

Introduction to Mathematics for Sports Analytics

(1) GENERAL

SCHOOL	SCHOOL OF INFORMATION SCIENCES & TECHNOLOGY		
ACADEMIC UNIT	DEPARTMENT OF STATISTICS		
LEVEL OF STUDIES	POSTGRADUATE		
COURSE CODE		TRIMESTER	1
COURSE TITLE	Introduction to Mathematics for Sports Analytics		
INDEPENDENT TEACHING ACTIVITIES		WEEKLY TEACHING HOURS	CREDITS
		1,5	0
		15	0
COURSE TYPE	Specialization In Applied Sports Analytics		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	ENGLISH		
COURSE DELIVERY METHOD	Distance		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO		
COURSE WEBSITE (URL)	https://cloud.aueb.gr/index.php/s/9geDri852Sic5io		

(2) LEARNING OUTCOMES

Learning outcomes
The purpose of this introductory course is to refresh students' knowledge of basic mathematical concepts, particularly for those who do not come from a science or STEM background.
General Competences
• Ability to work in an interdisciplinary environment. • Promotion of free, creative, and inductive thinking.

(3) SYLLABUS

During this course, the following topics will be covered: the concepts of differentiation, integration, function maximization, and basic concepts of linear algebra and matrices (matrix operations, matrix inversion, and determinants).

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Distance	
METHOD AND FREQUENCY OF COMMUNICATING WITH THE STUDENTS	Remotely via email and through weekly office hours (and whenever necessary) via teleconferencing or in-person office visits.	
ENSURING COMMUNICATION AMONG STUDENTS	Teleconference, Chat via eclass and/ or TEAMS, and QA sessions	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	MS Teams, e-class, MS Outlook, R, Python, WayGround or Kahoot educational games and quizzes	
REQUIRED EQUIPMENT AND TECHNOLOGY KNOWLEDGE	Camera, mic, PC, MS Office, and TEAMS	
COURSE POLICY ON PLAGIARISM AND PLAGIARISM DETECTION TOOLS	Turnitin	
COURSE POLICY ON USE OF AI TOOLS	The use of Artificial Intelligence is permitted with explicit reference to the bibliography (2) for the verbal correction of assignments and as long as students have understood the basic principles and methods of the course.	
TEACHING METHODS	Activity	Semester workload
	Lectures	15
	Lab Exercise	20
	Self-Study hours	30
	Course total	65
STUDENT PERFORMANCE EVALUATION	Evaluation language is English. Evaluation methods include lab exercises, written assignments, and/or written examinations. Oral examinations of the assignments may be conducted if clarifications are needed or if there are suspicions of plagiarism or unauthorized use of Artificial Intelligence tools. Assessment criteria are provided on the course eClass platform and in the course materials.	

(5) RECOMMENDED BIBLIOGRAPHY

- Kraljevic, A. H. (2006). Calculus for Non-Mathematics Majors. Pearson.
- Harville, D. A. (2008). Matrix Algebra From a Statistician's Perspective. Springer.