

Course Title	ANNUAL PLANNING AND ERGOMETRIC EVALUATION TO MAXIMIZE ATHLETIC PERFORMANCE			
Course Code	SSERG308-1			
Course Type	MANDATORY			
Level	BSc (Level 1)			
Year / Semester	3rd / Spring			
Teacher's Name	Dr Elena Papacosta, Dr Anthi Xenophontos			
ECTS	6	Lectures / week	2	Laboratories / week / 1
Course Purpose	The aim of the course is to provide students with a comprehensive understanding of the principles of sports science and athlete coaching. Through theoretical knowledge and practical application, the course aims to equip students with the skills and experience needed to analyze athletes' needs, collect quantitative data on athletic performance with various evaluation methods, and use them to design effective training programs and adapt training programs based on continuous evaluation.			
Learning Outcomes	<p>Upon completion of the course, students will have the opportunity to:</p> <ol style="list-style-type: none"> 1. Understand and interpret sports needs and define goals and needs of athletes. 2. Understand the different training sessions, including macrocycles, mesocycles and microcycles. 3. Design macrocycles and annual training programs based on sport competitive goals. 4. Design mesocycles and microcycles for weekly and daily planning. 5. Apply ergometry to measure, evaluate and plan training. 6. Use methods of measuring aerobic performance and analyze the influence of factors on heart rate. 7. Analyze various ergometric test protocols (laboratory, outdoor) and understand contraindications and criteria for termination of ergometrics. 8. They analyze methods of measuring aerobic capacity, anaerobic capacity - power and muscle strength. 9. Create and customize training plans based on sports data metrics and evaluations. 10. Evaluate athletes' progress and make modifications to training programs based on evaluations. 			
Prerequisites	No	Corequisites	No	
Course Content	<ul style="list-style-type: none"> • Sports needs analysis - Setting goals and needs of athletes. • Training periods - Macrocycles, mesocycles, and microcycles. • Macrocycle design - Annual training plan based on sport competitive goals. • Mesocycle and microcycle design - Weekly and daily training planning. 			

	<ul style="list-style-type: none"> • Ergometrics: terminology, measurement and evaluation, units of measurement, presentation of basic ergometers, principles of ergometrics, ergometric test protocols (laboratory, outdoor), contraindications of ergometrics, validity, reliability and objectivity of tests, test preparation, laboratory conditions, ergometric termination criteria. • Aerobic performance measurement: heart rate measurement, heart rate measurement methods, influence of factors on heart rate measurement. • Aerobic capacity: measurement of maximum oxygen uptake, submaximal and maximum protocols for assessing maximum oxygen uptake, laboratory and field protocols for assessing maximum oxygen uptake. • Anaerobic capacity – power assessment: anaerobic threshold assessment, blood lactate measurement for anaerobic threshold determination, anaerobic power measurement, lower limb power measurement • Muscle strength assessment: tests to measure isotonic, isokinetic and isometric muscle strength. • Assessment of flexibility and body composition: methods to measure the range of motion, evaluation of body composition: anthropometry, ways to evaluate body fat (skin folds, bioimpedance analysis), body mass index, body perimeters. • Evaluation and adjustments - Progress review and programme amendments
Teaching Methodology	<p>Theory</p> <p>The teaching of the course includes lectures to provide the theoretical background. Detailed notes with PowerPoint and material rich in images and videos are used in teaching. Methods such as case studies, real scenarios, discussion, questions/answers are used in the teaching methodology depending on the nature of the course. In addition, workshops and site visits with hands-on experiences are provided to deliver the practical background of course content. Relevant material published in international scientific journals is also used to follow the latest developments related to the subject of the course.</p> <p>Laboratory</p> <p>During the laboratory courses and using case studies students develop their practical skills in ergometric evaluation of performance parameters so that they can successfully evaluate measurements and data analysis in a real sports environment.</p>
Bibliography	<p>Κλεισούρας, Β. Εργομετρία, Μέτρηση της μυϊκής προσπάθειας. Εκδόσεις Συμμετρία. Αθήνα, Ελλάδα, (1991).</p> <p>Winter, E.M., Jones, A.M., Richard Davison, R.C., Bromley, P.M. & Mercer T.M. Sport and Exercise Physiology Testing Guidelines, Volume One, Sport Testing. The British Association of Sport and Exercise Sciences Guide. Routledge, New York, USA, (2007)</p> <p>Eston, R. & Reily, T. Kinanthropometry and Exercise Physiology Laboratory</p>

	<p>Manual. Tests, Procedures and Data: Anthropometry. 3rd Ed. Routledge, New York, USA, (2009).</p> <p>Davison, R., Smith, P. M., Hopker, J., Price, M. J., & Hettinga, F. J. (2022). <i>Sport and Exercise Physiology Testing Guidelines: Volume I - Sport Testing: The British Association of Sport and Exercise Sciences Guide</i>. Routledge.</p> <p>Bompa, T.O. & Buzzichelli, C. (2015). <i>Periodization training for sports</i>. 3rd Edition. Human Kinetics, Champaign, IL, USA</p> <p>Mujika, I. (2009). <i>Tapering and peaking for optimal performance</i>. Human Kinetics, Champaign, IL, USA.</p>
Assessment	<p>1. <u>Pop-up Exit Tickets (30%):</u></p> <p>Pop-up exit tickets consist of short quizzes. The questions will examine the student's performance in the reported learning outcomes of the current lecture. Each exit ticket will contribute up to 5% of the grade of the final course. Students are encouraged to complete 4 exit tickets during the course.</p> <p>2. <u>Laboratories (30%)</u></p> <p>The laboratory reports will examine the student's performance in the reported learning practical outcomes of the current lecture. Each laboratory report will contribute up to 10% of the grade of the final course. Students are encouraged to complete 3 laboratory reports during the course.</p> <p>3. <u>Final Project (40%)</u></p> <p>Students will be asked to design and present a realistic training cycle for a sport and age category of their choice. Work should include:</p> <ul style="list-style-type: none"> -Goal Analysis: Thorough examination of the goals pursued through the macrocycle, the mesocycle, and the training microcycle, as well as the selection and formulation of charges according to these goals. -Descriptive Training Unit Analysis: Presentation of an indicative training unit, detailing exercises, duration, intensity, and breaks. -Detailed Analysis of Ergometric Tests: Determination and analysis of ergometric tests to be conducted during the macrocycle to evaluate and monitor athletes' progress. -Training Program Adjustments: Analysis of possible adjustments to the training program based on the results of the tests, in order to ensure continuous improvement and adaptability of the program to the needs and requirements of the athlete.
Language	Greek / English