



# UNICUSANO

Università degli Studi Niccolò Cusano - Telematica Roma

<b>Course</b>	<b>SPORTS BIOLOGY</b>
<b>Level and Course of Study</b>	Degree in Sports Science and Technology (LM-68)
<b>Italian code</b>	SSD BIO/13 (old) – SC 05/F1 (new) Applied Biology
<b>Course Year</b>	1
<b>Academic Year</b>	2024-2025
<b>Credits</b>	6
<b>Head instructor</b>	Fiorenza Magi FIELD: PHYSICAL SCIENCES NICKNAME: EMAIL: <a href="mailto:fiorenza.magi@unicusano.it">fiorenza.magi@unicusano.it</a>
<b>Course Presentation</b>	The Sports Biology course aims to elucidate the effects of physical activity and sport exercise on the human body and to clarify the biological response to physical exercise and training. In particular, the cellular and molecular mechanisms underlying specific training and enhanced physical performance will be addressed. The role of satellite cells in determining the regenerative potential of skeletal muscle as well as the adaptive response of skeletal muscle to exercise-induced oxidative stress will also be analyzed.
<b>Objectives</b>	The educational objectives of the Sports Biology teaching are: <ul style="list-style-type: none"> <li>• Know the main concepts of cellular and molecular biology (cell structure and functions, biological macromolecules, gene expression regulation, signal transduction).</li> <li>• Know structure and molecular mechanism of skeletal muscle contraction.</li> <li>• Understand how gene expression and signal transduction are modulated in response to exercise.</li> <li>• Understand cellular and molecular mechanisms involved in response to exercise-induced stress.</li> </ul>
<b>Pre-requisites</b>	To prepare for the Sports Biology exam, students are required to have a knowledge of the principles of Human Biology and Biochemistry. Module 1 of the course, has been provided to help students review these essential concepts which are primary for mastering the course content.
<b>Expected Learning Outcomes</b>	In summary, the expected learning outcomes are: <b>KNOWLEDGE AND UNDERSTANDING:</b> The student will have acquired knowledge and ability to understand the fundamental principles of Sports Biology. <b>APPLICATION OF KNOWLEDGE AND UNDERSTANDING:</b> The student will be able to identify and understand the impact of physical activity on biological processes by applying the knowledge acquired throughout the course. <b>MAKING JUDGEMENTS:</b> The student will be able to assess the biological and functional consequences of exercise, training and physical inactivity. <b>COMMUNICATION SKILLS:</b> The student will have acquired the appropriate specific language to clearly communicate the knowledge gained from the topics discussed and analyzed. <b>LEARNING SKILLS:</b> The student will be able to effectively apply the knowledge acquired to recognize and analyze biological processes related to Sports Biology.

<p><b>Structure of the course</b></p>	<p>The Sports Biology course is worth 6 ECTS credits, which correspond to a study load of at least 150 hours for the student. The course is delivered through pre-recorded audio-video lectures, slides, handouts. The study materials, available on the platform, provide all the necessary content for preparing for the exam. To further enhance preparation, students are encouraged to supplement the handouts with the recommended textbooks.</p> <p>The study load includes at least the following components:</p> <ul style="list-style-type: none"> <li>• 120 hours of teaching for viewing and studying pre-recorded lessons (7 hours of study for 1 hour of video-recorded lesson, including 2 hours for listening to the lesson and 5 hours for self-study to assimilate the contents of the lesson, for a total of 18 hours of video-recorded lessons);</li> <li>• 30 hours of interactive learning designed for completing exercises and assignments proposed by the teachers referred to as e-tivity.</li> </ul> <p>In addition, teaching makes use of synchronous tools such as web-conference sessions and chats available on the platform to allow real-time interaction with enrolled students.</p> <p>Students are advised to distribute the study of the subject evenly over a 12 week period, dedicating about 12 hours per week to studying.</p>
<p><b>Course contents</b></p>	<ul style="list-style-type: none"> <li>• MODULE I (optional) – Principles of Cellular and Molecular Biology</li> <li>• MODULE II – Gene Expression Regulation and Cell Signaling</li> <li>• MODULE III – Skeletal Muscle: Structure and Function</li> <li>• MODULE IV – Signaling in Skeletal Muscle</li> <li>• MODULE V – Satellite Cells and Muscle Repair</li> <li>• MODULE VI - Oxidative Stress and Exercise</li> </ul>
<p><b>Study resources</b></p>	<p>Pre-recorded video lessons by the instructor divided into 6 modules (Italian)</p> <p>Handouts, slides, and scientific papers provided by the teacher</p> <p>Suggested texts for additional insights:</p> <ol style="list-style-type: none"> <li>1. B. Alberts, Essential Cell Biology—6th International Student Edition</li> <li>2. B. Alberts, Molecular Biology Of The Cell 7th Edition</li> </ol> <p>The instructor will provide suggested materials in English, including books, e-books, and scientific papers.</p>
<p><b>Criteria for the evaluation of learning outcomes</b></p>	<p>The exam will usually consist of of a written test or an oral exam (which may take place at the main campus in Rome) aimed at assessing analytical skills, language proficiency, and the ability to synthesize and apply the concepts acquired.</p> <p>The written test includes 30 multiple-choice questions covering the entire course content. Each correct answer is worth 1 point, and a minimum score of 18 is required to pass the exam.</p> <p>The oral exam typically consists of an interview aimed at assessing the student's level of preparation. It typically consists of 3 questions covering the entire course syllabus, with each question having equal value Each question holds equal dignity and therefore a maximum grade of 10.</p> <p>In both exam formats, particular attention is given, in evaluating the answers, to the student's ability to rework, apply, and present the material available on the platform with proper language proficiency.</p> <p>During the final evaluation the correct carrying out of the proposed e-tivities will also be taken into account.</p>