

Multivariate analysis NMST 539 – Lab sessions

NMST 539 Outline | Summer term 2021/2022

‡ **Lecturer:** Assoc. Prof. Zdeněk Hlávka

‡ **Lab sessions:** Asst. Prof. Matúš Maciak

📅 **Lab session schedule:** Tuesday, 12:20 – 13:50, Lecture room @K11

✉ **Consultations:** Tuesday 9:00 – 10:30 | Thursday 9:00 – 10:30 | or by an appointment
@K151 (first floor, Karlin building)

📄 **Basic information**

- Multivariate methods and techniques discussed during the course (NMST 539) lectures will be further elaborated and practically applied during the lab sessions. The main software tool used for the lab session will be the open public licence (GNU) statistical program **R** – which can be downloaded from <https://www.r-project.org/> Students may either use the computers available in the lecture room K11 (login required) or they may use their own laptops with the same software being installed on them (internet connection required);
- A detailed syllabus (containing all partial topics – multivariate methods to be discussed in each particular week) will be regularly updated on the lab session website.
- Standard knowledge (usually obtained during the bachelor studies at the Faculty of Mathematics and Physics) of the theory of probability, mathematical statistics, matrix algebra, and mathematical analysis is required for a smooth course graduation;
- The main purpose of the lab sessions is to apply multivariate methods discussed during the lectures while using computers, statistical software (**R**, Team Development Core, 2022), and real data examples;
- Each student is required to approach the course individually: individual (theoretical) preparation is needed for each lab session in order to apply the multivariate methods smoothly. Individual sample tasks will be always assigned at the end of each lab session to allow for some additional practicing skill training. Illustrative examples will be also posted on the lab session website;
- Data files needed for the practical applications of the discussed multivariate techniques are available on the course lecturer website.

☑ **Credit requirements**

In order to receive the final credit, the student must satisfy all of the following:

- (a) The student must be officially **enrolled in the Student Information System SIS**;
- (b) The student needs to **evaluate all partial tasks** assigned at the end of each lab session during the term;
- (c) Finally, the student needs to **successfully elaborate both individual test** (to be solved during the lab sessions). There will be exactly one secondary take for each individual test which will take place at the end of the term/during the exam period.

i Useful references

- ❑ Härdle, W. and Simar, L.: **Applied Multivariate Statistical Analysis**. Springer, 2015.
- ❑ Mardia, K., Kent, J., and Bibby, J.: **Multivariate Analysis**, Academic Press, 1979.
- ❑ Venables, W.N. and Ripley, B.D.: **Modern Applied Statistics with S**, Springer, 2002.
- ❑ Bouveyron, C., Celeux, G., Murphy, T.B., and Raftery, A.E.: **Model-based Clustering and Classification for Data Science**, Cambridge University Press, 2019.
- ❑ Härdle, W. and Hlávka, Z.: **Multivariate Statistics: Exercises and Solutions**. 2nd Ed., Springer, 2015.
- ❑ Rao, C.R.: **Linear Statistical Inference and Its Applications**. 2nd Ed.. Wile. New York, 1973.

⚡ Disclaimer (in Czech)

V rámci platných Pravidiel pro organizaci studia na Matematicko-fyzikální fakultě Univerzity Karlovy (ze dne 21. června, 2019), sa vzhľadom k Čl. 8, dds.2 týchto pravidiel týmto vyhlasuje, že povaha predmetu vylučuje právo studenta na jeden řádný a dva opravné termíny pro získání zápočtu. Získanie zápočtu sa riadi výhradne pravidlami podrobne uvedenými v tomto dokumente, na oficiálnej webovej stránke cvičenia, alebo stručne na fakultnej stránke predmetu v systéme SIS.

⚡ Disclaimer (in English)

The disclaimer above refers to the official rules of study at the Faculty of Mathematics and Physics specifying alternative options for the course credit assignment. The Disclaimer says that the rules which apply for the course credit assignment for the Multivariate analysis lab sessions (NMST 539) are fully determined by the specifications provided in this document.

✉ Contact:

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