

LECTURE / SESSION¹ PLAN

Name Lecturer: Sofia Gil-Clavel	Date session: 1	Expected number of students: 20
Course title	R-Workshop	
Topic of lecture or session	Data frames	
Situational factors (e.g. group size, prior knowledge, expected motivation)	The class lasts 2hrs. The students are in different career stages, from PhD students to professors. The students have different backgrounds, from qualitative researchers that have never used R to quantitative researchers that want to learn new topics or move out of SPSS/STATA. The students use different Operating Systems (Windows, Mac, or Linux).	
Intended learning outcomes of this session	At the end of the session the students will be able to: <ol style="list-style-type: none">1. Use RStudio to interact with R.2. Write their own R-scripts.3. Differentiate between the elements that compose a data frame (primitive elements and vectors), as well as their basic operators.4. Interpret the different elements in the data frames and their possible usage.5. Perform basic handling of data frames.6. Create, open and save data frames.	
Learning material (book, chapters, ...)	The lecture is based on the books: <ul style="list-style-type: none">• Albert, Jim, and Maria Rizzo. R by Example: Concepts to Code. Use R! New York, NY: Springer New York, 2012. https://doi.org/10.1007/978-1-4614-1365-3.	

¹ A session means a teaching and learning session for university students in the bachelor or master. It can be a lecture, a seminar or a specific type of educational meeting with a group of students that is relevant for the discipline where the lecturer can demonstrate a whole range of teaching skills. It means that in one session each of the six didactic elements appears at least once. Your lesson plan should show that you are using a powerful learning environment and that students are activated.

	<ul style="list-style-type: none"> • Davies, Tilman M. The Book of R: A First Course in Programming and Statistics. San Francisco: No Starch Press, 2016. https://web.itu.edu.tr/~tokerem/The_Book_of_R.pdf • Wickham, Hadley, Mine Çetinkaya-Rundel, and Garrett Grolemund. R for data science. " O'Reilly Media, Inc.", 2023. Accessed May 7, 2024. https://r4ds.hadley.nz/.
Media, equipment, tools	<p>The students use their own laptops.</p> <p>The teacher needs access to a projector and a whiteboard.</p>
Preparation for students	<p>The students have access to the slides and codes before the class:</p> <p>https://github.com/SofiaG11/R_Course/tree/master/R4SocialScientists/Session1_Dataframes</p>

Time ² (min.)	Didactic element (goal) ³ and topic ⁴	What the teacher does ⁵ (teacher activity)	What students do (learner activity)	Evaluation ⁶ (feedback/assessment)
5	<ul style="list-style-type: none"> • Use RStudio to interact with R. • Quick overview of what R and RStudio are. 	<ul style="list-style-type: none"> • The teacher explains what R and RStudio are using the slides. Also explains the usage of the different panes in RStudio. 	<ul style="list-style-type: none"> • The students passively digest what the teacher is explaining. 	<ul style="list-style-type: none"> • The students will use RStudio during the workshop. So, the teacher will detect when a student confuses the script with the console or when the student does not know where the variables are loaded. Based on these confusions the

² Indicate the planned duration in minutes

³ State the number(s) of the relevant ILO at each didactic element

⁴ Only key words

⁵ Specify the type of activity and write down also the questions that you prepared to ask in the session

⁶ Specify the type of evaluation, i.e. the way in which you assess if the objective(s) has/have been achieved

				teacher will be able to correct the student.
20	<ul style="list-style-type: none"> • Write their own R-scripts. • Using RStudio to interact with R. 	<ul style="list-style-type: none"> • The teacher will open RStudio and together with the students create the first R-script where the students will be writing the code during the class. • The teacher also explains the basics of writing scripts in R, such as how to write comments instead of code. 	<ul style="list-style-type: none"> • The students open and follow the steps that the teacher is explaining. 	<ul style="list-style-type: none"> • The teacher walks around the classroom to check on the students and provide feedback when something is not working on their computers. When the teacher detects a common error, then the teacher uses the whiteboard to clarify.
30	<ul style="list-style-type: none"> • Differentiate between the different elements that compose a data frame (primitive elements and vectors), as well as their basic operators. 	<ul style="list-style-type: none"> • The teacher uses the slides to explain what primitive data is (i.e. integers, doubles, Boolean, and characters/strings). • The teacher uses the slides to explain the different operations that can be performed using this data, e.g. addition and subtraction for integers and doubles. • The teacher uses the slides to explain what a vector is and how a vector is composed of primitive data. • The teacher explains that that a data frame is composed of vectors of the same size. 	<ul style="list-style-type: none"> • The students perform an exercise where they have to perform three operations on each of the different primitive data types. • The students share some ideas on the situations where they would use these data types and operations. • The students perform an exercise where they create a categorical vector with four of the Dutch political parties. 	<ul style="list-style-type: none"> • The teacher walks around the classroom to check on the students and provide feedback when something is not working on their computers. When the teacher detects a common error, then the teacher uses the whiteboard to clarify.

10	<ul style="list-style-type: none"> Interpret the different elements in the data frames and their possible usage. 	<ul style="list-style-type: none"> The teacher uses the slides to explain the different elements that composed a data frame: <ul style="list-style-type: none"> Values/ Observations Variables (columns) Individuals (rows) The teacher explains the connection between the different primitive data types and statistical variables, such as nominal, ordinal, factors, etc. 	<ul style="list-style-type: none"> The students passively digest what the teacher is explaining. 	<ul style="list-style-type: none"> The students will use these concepts during the workshop. So, the teacher will detect when a student confuses them. Based on these confusions the teacher will be able to correct the student.
30	<ul style="list-style-type: none"> Perform basic handling of data frames. 	<ul style="list-style-type: none"> The teacher used the slides to explain basic R functions to extract information from data frames. 	<ul style="list-style-type: none"> The students passively digest this information. 	<ul style="list-style-type: none"> The students will use these concepts during the workshop. So, the teacher will detect when a student confuses them. Based on these confusions the teacher will be able to correct the student.
20	<ul style="list-style-type: none"> Create, open and save data frames. 	<ul style="list-style-type: none"> The teacher uses the slides to explain some of the possible functions the students can use to create, open, and save data frames in R. 	<ul style="list-style-type: none"> The students perform an exercise to translate textual information into variables and then save them in a data frame. The students save this information into their computers. The students open this information back into R. 	<ul style="list-style-type: none"> The teacher walks around the classroom to check on the students and provide feedback when something is not working on their computers. When the teacher detects a common error, then the teacher uses the whiteboard to clarify.