UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze Psicologiche, Pedagogiche, dell'Esercizio Fisico e della Formazione		
ACADEMIC YEAR	2021/2022		
MASTER'S DEGREE (MSC)	SCIENCE OF PREVENTIVE AND ADAPTED PHYSICAL ACTIVITY AND SPORT PERFORMANCE		
INTEGRATED COURSE	ADAPTABILITY AND ADAPTATIONS IN SPORT TRAINING - INTEGRATED COURSE		
CODE	13508		
MODULES	Yes		
NUMBER OF MODULES	2		
SCIENTIFIC SECTOR(S)	BIO/09, BIO/10		
HEAD PROFESSOR(S)	PROIA PATRIZIA	Professore Associato	Univ. di PALERMO
OTHER PROFESSOR(S)	RUSSO GIUSEPPE PROIA PATRIZIA	Ricercatore Professore Associato	Univ. di PALERMO Univ. di PALERMO
CREDITS	9		
PROPAEDEUTICAL SUBJECTS			
MUTUALIZATION			
YEAR	1		
TERM (SEMESTER)	2° semester		
ATTENDANCE	Not mandatory		
EVALUATION	Out of 30		
TEACHER OFFICE HOURS	**PROIA PATRIZIA** Thursday 10:00 13:00 Via Pascoli, 6 Secondo piano **RUSSO GIUSEPPE** Monday 9:00 10:00 Previa prenotazione sull'email giuseppe.russo15@Unipa.it, l'incontro avverra su Teams:" canale ricevimento studenti Scienze Motorie Prof. Giuseppe Russo Fisiologia Umana".		

DOCENTE: Prof.ssa PATRIZIA PROIA

PREREQUISITES	Basic skills of biochemistry
LEARNING OUTCOMES	Knowledge and understanding: To acquire knowledge of the main metabolic pathways in order to choose the best energy substrates depending on the type of sport.Know the various food and energy supplements and their effect on the energy yield and speed of absorption. Ability in implementing knowledge and understanding:ability to analyze the performance after taking some foods;ability to identify energy substrates necessary to achieve the best performance in order to avoid any deficiencies that may cause damage to the athlete or failures;ability to design and plan the possible integration of ergogenic foods in physical activity over the time. Judgment autonomy: Be able to assess the physical and physiological test results and/or the performance in order to make changes to the training program and/or diet. Communicative skills:ability to present the results of tests carried out, even to a non-expert public; being able to support the importance and clarify the effects on physical motor activity. Learning skills: updating of skills through workshops, specialized seminars or consultation of scientific publications in their field
ASSESSMENT METHODS	Oral exam
TEACHING METHODS	Frontal lectures

MODULE
PHYSIOLOGY APPLIED TO SPORT

Prof. GIUSEPPE RUSSO

SUGGESTED BIBLIOGRAPHY	
Attività Fisica, fisiologia, adattamenti all'esercizio, prevenzione, sport terapia e nutrizione a cura di Giuseppe D'Antona Poletto Editore W.D. McArdle, F. I. Katch, V. L. Katch Fisiologia Applicata allo Sport Casa Editrice Ambrosiana Cindy Stanfield Fisiologia editore Edises Cindy L. Stanfield Fisiologia Edises	
AMBIT	21001-Attività formative affini o integrative
INDIVIDUAL STUDY (Hrs)	54
COURSE ACTIVITY (Hrs)	21
EDUCATIONAL OBJECTIVES OF THE MODULE	
Knowledge of sport and physical activity effects.	

SYLLABUS

Hrs	Frontal teaching
4	Energy for this activity 'physics: energy value of food, the release of energy in physical exercise, energy metabolism, measurement of energy metabolism, energy expenditure at rest and during muscular work, energy cost of walking, running and swimming, power measurement delivered and interindividual differences.
4	The transport system and oxygen use: the structure and function of the respiratory system, gas exchange in the blood and their transport, control of pulmonary ventilation.
4	Cardiovascular system, cardiovascular regulation, capacity 'function of the cardiovascular system.
4	Renal Physiology, structure and function of skeletal muscles, neuromuscular control.
2	Training of capacity 'aerobic and anaerobic, muscle strength, support to improve performance and athletic conditioning.
3	Body composition, energy balance, activity 'physical and health: the determination of body composition, physical structure and performance in different sports, obesity' and weight control, activity 'physical health and aging Up down'

MODULE
APPLIED BIOCHEMISTRY FOR SPORTS

Prof.ssa PATRIZIA PROIA

SUGGESTED BIBLIOGRAPHY

Fondamenti di Biochimica dell'esercizio fisico. Michael E. Houston. Edizione Calzetti Mariucci
Biochimica per le scienze motorie- Di Giulio,Fiorilli,Stefanelli- Casa Editrice Ambrosiano

AMBIT	50537-Biomedico
INDIVIDUAL STUDY (Hrs)	108
COURSE ACTIVITY (Hrs)	42

EDUCATIONAL OBJECTIVES OF THE MODULE

The aim of the course is to apply the chemical and biochemical principles acquired in the basal courses, adapting to the motor activity. Particularly, it will depth the knowledge about the fate of the final products of the main energy metabolisms. It will also give hints of the possible performance evaluation using biochemical markers. Also it will try to figure out how to modulate the expression of some key enzymes that regulate the main metabolisms, through training.

SYLLABUS

Hrs	Frontal teaching
3	Performance assessment through the biochemical markers analysis
5	Alactacid anaerobic metabolism. Creatine supplements uses. Absorption and catabolism. Historical notes on the discovery and function of phosphocreatine and creatinine.Spatial and temporal buffering of creatine.
1	Case study on "Creatine supplementation and effect on performance"
6	The glucose metabolism. Lactate anaerobic metabolism. Lactate fate following the recent discoveries. The use by the brain. The new frontier of lactate as "hormone-like" on brain activation.
3	Fatty acids metabolism. Different types of fatty acids. Omega 3 and 6 fatty acids. Metabolic interactions between lipid and glucose metabolism
4	Aminoacid metabolism. Use and absorption of protein supplements. Supplementation of BCAA.
3	Hydration and salt supplementation during exercise and recovery after exercise. Functional feeding and physical activity.
3	New frontiers of doping. Supplements of banned substances such as anabolic steroid hormones. Gene doping.
3	Digestion and absorption of food
3	Oxidative stress: reactive oxygen and nitrogen species
4	Removal of reactive oxygen species and defense systems against damage caused from free radicals
2	Ergogenic supports