

Data Users Curriculum

Data Skills: Beginners, Intermediate, Advanced



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Course description

Our Data Skills course is structured on three levels, suitable for a diverse audience: from absolute beginners who are looking to get started working with data through to experienced professionals looking to deepen their ability to wrangle and visualise data.

Our courses are built on a modular approach, allowing us to be highly flexible and to tailor both online content and offline courses to different audiences depending on their specific needs.

Data Skills: Beginners is an introduction to the basics of running a data project. The course is suitable for absolute beginners. It takes participants through key stages in the lifecycle of a data project, teaching them to avoid common pitfalls and giving them a solid overview of staple tools that can help with their work.

Data Skills: Intermediate is addressed to those who are already comfortable with the basics of working with data and want to take their skills to the next level. This course will introduce web and PDF scraping or the basics of how to convert data from non-useful “closed” formats into user-friendly “open” ones, dedicated tools for data cleaning and more advanced tools and tactics to analyse and visualise data.

Data Skills: Advanced builds on the previous two levels and is dedicated to professionals who have a solid experience and want to cross new frontiers in their data journey. Our experienced trainers can cater to the most experienced audiences, seamlessly introducing advanced technical tips. By the end of this course participants will be able get data through APIs and web scraping, use advanced features and functions of data analysis software, build bespoke maps and use network analysis software

Target audience

Our courses are designed for the media, business and non-profit sector. These courses are also suitable for:

- organisations or companies with a need for ideas on how to operate in a more data-driven environment
- businesses, especially small and medium enterprises (SMEs) with staff looking to enhance their dataskills
- media organisations with a need for training in data journalism skills
- organisations looking for data-driven campaigning skills

Requirements

There are no requirements for taking this course, but we recommend that participants have basic computer literacy and familiarity with spreadsheets. We recommend that beginners start with the low-level courses and make their way to the more advanced ones by following the steps in the data pipeline.

Modules outline

The School of Data courses are a collection of modules guiding learners through a variety of skills covering the main phases of the data pipeline. A course can be either generic, covering areas from obtaining data to presenting data and everything in between (e.g. Data Skills Basic), or specifically a tailored to a topic or a sector (e.g. Working with Election Data). This modular approach gives School of Data the flexibility to build online and offline courses for a diverse audience.



Scoping, Finding and Getting data

Module	Module description	Basic	Inter m	Adv
What is data	Short introduction to working with data, covering basic concepts and data types and giving an introduction to machine-readable data.	x		
Where to find data & data sources	Introduction to data portals and other data sources, including tips on how to use data portals effectively.	x	x	
Using Freedom of Information to request data	Overview of how Freedom of Information works internationally and tips on writing requests that will get you the data you need.	x	x	x

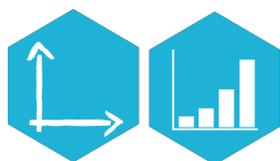
Collecting your own data: surveys	How to design surveys which allow you to collect meaningful data, including an overview of online survey tools.	x	x	
Collecting your own data: citizen reporting and crowdsourcing	Data collection tools and methods allowing you to collect data directly from citizens through web and mobile technology.	x	x	
Verifying data sources	How to ensure data quality and trustworthiness, including tips about verifying sources, good practices in working with data, and basic ethics.	x	x	x
From idea to story: mapping your data project	Learn how to conceive and plan for a data-driven project, from provenance and conception to development and publication, as well as tips for working with collaborators like designers and developers.	x		
Introduction to scraping	An introduction to one of the most useful skills for data investigators: how to extract data hidden in unstructured documents like web pages and PDFs and make it useable for further processing.		x	
Scraping: beyond the basics	How to extract data from web sites and web services, covering the various resources at your disposal to find and extract data.			x
Introduction to web APIs	Introduction to APIs, one of the most powerful techniques for obtaining data. Learn what web APIs are, why you should use them, and how they work.		x	x
APIs: beyond the basics	Advanced tips and tricks for working with web APIs, building on the intermediate web API course.			x



Cleaning and analysing

Module	Module description	Basic	Interm	Adv
Gentle refresh of math and statistics	Learn the basic statistical concepts such as rates and ratios, mean, median mode, including errors in per capita, percentage change, etc.	x	x	
Working with spreadsheets: formatting, sorting and filtering	Learn how to use the most basic tool for data wrangling, including how to import it into a spreadsheet, format it properly and how to begin cleaning and interpreting it using the 'sort' and 'filter' functions.	x		
Working with spreadsheets: formulae and basic charts	Understand what your data might mean by using spreadsheet formulae and basic charts.	x	x	
Working with spreadsheets: advanced formulae and pivot tables	This module will introduce more advanced analysis tools such as complex formulae like 'vlookup' and pivot tables, one of the most powerful tools for summarising data in spreadsheets.		x	x
Working with complex statistical software	This will introduce more complex open source statistical software such R.			x
Introduction to data cleaning	A gentle introduction to reducing errors by cleaning data. It gives you a clear overview of what can go wrong in spreadsheets and how to fix it.	x	x	
Data cleaning with Open Refine: the basics	Learn how to clean data with a powerful and user-friendly tool, Open Refine, without being a programmer. The module will include sorting and faceting, dealing with blank cells, reconciling categories, and splitting columns.		x	

