Bioenergetics and its applications 1984, John Wiley & Sons, New York.
4. Astrand & Rodahl: Text Book of Work Physiology, McGraw Hill.
5. Fox and Mathews – The Physiological Basis of Physical Education and Athletics – Holt Saunders.
6. Erston and Reilly – Kinanthropometry and Exercise Physiology Laboratory Manual Tests, Procedures and Data – F & FN Spon Madras.
7. Rowland – Developmental Exercise Physiology – Human

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SML 908- SPORTS INJURIES AND MANAGEMENT

Credits 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. Pre-participation examination
2. Causes & Mechanism of Sports Injuries, prevention of sports injuries
3. Sporting emergencies & first aid

Section – B

1. Common acute and overuse injuries of Upper Limb
2. Common acute and overuse injuries of Lower Limb
3. Head Injuries in Sport

Section – C

1. Management of Acute Injuries in Sport
2. Management of Overuse injury in Sport
3. Cardio pulmonary Resuscitation
4. Medical management of mass participation

Section – D

Sports specific injuries

1. Individual events: Track & Field
2. Team events: Hockey, Cricket, Football
3. Contact and Non-contact sports
4. Water sports

References:

1. Zulunga et al: Sports Physiotherapy, W.B. Saunders.
2. Brukner and Khan: Clinical Sports Medicine, McGraw Hill.
3. Reed: Sports Injuries – Assessment and Rehabilitation, W.B. Saunders.
4. K. Park: Preventive and Social Medicine – Banarsi Dass Bhanot – Jabalpur..
5. Fu and Stone: Sports Injuries: Mechanism, Prevention and Treatment, Williams and Wilkins.
6. Scuderi, McCann, Bruno: Sports Medicine – Principles of Primary Care, Mosby.
7. Lars Peterson and Per Renstron: Sports Injuries – Their prevention and treatment, Dunitz.
8. Morris B. Mellion: Office Sports Medicine, Hanley & Belfus.
9. Richard B. Birrer: Sports Medicine for the Primary Care Physician, CRC Press.

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LSL 901 - Research Methodology

Credits 3-0-0

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

Instructions for the Paper Setters:

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Note: The course will be numerical oriented to train the students for the analysis of research data. Use of calculators will be allowed in the examination.

SECTION-A

1. **Descriptive statistics:** Statistical expressions, central tendency, dispersion of data (arithmetic and geometric), χ moments, skewness, kurtosis, sample size estimation.
2. **Probability:** Concept of probability, conditional probability, distributions: Normal, Poisson, binomial, 't', χ^2 , F-distributions.

SECTION-B

3. **Testing of hypothesis:** Central limit theorem, null hypothesis and alternative hypotheses, Z-test, Student's t-test, χ -square, F-test, sample size, confidence intervals, odds ratio, index numbers, Probit analysis.
4. **Correlation and regression analysis:** Linear correlation and regression, exponential regression, logarithmic regression, reciprocal regression, Michael-Menten's regression, logistic regression, Gompertz regression, monomolecular regression.

SECTION-C

5. **Multiple correlation and regression:** MLR with 2 and 3 independent variables, quadratic and cubic polynomial regressions, Beta regression, sine curve, multiple correlation, partial correlation, path analysis, time series analysis.
6. **Experimental designs:** Experimental designs, central composite designs with 2 and 3 factors.

SECTION-D

7. **Analysis of Variance:** Assessing normality, one way and 2-way ANOVA, Tukey's multiple comparison test, HSD.
8. **Multivariate analysis:** Cluster analysis and dendrogram, principal component analysis, factor analysis, artificial neural networks.
9. **Non-parametric tests:** Wilcoxon's, Mann-Whitney's tests, Spearman's rank correlation, Kendall's Tau.

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10. Basic Greek and Latin words: The students will learn Greek alphabet and more than 100 basic roots and words used in science.

Note: The students will be asked to submit an assignment of computer softwares designed by them on the basis of the Research methodology syllabus.

References:

1. Bailey, N.T.J. (1995). Statistical Methods in Biology. Cambridge University Press, Cambridge.
2. Kothari, C.R. (2004). Research Methodology: Methods and Techniques, New Age International Publishers, New Delhi.