Syllabus

Course Description

Course Title	Data Management, Analysis and Security
Course Code	30191
Course Title Additional	
Scientific-Disciplinary Sector	STAT-04/A
Language	German
Degree Course	Bachelor in Tourism, Sport and Event Management
Other Degree Courses (Loaned)	
Lecturers	
Teaching Assistant	
Semester	Second semester
Course Year/s	3
CP	6
Teaching Hours	36
Lab Hours	-
Individual Study Hours	-
Planned Office Hours	18
Contents Summary	This course introduces key concepts and practical skills in data management, analysis, and protection, with a focus on applications in the tourism sector. Topics include data collection, storage, cleaning, and visualization; basic statistical and machine learning methods; and hands-on work with the R software for exploring and analyzing real-world tourism data. Students will also gain an understanding of legal frameworks for data protection and develop the ability to assess both the value and risks of data.
Course Topics	
Keywords	
Recommended Prerequisites	
Propaedeutic Courses	

Teaching Format	
Mandatory Attendance	-
Specific Educational Objectives and Learning Outcomes	Knowledge and understanding QUANTITATIVE METHODS Basic mathematical concepts (sets and operations on sets, relationships and their properties, general functions, numbers and elementary equations/inequalities) Functions of a real variable: Basic properties, derivatives and their calculation including first order partial derivatives Optimisation problems of one variable: Concepts and conditions of optimality, convexity, algorithmic approach. - Integrals for functions of one variable: indefinite integrals, integrals and defined surfaces, integral calculus. Descriptive statistics and summarising data: Variables, frequency distributions, measures of central tendency and variability. Mathematical terminology in English. the basic concepts of linear algebra: matrices and matrix calculus, vectors and their geometric applications, systems of linear equations. Functions with several variables: partial derivatives and gradient, convexity. Optimisation problems for several variables: Optimality concepts and conditions, for the unconstrained and constrained case, Lagrange method. the basic concepts of inferential statistics: punctual estimation; confidence interval; hypothesis testing; linear regression. the concept of uncertainty and the basic elements of probability theory. the basic concepts of sampling theory. the basic concepts of inferential statistics: punctual estimation; confidence interval; hypothesis testing; linear regression. Relationships between variables and basic concepts in hypothesis testing. Statistical terminology the software available for data analysis in the social sciences. the basics of linear programming in economics and management. Fundamentals of the concepts of uncertainty, ambiguity and robustness in the context of data analysis. the basis of order theory, in particular partial and total (linear)

	order relationships. the effects of non-total order relationships on decision models "Best practices" and important Excel functions for data collection, processing and visualisation the mechanisms for creating and utilising big data and the impact on the business environment the monetary value of personal and business data. - basic methods and algorithms for analysing data and machine learning methods. the concept of data security from a legal and technical perspective Ability to apply knowledge and understanding QUANTITATIVE METHODS basic concepts useful for attending courses in economics, business administration and management economic problems with multiple variables in a formalised way; ability to identify (optimal) solutions and interpret the results based on existing theories. Calculate differentials and integrals of real functions. Ability to solve optimisation problems with one variable. Define economic problems in a formalised way; find (optimal) solutions based on existing theories and interpret results. use mathematical tools to analyse static and dynamic models. analyse mathematical problems and models as well as ideas for their solution. Use mathematical tools to analyse static and dynamic models with multiple variables. Use matrices to represent data and manage them for transformations and calculations. statistical methods as useful research tools in the social sciences. Use descriptive and inferential statistics to summarise information, analyse and interpret relationships between variables and test hypotheses. at least one statistical application to develop a simple data analysis. the use of algorithms/applications to solve linear programmes and their dual problem. Solving zero-sum games between two people using linear programming Solving linear programs for business problems: cost and revenue

	optimisation, logistics design and optimisation, inventory flow planning, etc. Using mathematical methods to model risks (uncertainties) and to solve expected utility maximisation problems. Distinguish between decision situations with complete and incomplete preferences and then use the appropriate model. Use Excel to collect, process and visualise data. Use web services to analyse data online. Understand the basic principles of modern data analysis concepts, such as machine learning. Deal with data security issues in corporate environments. Making judgements Identify the most important variables to use when making judgements in complex situations; Report analytically and critically on information, experience and data to make appropriate business decisions; select the most appropriate quantitative and qualitative analytical tools to support decision making; find necessary additional information in databases, legal documents and scientific sources; find solutions by using logical reasoning and combining information and analytical tools Communication skills Achievement of this objective is assessed by means of written examinations, group work, assignments, presentations of case studies and projects as well as the final thesis. Learning skills the ability to retrieve and utilise information from databases, research studies, legal texts, regulations and standards needed in their professional life; the ability to analyse, critically assess and integrate data, information and experience;
Specific Educational Objectives and Learning Outcomes (additional info.)	
Assessment	

Evaluation Criteria	
Required Readings	
Supplementary Readings	
Further Information	
Sustainable Development Goals (SDGs)	