o#+TITLE:COURSE OVERVIEW

What is an "Advanced intro to data science"?

Data science: Journey to the "Lonely Mountain"

Glóin. Thorin and Company:

THE HOBBIT	THE COURSE
Treasure hunters	Big Data
Skilled experts	Data science training
Magic ring owners	R + Emacs + ESS + Org-mode
Fighters against evil	Statistics for good or evil
Band of brothers	Scrum projects

What will you do in this course?

- Last DSC 205 course in spring'22 was too "tidy"[1]
- Mixture of DataCamp lessons and current topics

[1] My view towards the "Tidyverse" is well summarized in Matloff's essay "TidyverseSceptic" (Matloff, 2022).

Figure 1: Map of the Lonely Mountain (Tolkien, The Hobbit)

Figure 2: Map of the Lonely Mountain (Tolkien, The Hobbit)

- Learn R programming (functions, conditions, loops, utilities)
- Improve performance (e.g. `data.table`, fast reading/writing)
- Special data science topics (e.g. NLP, ML, projects)
- Transcend R programming (e.g. command line data science)

How will you be evaluated?

- All course requirements have deadlines
- Late submissions will be penalized (loss of points)
- Final exam will be sourced by term test questions
- The project topic can come from any of the course sub-topics
- The project deliverable is a working **literate** program

WEEK	DATE	TOPICS & ASSIGNMENTS	TESTS
1	Jan 11,13	Calling functions	
2	Jan 18,20	**Intermed R: Conditionals**	Test 1
3	Jan 23,25,27	**Intermed R: Loops**	Test 2
4	Jan 30, Feb 1,3	**Intermed R: Functions**	Test 3
5	Feb 6,8,10	Writing functions	
6	Feb 13,15,17	**Intermediate R: apply**	Test 4
7	Feb 20,22,24	**Intermed R: Utilities**	Test 5
8	Mar 1,3	**Introduction to Bag-of-Words**	Test 6
9	Mar 6,8,10	Natural language processing	
10	Mar 13,15,17	**Introduction to data.table**	Test 7
11	Mar 27,19,31	**Importing and exporting data**	Test 8
12	Apr 3,5	Introduction to shell	Test 9
13	Apr 10,12,14	**Downloading data on shell**	
14	Apr 17,19,21	**Data cleaning and munging**	Test 10
15	Apr 24,26,28	Machine learning	
16	May 1, 3	Project presentations	

Figure 3: Syllabus, Canvas (lyon.instructure.com) or GitHub (github.com/birkenkrahe/ds2)

REQUIREMENT	UNITS	PPU	TOTAL	% of TOTAL
Final exam	1	100	100	20.
Home assignments	10	10	100	20.
Class assignments	10	10	100	20.
Project sprint reviews	5	20	100	20.
Multiple-choice tests	10	10	100	20.
TOTAL			500	100.

Figure 4: Source: syllabus, Canvas (lyon.instructure.com) or GitHub (github.com/birkenkrahe/ml)

Figure 5: Unsplash, workshop

Which tools are you going to use?

- DataCamp courses (10 weekly home assignments)
- GitHub repository (all course materials except tests)
- GNU Emacs + ESS + R (literate programming environment)
- Canvas (learning management system)

How can you register at DataCamp?

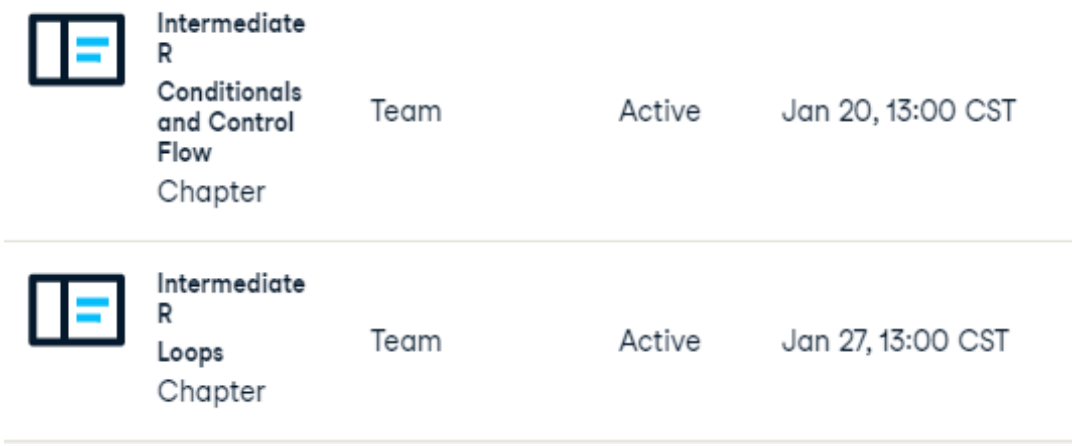
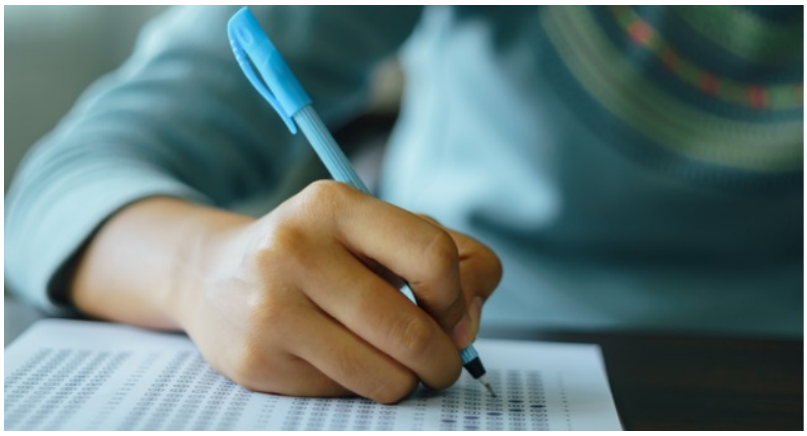


Figure 6: DataCamp assignments for January 2023

- You find the invitation link to the group for Spring 23 in Canvas.
- You will automatically be subscribed to the Digital Humanities team
- If you are in more than one course, I will add you later manually
- These accounts will be valid until July 8, 2023 only

When is the first assignment due?



