Course Title	**Kinesiology I**				
Course Code	PHYS105				
Course Type	Compulsory				
Level	Bachelor (Level 1)				
Year / Semester	1st/ Fall				
Instructor's, Name	Dr Christos Savva, Dimitris Sokratous				
ECTS	6	**Lectures / week**	2	**Laboratories/week**	2
Course Purpose	The purpose of the course is the recognition, study and analysis of human movement. Students identify normal movement and compare it with pathological, study the mechanisms controlling them, the role played by the nervous and muscular systems. The course also prepares students to be able to assess the possible causes that lead to pathological movement. This knowledge will assist them significantly in Physiotherapy evaluation and the selection of the appropriate therapeutic exercise for each case.				
Learning Outcomes	It is expected that upon completion of the course, the student will be able to: • recall and describe the principles of mechanics and anatomy in relation to the normal movement of the human body • recall and describe the principles of mechanics and anatomy in relation to the pathological movement of the human body • analyze and evaluate the musculoskeletal structure and function of the upper extremity and spine • understand the principles of kinematics in relation to the osteokinematic and arthrokinematic characteristics of each joint • identify and evaluate the muscular strength and functional capacity of the individual • recognize, assess and evaluate the neuromuscular mechanisms that govern the movement of the upper extremity and spine, • determine and objectively analyze the type of muscle work, the trajectory that the member erases, and the magnitude of the burden • describe and analyze the muscular work of the entire kinetic chain • understand the behavior of peripheral neural tissue during the movements of each joint Upon completion of the laboratory part of the course the learner is expected to be able to:				

	• apply all kinds of contractions, calculate and assess the range of movement of the upper extremity and spine • recognize the muscle work performed and define the movements • determine the type of muscle work performed • perform movements on the axes and levels selected, thus understanding the osteokinematic characteristics of each joint • selectively use and evaluate the muscles of the upper limbs and spine, identify and evaluate the deviation from normal and • modify the size of the joint burden to determine the arthrokinematic characteristics of each joint and recognize what happens to the peripheral neural tissue during each movement		
Prerequisites	None	Co-requisites	None
Course Content	• Introduction to Kinesiology. Principles governing it, the importance of movement analysis, functional evaluation and functional rehabilitation, systems of participation in movement, behavior of peripheral nervous tissue during movements of peripheral joints, muscle shortening and muscle elongation, principles of kinematics, osteokinematics and arthrokinematics. • Kinematic analysis of the movements of the human body, kinematic chains, quantitative and qualitative evaluation of the movement of the joint, analysis of the forces exerted during the execution of a movement-activity, Newton's laws of movement, levers – types of levers, center of gravity – line of gravity, introduction to the types of muscle contractions (concentric, eccentric, isometric and isokinematic contraction) • Skeletal muscle, Presentation of its role, architecture and morphology, presentation of the role of the tendon, characteristics of each muscle contraction, categorization of muscles, mecodynamics – tachodynamics. • Sensory-motor system, its role in relation to movement and balance, which systems it consists of, how it works, proprioception - kinesthesia, types of muscle fibers, muscle tissue characteristics • Presentation of the anatomical characteristics of the Shoulder Complex (SO), presentation of the functional characteristics of the SO, osteokinematic and arthrokinematic analysis of the SO, muscular analysis of the SO, movement analysis of peripheral peripheral tissue during the movement of the SO • Presentation of the anatomical features of the elbow joint and forearm / forearm, presentation of the functional features of the elbow joint and forearm / forearm, osteokinematic analysis of the joints that form the elbow joint and forearm / forearm, arthrokinematic analysis of the joints that form the elbow and forearm / forearm joint, muscle analysis, mobility of peripheral nervous tissue during elbow and forearm movements. • Presentation of the anatomical features of the hand, presentation of the functional characteristics of the hand, osteokinematic and		

