

Master of Science Program in Sports Science Revised 2012

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1. **Name of Degree** : Master of Science Program in Sports Science
M.Sc.(Sports Science)

2. Major areas

- 2.1 Sports Physiology
- 2.2 Sports Biomechanics
- 2.3 Sports Nutrition
- 2.4 Sports Psychology
- 2.5 Sports Medicine

3 Admission Requirements

A candidate must:

1. Plan A(A2)

- 1.1 Hold a Bachelor's degree in Sports Science, Health Science or related fields
- 1.2 Have a grade point average of at least 2.50

2. Plan B

- 2.1 Hold a Bachelor's degree in Sports Science, Health Science or related fields
- 2.2 Have a grade point average of at least 2.50
- 2.3 Have an working experience in the area of Sports Science, Health Science or related fields.

Exemption from the above conditions may be granted by the Programme Committee under exceptional circumstances.

3. Number of students accepted 15 persons

4 Credits requirement for the program is at least 36 credits

| No. | Courses | Plan A(2) | Plan B |
|--------------|-------------------|-------------------|-------------------|
| 3.1 | Core courses | 10 credits | 10 credits |
| 3.2 | Major courses | 8 credits | 8 credits |
| 3.3 | Elective courses | 6 credits | 12 credits |
| 3.4 | Thesis | 12 credits | - |
| 3.5 | Independent study | - | 6 credits |
| Total | | 36 credits | 36 credits |

5. Course Requirements

(Credits (Lecture-Lab-Self study))

1. Core Courses 10 credits

| | | | |
|------|-----|---------------------|----------|
| SPSS | 531 | Exercise Physiology | 1(2-0-4) |
| GRID | 603 | Biostatistics | 3(3-0-6) |

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|------|-----|---|----------|
| SPSS | 631 | Sports Training and Physical Fitness Assessment | 2(1-2-3) |
| SPSS | 632 | Research Methodology in Sports Science | 3(3-0-6) |

2. Major courses 8 credits

(1) Sports Physiology

| | | | |
|------|-----|-------------------------------------|-----------|
| SPSS | 541 | Sports Physiology | 3 (3-0-6) |
| SPSS | 544 | Applied Sports Physiology | 3 (3-0-6) |
| SPSS | 542 | Current Topics in Sports Physiology | 1 (1-0-2) |
| SPSS | 543 | Seminar in Sports Physiology | 1 (1-0-2) |

(2) Sports Biomechanics

| | | | |
|------|-----|---------------------------------------|-----------|
| SPSS | 551 | Sports Biomechanics | 3 (3-0-6) |
| SPSS | 554 | Applied Sports Biomechanics | 3 (3-0-6) |
| SPSS | 552 | Current Topics in Sports Biomechanics | 1 (1-0-2) |
| SPSS | 553 | Seminar in Sports Biomechanics | 1 (1-0-2) |

(3) Sports Nutrition

| | | | |
|------|-----|------------------------------------|-----------|
| SPSS | 564 | Sports Nutrition I | 3 (3-0-6) |
| SPSS | 565 | Sports Nutrition II | 3 (3-0-6) |
| SPSS | 562 | Current Topics in Sports Nutrition | 1 (1-0-2) |
| SPSS | 563 | Seminar in Sports Nutrition | 1 (1-0-2) |

(4) Sports Psychology

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|------|-----|-------------------------------------|-----------|
| SPSS | 574 | Applied Sports Psychology | 3 (3-0-6) |
| SPSS | 575 | Exercise and Health Psychology | 3 (3-0-6) |
| SPSS | 572 | Current Topics in Sports Psychology | 1(1-0-2) |
| SPSS | 573 | Seminar in Sports Psychology | 1(1-0-2) |

