

# Syllabus

## Data Visualization 4: Data Visualization in Production with Shiny

**Instructor:** Gergely Daroczi

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**Office:** by appointment

**Credits:** 1 US credit (2 ECTS credits)

**Term:** Spring 2022-2023

**Course level:** Master's

### Prerequisites:

- Data Visualization 2: Practical Data Visualization with R
- Data Engineering 3: Using R in Production

**Course drop:** Spring term course registration modification is not allowed after April 25<sup>th</sup>, 2023. Course may not be dropped past that date.

**Audit:** A maximum nr of 2 auditing students are allowed to take this course. Prerequisites are mandatory for auditing students as well. Please consult the instructor for auditing requirements.

## 1. COURSE DESCRIPTION

This course heavily relies on "Data Visualization 2: Practical Data Visualization with R", and focuses on the topics the previous course introduced briefly: using Shiny to create interactive dashboards in R. Besides learning about the interactive components and how to structure such applications, you will also become familiar with deploying applications in dockerized environments using shinyproxy.io – in the cloud infrastructure, introduced in "Data Engineering 3: Using R in Production".

## 2. LEARNING OUTCOMES

### Key outcomes:

By the end of the course, you will be able to create interactive dashboards in R and share with others via a web browser – without the need to install R, have access to your data etc on the client's machine.

**Other outcomes.** The course will also help develop skills in the following areas:

| Learning Area                      | Learning Outcome  |
|------------------------------------|---|
| Critical Thinking                  | The difference between using a data scientist's local computer for data visualization VS releasing production-ready dashboards for end-users. |
| Quantitative Reasoning             |   |
| Technology Skills                  | Advanced data visualization skills in R, infrastructure design for dashboards, hands-on experience with cloud deployments.                    |
| Interpersonal Communication Skills |   |
| Management Knowledge and Skills    |   |
| Cultural Sensitivity and Diversity |   |
| Ethics and Social Responsibility   |   |

### 3. READING LIST

Class materials will be available on GitHub.

**Databases.** The CEU Library boasts a range of databases covering financial and company data, market and industry reports, global news and more. For a full list of databases visit the [CEU Library](#).

- Refinitiv (Thomson Reuters) Eikon for Students + Datastream/Thomson ONE
  - Eikon: Platform used by finance practitioners including market traders to monitor and analyze financial information. Information, analytics and news on all major financial markets including real-time pricing data, financial research, global financial news and commentary, financial estimates, fundamentals analysis, visual analysis through charting. Import/export from Excel.
  - Datastream: Range of economic, securities and company financial data. Excel add-in.
  - Thomson ONE: Global overviews on 55,000 public companies, one million private companies. Reuters News, ownership, deals, private equity, key ratios, company filings, officers and directors. Investext analyst reports, active and historical research from 1,600 independent research firms, brokerages, investment banks.
- Standard & Poor's Capital IQ
  - Web and Excel-based platform combining deep global company information, credit ratings and research, and market research with powerful tools for risk assessments. Real-time and historical information on markets, industries, companies, transactions and people. Tearsheet data.
- Lexis Nexis Academic
  - Global database of news, business, legal and other sources. Full text of 350 newspapers, 300 magazines and journals, 600 newsletters. Wire services including Associated Press, Business Wire and PR Newswire. Company financial information, market research, industry reports.

#### 4. TEACHING METHODS AND LEARNING ACTIVITIES

The course will involve coding sessions with demos and exercises.

Learning objectives will be achieved through actively taking part in the in-class exercises and solving homework and the final take-home assignment.

#### 5. ASSESSMENT

40% homework and 60% final project.

##### Grading Policy

Students shall not miss more than 1 day of classes, failing to do so will yield an administrative fail grade. To pass, students will need to get at least 50% of the homework AND at least 50% of the final project.

Grading will be based on the total score out of 100, in line with CEU's standard grading guidelines.

#### 6. TECHNICAL/LAPTOP REQUIREMENT

Laptop with R, RStudio and git installed is required in the class and for the take-home assignments. Installation steps will be shared on GitHub. AWS login information is also required.

#### 7. TOPIC OUTLINE AND SCHEDULE

| Session | Topics   | Readings          |
|---------|--|-------------------|
| 1       | Introduction to Shiny                            | Shared on GitHub. |
| 2       | Custom layouts, reactives, widgets               | Shared on GitHub. |
| 3       | Deploying Shiny applications on remote server(s) | Shared on GitHub. |

#### 8. SHORT BIO OF THE INSTRUCTOR

Gergely Daroczi has a PhD in Sociology, 15 years of experience with R, founder of the Hungarian R meetup and main organizer of R conferences, authored a book on R and maintains a dozen of R packages, lived and worked in Hungary and USA at market research, fintech, adtech and healthtech companies as a data scientist and engineer both in individual contributor and management roles.