Data cleaning with Open Refine: advanced	Make the most of this powerful application by ensuring your values are formatted properly (number, date and time, etc.) and by using regular expressions to search for relevant data.			x
Network analysis	Network analysis allows us to identify key players in a given network (e.g. a social network, an international network of companies) and how they are related to each other.			x



Presenting and visualising

Module	Module Description	Basic	Interm	Adv
From data to diagrams: an introduction to basic graphs and charts	A picture says more than a thousand words, but how do we turn a thousand words into a picture? This module will help you to understand basic data visualization, including basic design principles, types of data, and data representation.	x	x	
Common misconceptions and how to avoid them	In this module, we give a short overview of common pitfalls when talking about data and how to avoid them.	x	x	
Tell me a story: presenting your data	In this module, we will talk about how to publish the data we worked on throughout the previous modules. We will talk about how to identify key points of your data to help you use data to make your voice heard.	x	x	
Online data visualisation tools	This module presents an overview of the newest tools designed to help journalists, data scientists, and activists to analyse and visualise data.	x	x	x

Introduction to mapping data	How to represent your data using maps, including an introduction to geocoding, geodata formats, and basic tools.	x		
Create your first map	Turning geodata into a interactive map and an overview of online mapping tools.		x	
Advanced mapping	Geodata is not simple data. This module will explain the basics of projections and how to work with professional GIS software (QGIS) if your data is not simple GPS data			x
Case studies of data driven journalism	This module will present and discuss effective and ineffective data-driven news content.	x	x	x
Case studies of data driven campaigning	This module will present and discuss effective and ineffective data driven campaigns.	x	x	x

Onsite activities

Interactive training workshops

Thanks to our modular approach to creating courses, we are able to build both standard and bespoke training curricula. School of Data trainings can be as general as covering the whole process from obtaining data to presenting analyses (e.g. Data Skills Basic) or can be specifically tailored to a topic or a sector (e.g. Working with Election Data).

At School of Data, our two central philosophies regarding onsite trainings are are **'learning by doing'** and **'working with real data'**. Our regular participatory learning events are the ideal mechanism to bring a diverse set of stakeholders into a single convening event to collectively discover what data can do for them.

Examples of standard onsite training workshops:

- **1 day training course: beginners**

This course is designed to help participants get started with their data project. In the morning, we will cover the basics - what is data, types of data and data representations and a gentle refresh of math and statistics. In the afternoon, participants will work in small groups producing their first data project: from finding data, cleaning it, analysing and finally produce a beautiful visualisation.

- **3 days training course: beginners/ intermediate**

This course offers a solid base for those looking to enhance their data wrangling and storytelling skills. In the first day we will cover the basics, exploring what is data, different types of data and representations and where to find relevant data for their projects. After covering the theoretical basis, we will work on concrete data projects introducing at each step new tools and tips for data cleaning, analysing and visualising data. Throughout the workshop, the trainees will work hands on with real data they care about.

- **5 days intensive training course: intermediate/ advanced**

This intensive, hands on, five day course is an allround introduction to working with data, enabling participants to expand their existing data skills into specific areas such as bespoke web-scraping or visualisations using APIs, which fit their data projects. We will enable participants to develop their own data project by delivering bespoke trainings on specific needs. This will culminate in a data expedition giving trainees the opportunity to consolidate their skills through exploring real data and investigating a given research topic.

- **Data expeditions**

Level: basic, intermediate advanced

A data expedition is an exploration-based approach to learning. In a data expedition, you learn in a team through exploring real data and investigating a given research topic. A facilitator guides participants through all of the steps of a data investigation from formulating the right question through cleaning and analysis all the way to presenting your data.

We try to pair participants with someone with more advanced skills, and we encourage people to ask and answer questions along the way. Data expeditions can be organised as standalone events or as a part of multi-day trainings as a final exercise to consolidate skills acquired during the training.

Ongoing support from our local School of Data fellows

The School of Data fellowship programme aims to recruit and train the next generation of leaders and trainers to magnify the reach and power of School of Data. The fellows can provide training and ongoing support to journalists, civil society organisations, and individual changemakers to use data effectively.

See more details regarding our fellowship programme [here](#).

Accreditation

The School of Data team is currently developing a system to acknowledge and reward those who complete our training courses both online and offline. We will soon be able to offer badges and certificates for those who:

- Complete an online module or course
- Attend an offline event
- Are active members of our community (e.g. fellow, volunteers, local project leaders, etc.)