(5) Sports Medicine

| | | | |
|------|-----|------------------------------------|-----------|
| SPSS | 584 | Principle of Sports Medicine | 3 (3-0-6) |
| SPSS | 585 | Applied Anatomy in Sports Medicine | 3 (3-0-6) |
| SPSS | 586 | Current Topics in Sports Medicine | 1(1-0-2) |
| SPSS | 587 | Seminar in Sports Medicine | 1(1-0-2) |

(Credits (Lecture-Lab-Self study))

3. Elective Courses 6 -12 credits

| | | | |
|------|-----|--|-----------|
| SPSS | 588 | Sports Management | 3 (3-0-6) |
| SPSS | 589 | Coaching Science in Sports | 3 (2-2-5) |
| SPSS | 598 | Science and Technology in Sports | 3 (3-0-6) |
| SPSS | 599 | Counseling and Mental Skills Development in Sports | 3 (2-2-5) |

4. Thesis (Plan A(A2))

SPSS 698 Thesis

12 (0-36-0)

5. Independent Study (Plan B)

SPSS 697 Thematic Paper

6 (0-18-0)

6. Study Plan**Major Sports Physiology**

| year | Plan A (A2) | Plan B |
|-------------|---|---|
| 1 | Summer course | Summer course |
| | SPSS 531 Exercise Physiology 2(2-0-4) Total 2 credits | SPSS 531 Exercise Physiology 2(2-0-4) Total 2 credits |
| | Semester 1 | Semester 1 |
| | SPSS 541 Sports Physiology 3 (3-0-6) SPSS 542 Current Topics in Sports Physiology 1 (1-0-2) | SPSS 541 Sports Physiology 3 (3-0-6) SPSS 542 Current Topics in Sports Physiology 1 (1-0-2) |

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|----------|---|--|
| | Elective courses not less than 6 credit Total 10 credits | Elective courses not less than 9 credit Total 13 credits |
| | <p style="text-align: center;">Semester 2</p> SPSS 544 Applied Sports Physiology 3(3-0-6) GRID 603 Biostatistics 3(3-0-6) SPSS 631 Sports Training and Physical Fitness Assessment 2(1-2-3) SPSS 543 Seminar in Sports Physiology 1(1-0-2) SPSS 632 Research Methodology in Sports Science 3(3-0-6) <p style="text-align: right;">Total 12 credits</p> | <p style="text-align: center;">Semester 2</p> SPSS 544 Applied Sports Physiology 3(3-0-6) GRID 603 Biostatistics 3(3-0-6) SPSS 631 Sports Training and Physical Fitness Assessment 2(1-2-3) SPSS 543 Seminar in Sports Physiology 1(1-0-2) SPSS 632 Research Methodology in Sports Science 3(3-0-6) Elective courses not less than 3 credit <p style="text-align: right;">Total 15 credits</p> |
| 2 | <p style="text-align: center;">Semester 1</p> SPSS 698 Thesis 6 (0-18-0) <p style="text-align: right;">Total 6 credits</p> | <p style="text-align: center;">Semester 1</p> Comprehensive Examination SPSS 697 Thematic Paper 3 (0-9-0) <p style="text-align: right;">Total 3 credits</p> |
| | <p style="text-align: center;">Semester 2</p> SPSS 698 Thesis 6 (0-18-0) <p style="text-align: right;">Total 6 credits</p> | <p style="text-align: center;">Semester 1</p> SPSS 697 Thematic Paper 3 (0-9-0) <p style="text-align: right;">Total 3 credits</p> |