	arthrokinematic analysis of the hand, muscle analysis of the hand, mobility of peripheral neural tissue during hand movements
Teaching Methodology	**Theory** The course is delivered to the students through lectures, using computer-based presentations programmes. Case Studies, Discussion, Questions / Answers are also used depending on the content of the lecture. Lecture notes and presentations are available online for use by students in combination with textbooks. Relevant material published in international scientific journals is also used to follow the latest developments related to the subject of the course. **Laboratory** During the laboratory courses, students develop their clinical skills in models, where possible, and in practical application of the thematic units developed in the theoretical part of the course. They analyze simple and complex movements and activities, palpation of muscles, control of muscle functional capacity and their mode of action so that they can successfully and safely apply in a real clinical environment
Bibliography	**Textbooks:** Angin, S., & Simsek, I. (Eds.). (2020). Comparative kinesiology of the human body: normal and pathological conditions. Academic Press. Mansfield, P. J., & Neumann, D. A. (2018). Essentials of kinesiology for the physical therapist assistant e-book. Elsevier Health Sciences. Cael, C. (2022). Functional anatomy: musculoskeletal anatomy, kinesiology, and palpation for manual therapists. Jones & Bartlett Learning. **References:** Hislop, H., Avers, D., & Brown, M. (2013). Daniels and Worthingham's muscle Testing-E-Book: Techniques of manual examination and performance testing. Elsevier Health Sciences. Gerhardt, J. J., & Rondinelli, R. D. (2001). Goniometric techniques for range-of-motion assessment. Physical Medicine and Rehabilitation Clinics of North America, 12(3), 507-528. Whittle, M. W. (2014). Gait analysis: an introduction. Butterworth-Heinemann. Field, D., & Hutchinson, J. S. O. (2006). Field's anatomy, palpation, and surface markings. Elsevier Health Science
Assessment	**Continuous Assessment (50%):** The assessment may include any combination of the following: • **Written and/or oral**, and it consists of multiple – choice, short answer, open ended questions and/or essay questions, that align

	with the learning outcomes, in order to assess the theoretical knowledge gained. The questions ensure that students will demonstrate a deep understanding of the subject matter and apply their knowledge to solve problems or analyse scenarios. • **Assignments and projects** provide opportunities for students to apply their theoretical knowledge in practical ways. The assignments are designed in a way that require critical thinking, research, analysis, and synthesis of information. Projects can be individual, self directed learning or group-based and should align with the learning outcomes. Students are evaluated on the quality of their work, the depth of understanding displayed, and their ability to effectively communicate their ideas. Assignments and projects may be individual or group work. • Use of **case studies or problem-solving exercises** to assess how students can apply theoretical knowledge to real-life situations. Students are presented with scenarios that require analysis, critical thinking, and the application of theoretical concepts and they are assessed based on their ability to perform verbal presentations, viva voce examinations, identify and evaluate relevant information, propose solutions, and provide justifications for their choices. • **Online quizzes or interactive assessments**: Online quizzes or interactive assessments, reflective writing can be used through the Moodle platform, to create quizzes with various question formats. These assessments can be self-paced or timed, and immediate feedback can be provided to students. • **Classroom discussions and debates**: Students engage in classroom discussions and debates to assess their theoretical knowledge. Active participation is encouraged in order to hone their critical thinking skills by posing open-ended questions and facilitating dialogue. • **Peer and self-assessment**: Students are assigned to review and provide feedback on each other's work, encouraging them to critically evaluate their peers' understanding and provide constructive suggestions. **Laboratory** evaluation consists of assessment of the expected skills and competences, critical thinking, problem-solving and teamwork skills. During the laboratory sessions, students are closely observed as they engage in the assigned tasks and note is taken regarding the actions, approach and any relevant observations that demonstrate their understanding of the subject matter and application of skills. After assessing the laboratory work, constructive feedback is provided to students. Their strengths and areas for improvement are highlighted, linking them back to the learning outcomes in order to help students understand their progress and guide them towards further development. Depending on the nature of the laboratory work, peer assessment can be incorporated, where students evaluate each other's work based on the

	established criteria in order to promote self-reflection, collaboration, and a deeper understanding of the subject matter. **Final Exam (50%):** comprehensive final exam, to assess students' overall theoretical knowledge. These assessments cover a broader range of topics and learning outcomes from the entire program of study, to gauge the students' understanding and integration of knowledge across different areas.
Language	Greek / English