



Study Plan

School: School of Sciences and Technology
Degree: Master
Course: Physical exercise and health (cód. 398)

1st Year - 1st Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
DES10220	Exercise Physiology	Human Kinetics	3	Semester	78
DES10221	Research Methods and Data Analysis in Health Sciences	Human Kinetics	9	Semester	234
DES10222	Nutrition	Human Kinetics	3	Semester	78
DES10223	Nutritional Supplements and Doping	Human Kinetics	3	Semester	78
DES10224	Benefits of Physical Activity in Health	Human Kinetics	3	Semester	78
DES10225	Training Methods and Short and Long-term Effects	Human Kinetics	3	Semester	78
DES10226	The Labour Market and Legal Aspects in Physical Activity and Health	Juridical Sciences	3	Semester	78
DES10227	Sports Medicine	Human Kinetics	3	Semester	78

1st Year - 2nd Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
DES10228	Functional Assessment Protocols	Human Kinetics	6	Semester	156
DES10229	Exercise Biomechanics	Human Kinetics	3	Semester	78
DES10230	Fundamentals of Exercise Prescription	Human Kinetics	6	Semester	156
DES10231	Physiology and Exercise Prescription for the Elderly	Human Kinetics	3	Semester	78
DES10232	Physiology and Female Physical Activity Programmes	Human Kinetics	3	Semester	78
DES10233	Physiopathology and Exercise Prescription for Patients with Central Nervous System Disorders	Human Kinetics	3	Semester	78
DES10234	Physiopathology and Exercise Prescription for Patients with Cardiovascular Pathologies	Human Kinetics	3	Semester	78
DES10235	Physiopathology and Exercise Prescription for Patients with Neuromuscular Diseases	Human Kinetics	3	Semester	78

2nd Year - 3rd Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
DES10236	Physiopathology and Exercise Prescription for Patients with Osteoarticular Diseases	Human Kinetics	3	Semester	78
DES10237	Physiopathology and Exercise Prescription for Patients with Respiratory Diseases	Human Kinetics	3	Semester	78
DES10238	Physiopathology and Exercise Prescription for Patients with Metabolic Diseases	Human Kinetics	3	Semester	78
DES10239	Physiopathology and prescription of exercise in people with HIV and Cancer	Human Kinetics	3	Semester	78

Mandatory alternatives

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
	Dissertation				
	Project Work				
	Report				



2nd Year - 4th Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
Mandatory alternatives					
Component code	Name	Scientific Area Field	ECTS	Duration	Hours
	Dissertation				
	Project Work				
	Report				

Conditions for obtaining the Degree:

*** TRANSLATE ME: Para aprovação na componente curricular deste Mestrado, é necessário a aprovação (através de avaliação ou creditação) das seguintes unidades curriculares: { \ }newline

{ \ }newline

1.º Semestre: { \ }newline

- 8 UC Obrigatórias num total de 30 ECTS { \ }newline

{ \ }newline

2.º Semestre: { \ }newline

- 8 UC Obrigatórias num total de 30 ECTS { \ }newline

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3.º Semestre: { \ }newline

- 4 UC Obrigatórias num total de 12 ECTS { \ }newline

{ \ }newline

Para obtenção do grau, é necessário também a aprovação em Dissertação/Relatório/Trabalho de Projecto, com o total de 48 ECTS, no 3.º e 4.º Semestre. ***

Program Contents

[Back](#)

Exercise Physiology (DES10220)

1. Bioenergetics of muscle activity
2. Acute and chronic adaptations to exercise
 - 2.1. Cardio-vascular
 - 2.2. Respiratory
 - 2.3. Hormonal
 - 2.4. Skeletal muscle
 - 2.5. Renal
3. Thermoregulation and metabolic
4. Exercise in different environments



[Back](#)

Research Methods and Data Analysis in Health Sciences (DES10221)

Major issues associated with scientific research:

Qualitative and quantitative studies.

Principles of scientific method:

Inductive methodology

Deductive methodology

Experimental methodology

Populations and samples

Data statistical analysis and results interpretation.

Scientific papers conception.