Major Sports Biomechanics

| year | Plan A (A2) | Plan B |
|----------|---|---|
| 1 | <p style="text-align: center;">Summer course</p> SPSS 531 Exercise Physiology 2(2-0-4) <p style="text-align: right;">Total 2 credits</p> | <p style="text-align: center;">Summer course</p> SPSS 531 Exercise Physiology 2(2-0-4) <p style="text-align: right;">Total 2 credits</p> |
| | <p style="text-align: center;">Semester 1</p> SPSS 551 Sports Biomechanics 3 (3-0-6) SPSS 552 Current Topics in Sports Biomechanics 1 (1-0-2) Elective courses not less than 6 credit <p style="text-align: right;">Total 10 credits</p> | <p style="text-align: center;">Semester 1</p> SPSS 551 Sports Biomechanics 3 (3-0-6) SPSS 552 Current Topics in Sports Biomechanics 1 (1-0-2) Elective courses not less than 9 credit <p style="text-align: right;">Total 13 credits</p> |
| | <p style="text-align: center;">Semester 2</p> SPSS 554 Applied Sports Biomechanics 3(3-0-6) | <p style="text-align: center;">Semester 2</p> SPSS 554 Applied Sports Biomechanics 3(3-0-6) |

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|---|--|--|
| | GRID 603 Biostatistics 3(3-0-6) SPSS 631 Sports Training and Physical Fitness Assessment 2(1-2-3) SPSS 553 Seminar in Sports Biomechanics 1(1-0-2) SPSS 632 Research Methodology in Sports Science 3(3-0-6) Total 12 credits | GRID 603 Biostatistics 3(3-0-6) SPSS 631 Sports Training and Physical Fitness Assessment 2(1-2-3) SPSS 553 Seminar in Sports Biomechanics 1(1-0-2) SPSS 632 Research Methodology in Sports Science 3(3-0-6) Elective courses not less than 3 credit Total 15 credits |
| 2 | Semester 1 SPSS 698 Thesis 6 (0-18-0) Total 6 credits | Semester 1 Comprehensive Examination SPSS 697 Thematic Paper 3 (0-9-0) Total 3 credits |
| | Semester 2 SPSS 698 Thesis 6 (0-18-0) Total 6 credits | Semester 1 SPSS 697 Thematic Paper 3 (0-9-0) Total 3 credits |

Major Sports Nutrition

| year | Plan A (A2) | Plan B |
|------|--|--|
| 1 | Summer course SPSS 531 Exercise Physiology 2(2-0-4) Total 2 credits | Summer course SPSS 531 Exercise Physiology 2(2-0-4) Total 2 credits |
| | Semester 1 SPSS 564 Sports Nutrition I 3 (3-0-6) SPSS 562 Current Topics in Sports Nutrition 1 (1-0-2) Elective courses not less than 6 credit Total 10 credits | Semester 1 SPSS 564 Sports Nutrition I 3 (3-0-6) SPSS 562 Current Topics in Sports Nutrition 1 (1-0-2) Elective courses not less than 9 credit Total 13 credits |
| | Semester 2 SPSS 565 Sports Nutrition II 3(3-0-6) GRID 603 Biostatistics 3(3-0-6) SPSS 631 Sports Training and Physical Fitness Assessment 2(1-2-3) | Semester 2 SPSS 565 Sports Nutrition II 3 (3-0-6) GRID 603 Biostatistics 3(3-0-6) SPSS 631 Sports Training and Physical Fitness Assessment 2(1-2-3) |

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|----------|---|--|
| | SPSS 563 Seminar in Sports Nutrition 1(1-0-2) SPSS 632 Research Methodology in Sports Science 3(3-0-6) Total 12 credits | SPSS 563 Seminar in Sports Nutrition 1(1-0-2) SPSS 632 Research Methodology in Sports Science 3(3-0-6) Elective courses not less than 3 credit Total 15 credits |
| 2 | Semester 1 SPSS 698 Thesis 6 (0-18-0) Total 6 credits | Semester 1 Comprehensive Examination SPSS 697 Thematic Paper 3 (0-9-0) Total 3 credits |
| | Semester 2 SPSS 698 Thesis 6 (0-18-0) Total 6 credits | Semester 1 SPSS 697 Thematic Paper 3 (0-9-0) Total 3 credits |