- The first DataCamp home assignment is due on Friday, January 20. For late submissions, you lose 1 point per day (out of 10).
- The first in-class assignment is due on Friday, January 20. For late submissions, you lose 1 point per day (out of 10 possible points)
- We'll write the first weekly multiple-choice test on January 20, covering all of the material that was covered until then.

What should we do as a project?

- For your term project, **pick an R package** to explore and explain
- The exploration should include **examples and tests**
- Your final deliverable should be a **literate program** (Org-mode)
- The final presentation should include **exercises** for the audience
- We can only accommodate **four (4) projects** altogether (groups of 3)
- Deliverables: proposal, literature review, abstract, presentation

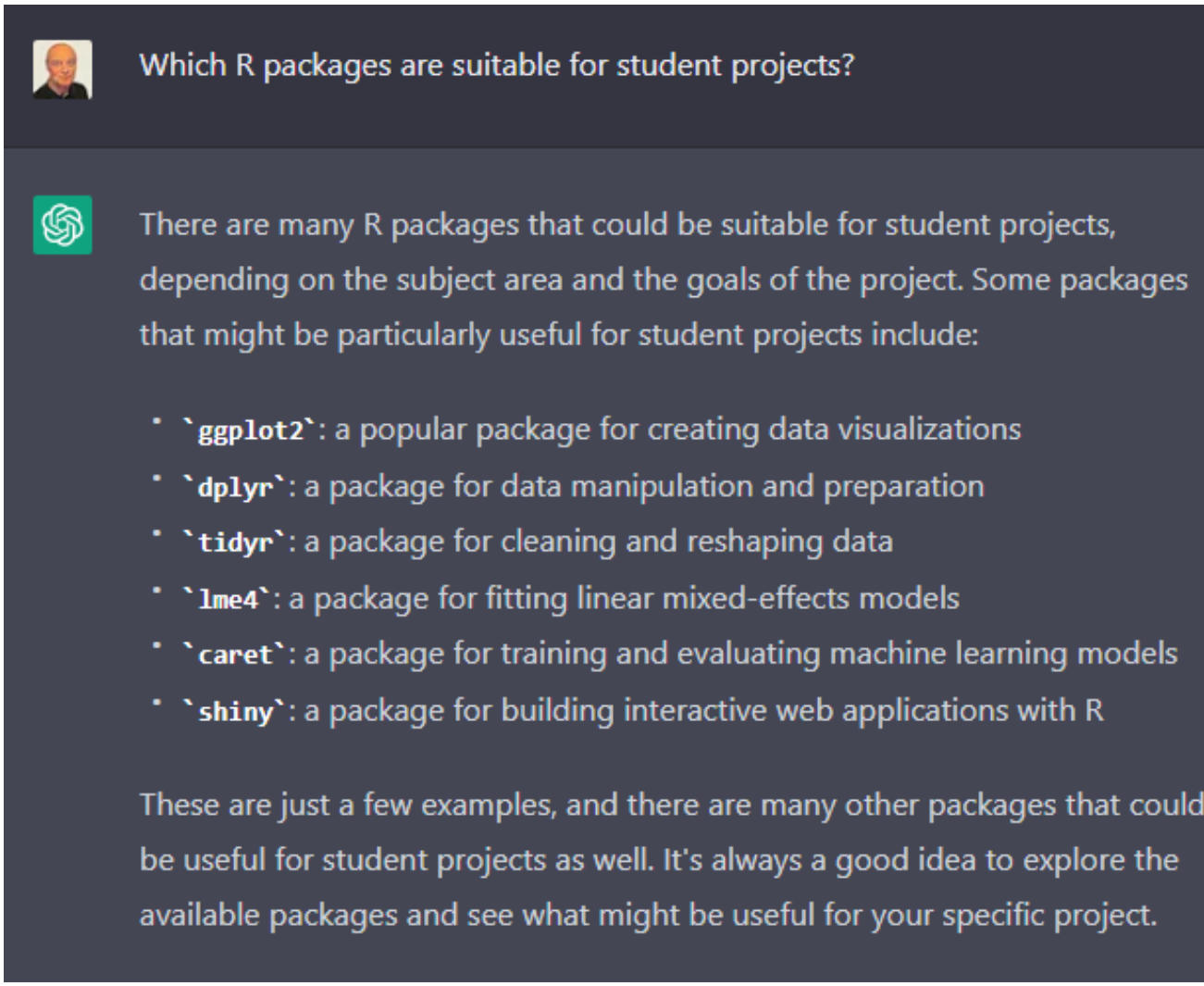


Figure 7: R packages suitable for student projects by ChatGPT

What are you looking forward to?

- Developing lectures and exercises beyond the "Tidyverse"
- Learning more about R packages through your projects
- Having fun with R programming and real applications

Next

Figure 8: Our next topic is "Argument matching"