

Syllabus for the course

FUNDAMENTALS OF QUANTITATIVE METHODS IN R

Course code:	4ST660
Course title in language of instruction:	Fundamentals of Quantitative Methods in R
Course title in Czech:	Základy kvantitativních metod v R
Course title in English:	Fundamentals of Quantitative Methods in R
Number of ECTS credits allocated:	3
Mode of delivery:	full-time; 0/2 (hours of lectures per week / hours of seminars per week) as semestral course extra-sem; 0/26 (lectures per period / seminars per period) as intensive course
Mode of completion:	graded course
Language of instruction:	English
Level of course and year of study:	master (second cycle): 1
Semester:	— <i>item not defined</i> —
Name of lecturer(s):	doc. RNDr. Ivana Malá, CSc. (supervisor)
Prerequisites and co-requisites:	none
Recommended optional programme components:	none
Work placement:	none

Aims of the course:

The course provides the students with the basic concepts and skills necessary for elementary data analysis and the successful study of quantitative undergraduate subjects.

Learning outcomes and competences:

Upon successful completion of this course, students will be able to fully use essential tools of mathematics, statistical data analysis and visualisation. They will learn how to work in a free software environment for statistical computing and graphics R. They will utilise these skills in any future quantitative modelling and studying of undergraduate quantitative subjects.

Course contents:

Matrices, matrix operations, determinant, eigenvalues and eigenvectors.
Systems of linear equations.
Set operations, mapping, real function.
Derivatives, indefinite integral, definite integral, improper integral.
Basics of probability theory. Definition, properties, evaluation of probabilities. Combinatorics.
Data, descriptive statistics. Types of variables. Characteristics of location, variability, skewness and kurtosis.
Basic visualisation of data.

Learning activities, teaching methods and workload (hours):

Type of teaching method	Hours of workload
	Daily attendance
Attendance at seminars/workshops/tutorials	26
Preparation for seminars/workshops/tutorials	26
Preparation of term paper	26
Total	78

Assessment methods and criteria:

Requirement type	Weight
	Daily attendance
Active lecture/seminar/workshop/tutorial participation	40 %
Term paper	60 %
Total	100 %

Assessment:

Graded courses

1 Excellent (90 – 100%)

2 Very good (75 – 89%)

3 Good (60 – 74%)

4 Insufficient (0 – 59%)

Ungraded courses

P Passed

NP Not Passed

Special requirements and details:

none

Reading:

Type*	Author	Title	Published in	Publisher	Year	ISBN
RQ	KASPŘIKOVÁ, N. – KLŮFA, J.	Mathematics for economic universities	Praha	Ekopress	2013	978-80-87865-01-9
RQ	DALGAARD, P.	Introductory statistics with R	New York	Springer	2008	978-0-387-79053-4
RE	TEETOR, P.	R cookbook	Sebastopol	O'Reilly Media	2011	978-0-596-80915-7

* RQ – required RE – recommended