Major Sports Psychology

| year | Plan A (A2) | Plan B |
|----------|--|---|
| 1 | Summer course SPSS 531 Exercise Physiology 2(2-0-4) Total 2 credits | Summer course SPSS 531 Exercise Physiology 2(2-0-4) Total 2 credits |
| | Semester 1 SPSS 574 Applied Sports Psychology 3 (3-0-6) SPSS 572 Current Topics in Sports Psychology 1(1-0-2) Elective courses not less than 6 credit Total 10 credits | Semester 1 SPSS 574 Applied Sports Psychology 3 (3-0-6) SPSS 572 Current Topics in Sports Psychology 1(1-0-2) Elective courses not less than 9 credit Total 13 credits |
| | Semester 2 SPSS 575 Exercise and Health Psychology 3(3-0-6) GRID 603 Biostatistics 3(3-0-6) SPSS 631 Sports Training and Physical Fitness Assessment 2(1-2-3) SPSS 573 Seminar in Sports Psychology 1(1-0-2) SPSS 632 Research Methodology in Sports Science 3(3-0-6) | Semester 2 SPSS 575 Exercise and Health Psychology 3 (3-0-6) GRID 603 Biostatistics 3(3-0-6) SPSS 631 Sports Training and Physical Fitness Assessment 2(1-2-3) SPSS 573 Seminar in Sports Psychology 1(1-0-2) SPSS 632 Research Methodology in Sports Science 3(3-0-6) |

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|----------|---|--|
| | Total 12 credits | Elective courses not less than 3 credit Total 15 credits |
| 2 | Semester 1 SPSS 698 Thesis 6 (0-18-0) Total 6 credits | Semester 1 Comprehensive Examination SPSS 697 Thematic Paper 3 (0-9-0) Total 3 credits |
| | Semester 2 SPSS 698 Thesis 6 (0-18-0) Total 6 credits | Semester 1 SPSS 697 Thematic Paper 3 (0-9-0) Total 3 credits |

Major Sports Medicine

| year | Plan A (A2) | Plan B |
|----------|---|--|
| 1 | Summer course SPSS 531 Exercise Physiology 2(2-0-4) Total 2 credits | Summer course SPSS 531 Exercise Physiology 2(2-0-4) Total 2 credits |
| | Semester 1 SPSS 584 Principle of Sports Medicine 3 (3-0-6) SPSS 586 Current Topics in Sports Medicine 1(1-0-2) Elective courses not less than 6 credit Total 10 credits | Semester 1 SPSS 584 Principle of Sports Medicine 3 (3-0-6) SPSS 586 Current Topics in Sports Medicine 1(1-0-2) Elective courses not less than 9 credit Total 13 credits |
| | Semester 2 SPSS 585 Applied Anatomy in Sports Medicine 3(3-0-6) GRID 603 Biostatistics 3(3-0-6) SPSS 631 Sports Training and Physical Fitness Assessment 2(1-2-3) SPSS 587 Seminar in Sports Medicine 1(1-0-2) SPSS 632 Research Methodology in Sports Science 3(3-0-6) Total 12 credits | Semester 1 SPSS 585 Applied Anatomy in Sports Medicine 3(3-0-6) GRID 603 Biostatistics 3(3-0-6) SPSS 631 Sports Training and Physical Fitness Assessment 2(1-2-3) SPSS 587 Seminar in Sports Medicine 1(1-0-2) SPSS 632 Research Methodology in Sports Science 3(3-0-6) Elective courses not less than 3 credit Total 15 credits |
| 2 | Semester 1 SPSS 698 Thesis 6 (0-18-0) | Semester 1 Comprehensive Examination SPSS 697 Thematic Paper 3 (0-9-0) |

| | | |
|-----------------|------------------------|-------------------------|
| | Total 6 credits | Total 3 credits |
| | Semester 2 | Semester 1 |
| SPSS 698 Thesis | 6 (0-18-0) | SPSS 697 Thematic Paper |
| | Total 6 credits | 3 (0-9-0) |
| | | Total 3 credits |