[Back](#)

Nutrition (DES10222)

1. Food, nutrition and health

1.1. Basics of healthy eating

2. Nutritional diseases

2.1. Anorexia

2.2. Bulimia

2.3. Anemia (athlete)

3. Methodologies and tools for assessment of food intake and nutritional status

4. Specific needs at different stages of life

5. Nutrition and physical activity

6. Food and pathological states

6.1. Obesity

6.2. Dyslipidemia

6.3. Diabetes

7. hypertension

[Back](#)

Nutritional Supplements and Doping (DES10223)

1. Food supplements

2. Phosphocreatine, creatinina, protein, L-Carnitina etc.

3. Doping

3.1. Definition

3.2. Types of substances used and their effects

3.3. Doping as a biological or ethical problem?



[Back](#)

Benefits of Physical Activity in Health (DES10224)

1. Types of physical activity
2. Public health perspective and recommendations
3. Benefits of regular physical activity
4. Dose / response relationship
5. Risks associated with physical activity levels
6. Primary, secondary and tertiary prevention
7. How to measure the health and related indicators
8. How to measure the results of health interventions

[Back](#)

Training Methods and Short and Long-term Effects (DES10225)

1. Definition of training method
 - 1.1. Components of training
 - 1.2. Characteristics of training load
2. Cardiovascular training
3. Velocity training
4. Strength training
5. Training flexibility

[Back](#)

The Labour Market and Legal Aspects in Physical Activity and Health (DES10226)

1. Legal aspects of health in sport
 - 1.1. International, Europe, Spain and Portugal.
 - 1.2. General powers and interdisciplinarity
 - 1.3. Declarations of consent
2. Health models in sport: specific skills, interdisciplinary work and implications
 - 2.1 Classic model: public and private
 - 2.2. Model public health: public and private
 - 2.3. Model Community: public and private
 - 2.4. Leisure sports and health: public and private

[Back](#)

Sports Medicine (DES10227)

1. Definition
 - 2.1. The sports medical examination
2. Acute traumatic injuries caused in the practice of physical activity
 - 2.1.1. Evaluation and diagnosis
 - 2.1.2. Prevention and treatment
3. Chronic injuries of specific sports
4. Injuries caused by "over training"
5. Preventive and therapeutic role of exercise
6. First aid



[Back](#)

Functional Assessment Protocols (DES10228)

1. How to develop a protocol
2. Testing and interpretation of the principles of the exercise
 - 2.1. cardiopulmonary assessment
 - 2.1.1. Cardiac Function
 - 2.1.2. function Aerobics
 - 2.1.3. Anaerobic function
 - 2.2. Assessment of body composition
 - 2.3. Assessment of the strength
 - 2.4. Assessment of neuromuscular function
 - 2.5. Evaluation of flexibility
3. Batteries fitness
 - 3.1. AFISAL
 - 3.2. Eurofit
 - 3.3. other
4. The use of questionnaires

[Back](#)

Exercise Biomechanics (DES10229)

- 1 - Biomechanics as an Interdiscipline. Basic Movement terminology
- 2 - Total Description of a Body segment in Space. The Center of Mass of human body.
- 3 - Scope of Anthropometry in Movement Biomechanics
- 4 - Basic elements of Kinematics. Processing raw kinematics data
- 5 - Direct and Imaging Measurements techniques
- 6 - Basic elements of Kinetics. Biomechanical Models
- 7 - Joint reactions forces. Angular Kinetics.
- 8 - Mechanical Energy and Work. Mechanical energy transfer between segments
- 9 - Internal versus external forces.
- 10 - Neuromechanical Basics of human movement.
- 11 - Muscle mechanics. Force-Length and Force-Velocity Characteristics
- 12 - Kinesiological Electromyography (EMG)
- 13 - Analytical Tools for human movement - Movement variability and motor control

[Back](#)

Fundamentals of Exercise Prescription (DES10230)

1. The use of data obtained in functional assessment.
2. Energy calculations
3. The programming exercise programs
4. Exercise prescription in adults
5. Exercise prescription in young people.



[Back](#)

Physiology and Exercise Prescription for the Elderly (DES10231)

1. Introduction to physiology in the elderly
 - 1.1. Introduction conceptual
 - 1.2. Description of metabolic and hormonal characteristics in elderly populations
 - 1.3. Implications of the characteristics of the elderly in the physiology of effort.
 - 1.4. Changes of health prevalent in the elderly: indications and contraindications
 - 1.5. Physical fitness and aging
2. Specific psychosocial and cultural aspects
3. Some specific features of the prescription of physical exercise in elderly subjects
 - 3.1. Exercise and age
 - 3.2. Specific implications for labor
4. Exercise and cognitive functioning in aging

[Back](#)

Physiology and Female Physical Activity Programmes (DES10232)

