Detailed Course Syllabus

Academic year: 2025/2026	**Semester:** Summer semester
Study programme: Sestrinstvo (I) (elective)	**Year of study:** 1

I. BASIC COURSE INFORMATION

Name: Multivariate statistical methods

Abbreviation:

Status: Compulsory	**ECTS:** 6	**Code:** 252578

Prerequisites: No

Total Course Workload

Teaching Mode	Total Hours
Lecture	30
Seminar	30

Class Time and Place: HKS - according to the published schedule

II. TEACHING STAFF

Course Holder

Name and Surname: Šikić Luka

Academic Degree:	**Professional Title:**
Contact E-mail: luka.sikic@unicath.hr	**Telephone:**

Office Hours: According to the published schedule

Course Assistant

Name and Surname: Šagovac Mislav

Academic Degree:	**Professional Title:**
Contact E-mail: mislav.sagovac@unicath.hr	**Telephone:**

Office Hours: According to the published schedule

III. DETAILED COURSE INFORMATION

Teaching Language: English

Course Description	This course covers advanced empirical research design, including developing questions, creating hypotheses, designing research, and analyzing data. Students will gain hands-on experience using statistical software and learn to properly analyze data using appropriate statistical tests. The course will also cover effective communication of experimental findings, helping students develop skills to communicate their research findings to different audiences effectively. By the end of the course, students should be able to design and conduct their experiments and analyze the data they collect using statistical techniques appropriate for their research questions. They should also effectively communicate their experimental findings to scientific audiences. This will allow them to stay up-to-date with the course content and participate in scientific discussions. In addition to attending lectures and seminars, students will be required to complete a data analysis project, which will be presented as an oral seminar presentation. This project will allow students to apply the data science skills they have learned to a real-world social science research problem. To complete the course, students must accumulate at least 70% of their grade through class activities, including midterm exams and written and orally presented seminar projects. This will ensure that students regularly engage with the course content and actively work towards mastering the skills and concepts covered in the course
Educational Outcomes	1. Develop a thorough understanding of multivariate statistical techniques, including their theoretical foundations and practical applications. 2. Learn to apply multivariate statistical techniques to real-world data analysis problems and research questions. 3. Understand the assumptions underlying multivariate statistical methods and how to assess their validity. 4. Gain experience in using statistical software to analyze multivariate data. 5. Develop skills in interpreting and presenting results of multivariate statistical analyses to various audiences.
Textbooks and Materials	
Required	Hair Jr., J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). Multivariate Data Analysis. Pearson.
Supplementary	Stevens, J. P. (2009). Applied Multivariate Statistics for the Social Sciences. Routledge. Izenman, A. J. (2013). Modern Multivariate Statistical Techniques: Regression, Classification, and Manifold Learning. Springer. Sharma, S. (1996). Applied Multivariate Techniques. John Wiley & Sons. Bartholomew, D. J., & Steele, F. (2008). The Analysis of Multivariate Social Science Data. CRC Press
Examination and Grading	

To Be Passed	**Exclusively Continuous Assessment**	**Included in Average Grade**
Prerequisites to Obtain Signature and Take Final Exam	Attendance is crucial for success in this course, and students are expected to attend at least 70% of lectures and seminar sessions.	

Examination Manner	Final course grade is based on 100 points earned through student's continuous involvement in class activities: Fair (2) – 50 to 64 points Good (3) – 65 to 79 points Very good (4) – 80 to 89 points Excellent (5) – 90 to 100 points Earning credits: Class activities contribute to 50% of the grade: Seminar – maximum 40 points Seminar presentation – maximum 10 points Final exam contributes to 50% of the grade: Final exam – maximum of 50 points (50% of correct answers necessary for passing)
Grading Manner	Class activities: Midterm exam (written), seminar presentation (written and oral) and final exam.

Detailed Overview of Grading within ECTS

VRSTA AKTIVNOSTI	ECTS bodovi - koeficijent opterećenja studenata	UDIO OCJENE (%)
Pohađanje nastave	1.5	0
Kolokvij-međuispit	1.8	40
Seminarski rad	0.9	20
Seminarsko izlaganje	0.45	10
Ukupno tijekom nastave	4.65	70
Završni ispit	1.35	30
UKUPNO BODOVA (nastava+zav.ispit)	6	100

Midterm exam dates:

Exam period dates:

IV. WEEKLY CLASS SCHEDULE

[Predavanja]

#	Topic
1	Overview of the Course and Student Obligations
2	Fundamentals of the R Programming Language
3	Descriptive Statistics Refresher
4	Inferential Statistics Refresher
5	Principal Component Analysis (PCA)
6	Factor Analysis

7	Cluster Analysis
8	Multivariate Regression Analysis
9	Content (text) Analysis
10	Survival Analysis
11	Network Analysis
12	Time Series Analysis
13	Machine Learning
14	Conducting Empirical Research
15	Final exam
[Seminari]	
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