7. Course Description

7.1 Core Courses

(Credits (Lecture-Lab-Self study))

SPSS 531 Exercise Physiology

2(2-0-4)

Physiological mechanisms and functional roles of major systems including musculoskeletal, neural, cardiovascular, and respiratory systems; metabolic processes in relation to energy liberation; body heat regulation; roles of gastrointestinal, renal, endocrine systems at rest and during exercise

GRID 603 Biostatistics

3(3-0-6)

Methods of statistical data collection, analysis and interpretation of biomedical and public health data; probability distributions, sampling distributions, estimation of parameters, significance tests by using parametric and nonparametric methods, analysis of variance, correlation and regression analyses

SPSS 631 Sports Training and Physical Fitness Assessment

2(1-2-3)

Types, critical roles, testing and assessment of physical fitness, muscular, cardio-respiratory systems, neural responses, balance, speed, agility, flexibility and thermoregulation

SPSS 632 Research Methodology in Sports Science

3(3-0-6)

Conceptual ideas, philosophy and research ethics, research designs, with emphasis on planning, conducting, and reporting of research, application of statistical analysis and interpretation of data from the field of exercise and sports science, writing for thesis and publication

7.2 Major Courses

SPSS 541 Sports Physiology

3(3-0-6)

Training programs, body function and its adaptations from different exercise and sports trainings on metabolism, hormones, musculoskeletal, cardiovascular, pulmonary, and environmental influences on physical performance; age and sex

considerations in sports and exercise; benefits of physical activity on health, disease control and prevention

(Credits (Lecture-Lab-Self study)

- SPSS 544 Applied Sports Physiology 3(3-0-6)**
 New concepts and advanced understanding of the regulatory mechanisms and adaptations of musculoskeletal, neural, cardiovascular and respiratory from training including metabolism and hormonal control; strategies and intervention in increasing sports performance
- SPSS 542 Current Topics in Sports Physiology 1(1-0-2)**
 In-depth examination of current research articles published in exercise and sports physiology journals; emphasis placed upon critical review of research in regards to methodology, data interpretation and conclusions derived from data; publishing research articles using standard journal format
- SPSS 543 Seminar in Sports Physiology 1(1-0-2)**
 Presentation and critical analysis of recent and interesting research articles in a seminar setting dealing with physiological and metabolic adaptations in responses to exercise and sports training; environmental factors, training programs, interventions and techniques in increasing sports performance including research ethics
- SPSS 551 Sports Biomechanics 3(3-0-6)**
 Fundamental biomechanics both kinematics and kinetics related to sports movement data collection and biomechanical analysis in two-dimensions determination of reaction forces and muscle moment via inverse dynamic model
- SPSS 554 Applied Sports Biomechanics 3(3-0-6)**
 Analysis and applied biomechanics to various sports motion particularly emphasis in three dimensional movements, programming, data collection and interpretation in biomechanics

(Credits (Lecture-Lab-Self study))

SPSS 552 Current Topics in Sports Biomechanics 1(1-0-2)
 In-depth examination of current research articles in exercise and sports biomechanics journals; emphasis placed upon critical review of research in regards to methodology, data interpretation and conclusions derived from data; publishing research articles using standard journal format

SPSS 553 Seminar in Sports Biomechanics 1(1-0-2)
 Presentation, analysis and discussion on updated articles from journal of sports biomechanics including research ethics

SPSS 564 Sports Nutrition I 3(3-0-6)
 Roles of macronutrients metabolism for providing energy during exercise and enhancing sports performance. impacts of water; fluid, vitamins and minerals on body performance; food intake assessment; nutritional strategies during training and competition; nutritional considerations for different types of sports; nutrition and ergogenic aids including sport supplements

SPSS 565 Sports Nutrition II 3(3-0-6)
 Metabolism and substrate utilization at rest and during exercise; nutritional assessment techniques and dietary analysis tools; timing of energy and food intake; nutrition for athlete suitably for gender, age and conditions including types of sports; nutritional consultation for athletes; Discussion of current research in sport nutrition