1. Introduction to physiology in female subjects
 - 1.1. Conceptual introduction
 - 1.2. Description of metabolic and hormonal features trough lifespan (pre-menarche, menstrual cycle, pregnancy, menopause and older age)
 - 1.3. Implications of the characteristics of women in the physiology of effort.
 - 1.4. Changes of health that characterize women: indications and contraindications
 - 1.5. Fitness and women
2. Specific psychosocial and cultural aspects
3. Some specific features of the prescription of physical exercise in female subjects
 - 3.1. Exercise and age
 - 3.2. Exercise and menstrual cycle
 - 3.3. Classic exercise in women and community
 - 3.4. Specific implications for labor

[Back](#)

Physiopathology and Exercise Prescription for Patients with Central Nervous System Disorders (DES10233)

1. Introduction to physiology in subjects with problems in the central nervous system
 - 1.1. Introduction and conceptual classifications
 - 1.2. Pathophysiology, treatment phases and major implications on the physical condition
 - 1.3. Indications and contraindications of exercise
2. Prescribed exercise in people with central nervous system disorders
 - 2.1. Brief summary of epidemiological determinants and types of prevention (primary, secondary and tertiary)
 - 2.2. Exercise, types of prevention and health models
 - 2.3. Specific implications for labor

[Back](#)

Physiopathology and Exercise Prescription for Patients with Cardiovascular Pathologies (DES10234)

1. Introduction to physiology in subjects with cardiovascular disease
 - 1.1. Conceptual introduction and classifications
 - 1.2. Physiopathology, treatment phases and major implications on the physical condition
 - 1.3. Indications and contraindications of exercise
2. Prescribed exercise in people with cardiovascular disease
 - 2.1. Brief summary of epidemiological determinants and types of prevention (primary, secondary and tertiary)
 - 2.2. Exercise, types of prevention and health models
 - 2.3. Specific implications for labor



[Back](#)

Physiopathology and Exercise Prescription for Patients with Neuromuscular Diseases (DES10235)

1. Introduction to physiology in subjects with neuromuscular
 - 1.1. Conceptual introduction and classifications
 - 1.2. Physiopathology, treatment phases and major implications on the physical condition
 - 1.3. Indications and contraindications of exercise
2. Prescribed exercise in people with neuromuscular disorders
 - 2.1. Brief summary of epidemiological determinants and types of prevention (primary, secondary and tertiary)
 - 2.2. Exercise, types of prevention and health models
 - 2.3. Specific implications for labor

[Back](#)

Physiopathology and Exercise Prescription for Patients with Osteoarticular Diseases (DES10236)

1. Introduction to physiology in subjects with osteoarticular
 - 1.1. Introduction and conceptual classifications
 - 1.2. Physiopathology, treatment phases and major implications on the physical condition
 - 1.3. Indications and contraindications of exercise
2. Prescribed exercise in people with osteoarticular changes
 - 2.1. Brief summary of epidemiological determinants and types of prevention (primary, secondary and tertiary)
 - 2.2. Exercise, types of prevention and health models
 - 2.3. Specific implications for labor

[Back](#)

Physiopathology and Exercise Prescription for Patients with Respiratory Diseases (DES10237)

1. Introduction to physiology in subjects with respiratory
 - 1.1. Introduction and conceptual classifications
 - 1.2. Physiopathology, treatment phases and major implications on the physical condition
 - 1.3. Indications and contraindications of exercise
2. Prescribed exercise in people with respiratory disorders
 - 2.1. Brief summary of epidemiological determinants and types of prevention (primary, secondary and tertiary)
 - 2.2. Exercise, types of prevention and health models
 - 2.3. Specific implications for labor

[Back](#)

Physiopathology and Exercise Prescription for Patients with Metabolic Diseases (DES10238)

[Back](#)

Physiopathology and prescription of exercise in people with HIV and Cancer (DES10239)

1. Introduction to physiology in subjects with HIV and Cancer
 - 1.1. Introduction and conceptual classifications
 - 1.2. Pathophysiology, treatment phases and major implications on the physical condition
 - 1.3. Indications and contraindications of exercise
2. Attention social health of the subject who suffers or has suffered HIV or Cancer
 - 2.1. Atenção socio-health context and engaging classical
 - 2.2. mitigating care
3. Prescribed exercise in people with HIV or Cancer
 - 3.1. Brief summary of epidemiological determinants and types of prevention (primary, secondary and tertiary)
 - 3.2. Exercise, types of prevention and health models
 - 3.3. Specific implications for labor