SPSS 562 Current Topics in Sports Nutrition 1(1-0-2)
 In-depth examination of current research articles published in exercise and sports nutrition journals; emphasis placed upon critical review of research in regards to methodology, data interpretation and conclusions derived from data; publishing research articles using standard journal format

SPSS 563 Seminar in Sports Nutrition 1(1-0-2)
 Presentation and critical analysis of recent and interesting research articles relating to sports nutrition in a seminar settings including research ethics

(Credits (Lecture-Lab-Self study))

SPSS 574 Applied Sports Psychology 3(3-0-6)
 Application of sport psychological theories, principles, and techniques; as need analysis, cognition and perception on motivated behavior in sport setting, social

interaction and context in understanding, predicting, and controlling athlete behavior, psychological skill training for improving athletic training, competition and team management.

SPSS 575 Exercise and Health Psychology 3(3-0-6)
 Psychological factors and social context effect exercise; social factors, culture, attitude, and environment leading to health behavior; application of counseling in exercise and health promotion

SPSS 572 Current Topics in Sports Psychology 1(1-0-2)
 In-depth examination of current research articles published in exercise and sports psychology journals; Emphasis placed upon critical review of research in regards to methodology, data interpretation and conclusions derived from data; publishing research articles using standard journal format

SPSS 573 Seminar in Sports Psychology 1(1-0-2)
 Reading, presentation, and discussion of updated articles which are interesting and valuable in sports psychology including research ethics

SPSS 584 Principle of Sports Medicine 3(3-0-6)
 Causes, types of injuries, and risk in various sports, first aid and injuries management, physical therapy and rehabilitation for injured athletes, diseases and abnormalities involving in sports, drugs in sports, doping, roles of physicians and medical personal in athletic team, exercise and sports in therapeutic aspects, protective and rehabilitation equipment

(Credits (Lecture-Lab-Self study))

SPSS 585 Applied Anatomy in Sports Medicine 3(3-0-6)
 Musculoskeletal system : bone, muscle, joint, ligament, tendon and soft tissues, cardiovascular system, respiratory system, nervous system involving in sports and exercise, mechanism of injuries, application for research and sports injuries management

SPSS 586 Current Topics in Sports Medicine 1(1-0-2)
 In-depth examination of current research articles published in exercise and sports medicine journals; emphasis placed upon critical review of research in regards

to methodology, data interpretation and conclusions derived from data; publishing research articles using standard journal format.

SPSS 587 Seminar in Sports Medicine 1(1-0-2)

Reading, presentation, and discussion of updated articles which are interesting and valuable in sports medicine including research ethics

7.3 Elective Courses

SPSS 588 Sports Management 3(3-0-6)

The sports industry environment; creative problem solving and decision making, strategic and operational planning, organizing and delegating work, managing changes in area of sports culture, innovation, diversity, human resource management; conflict and stress; team development, communication, motivation, and quality control

SPSS 589 Coaching Science in Sports 3(2-2-5)

Application of principles and methods of sports science in coaching and training; design and analysis training programs

SPSS 598 Science and Techonology in Sports 3(3-0-6)

Development software to solve problems in the sports sciences; format, structure, and techniques techniques for computer programming which develop and apply for sports sciences.

(Credits (Lecture-Lab-Self study)

SPSS 599 Counselling and Mental Skills Development in Sports 3(2-2-5)

Theories and techniques for individual and group counseling, mental skills training to improve training and competitive abilities; morality and personality of counselor

(7.4) Thesis

SPSS 698 Thesis 12(0-36-0)

Identify research title; present proposal and conduct research in sport science; write thesis for publication

(7.5) Independent Study

SPSS 697 Thematic Paper 6(0-18-0)

Identify concepts in sports science, data retrieval; literature review; analyse, discuss, and summarize data; writing up report; presentation of thematic paper
