Introduction to R Programming

Nov. 4, 2026
1:30 – 3:30 p.m.

Online

Sherman Centre for Digital Scholarship





Land Acknowledgement

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The Sherman Centre's certificate program recognizes attendance at our workshops.

The certificate complements degree training, supports the development of critical DS competencies, and formalizes core skills fostered by the workshop series.

General Certificate: Any 7 SCDS workshops

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General Certificate



Any 7 SCDS workshops

Stream-focused Certificate



Any 3 SCDS workshops
+ 4 stream-specific workshops

Book an Appointment with the DASH Team

Receive help from a member of the DASH team! DASH can assist with the following topics:

- Creating data visualizations, including charts, graphs, and scatter plots
- Figuring out which statistical tests to run (e.g., t-test, chi-square, etc.).
- Analyzing data with software including SPSS, Python, R, SAS, ArcGIS, MATLAB, and Excel
- Choosing which software package to use, including free and open-source software
- Troubleshooting problems related to file formats, data retrieval, and download
- Selecting methodology and type of data analysis to use in a thesis project

Book an appointment: **https://library.mcmaster.ca/services/dash**

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Fall 2026: Upcoming Workshops

Data Analysis Support Hub

November 4 - Introduction to R Programming
November 18 – Prediction Model Performance for Binary Outcomes in R
November 25 – Basic Mapping and Analysis Using ArcGIS Pro

Research Impact

November 10 - DORA: Visualizing Research Impact
February 10 - Introduction to Bibliometric Analysis

Research Data Management

November 17 - Setting Up a Research Project with Data from Humans and Preparing for Ethics
December 8 - Setting up a New Reproducible Research Project: Data Sharing, Documentation, File Formats, and More!

Do More with Digital Scholarship

December 10 - Introduction to SQL

Register for Upcoming Workshops: scds.ca/events

Learning Objectives

By the end of this workshop, you will:

- Understand what R is and why it is widely used for data analysis
- Learn basic R syntax and data structures (vectors, data frames, lists)
- Perform basic data manipulation and visualization
- Write simple R scripts and use functions/packages
- Gain confidence to explore R further on your own

What is R?

- R is a Data Analysis Software
- R is a programming language
- R is an Environment for Statistical Analysis
- R is Open-Source Software Project
- R is a community: https://www.r-bloggers.com/

Why learn R?

- R does not involve lots of pointing and clicking
- R code is great for reproducibility
- R is interdisciplinary and extensible
- R works on data of all shapes and sizes
- R produces high-quality graphics
- R has a large, welcoming and growing community
- Not only R is free but it is also open-source and cross-platform

What is RStudio?

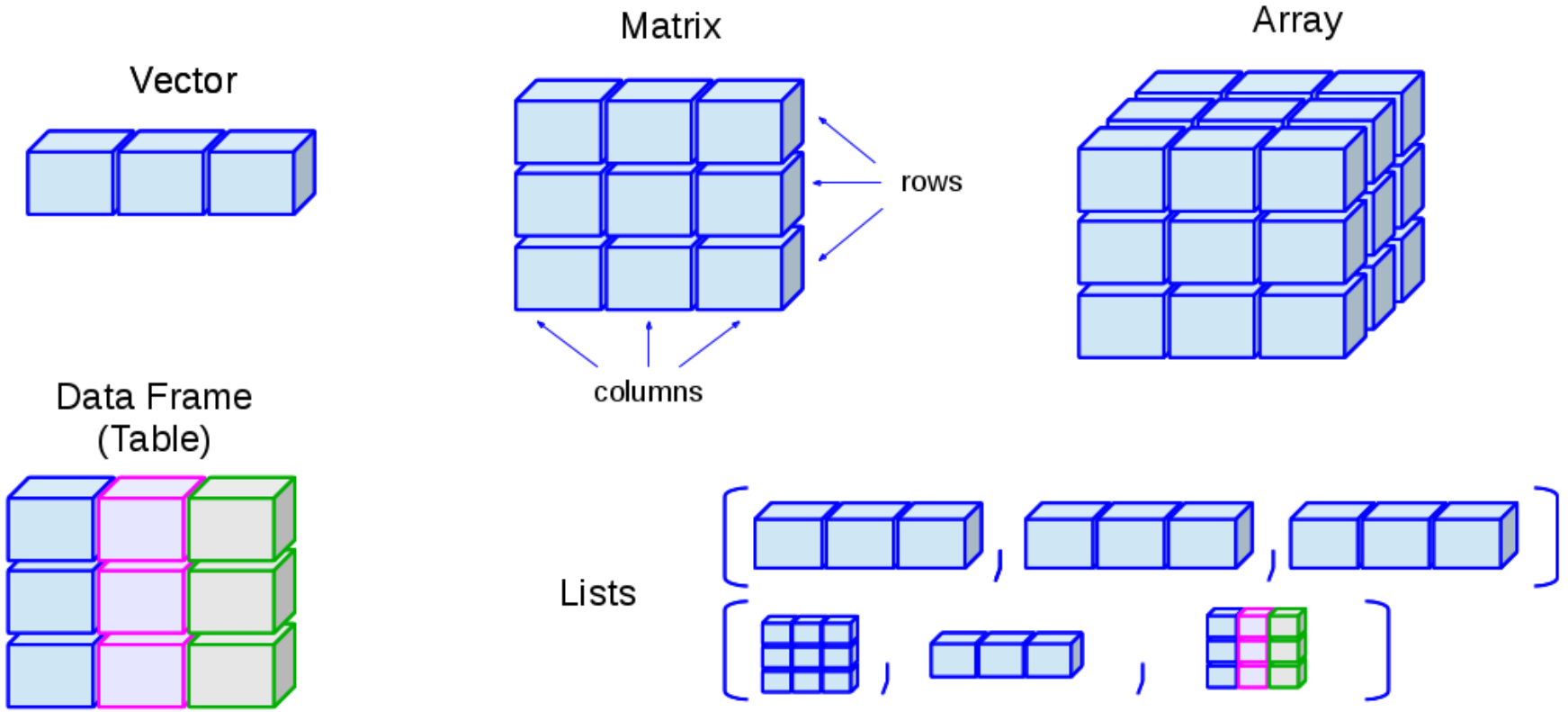
- Most popular IDE (Integrated Development Interface) for R
  - An IDE is a piece of software that provides tools to make programming easier

- RStudio is not only a popular way to write your R scripts but also makes it easier to interact with R
  - We will use RStudio IDE to write code, navigate the files on our system, inspect variables we create, visualize plots we generate.
  - RStudio can also be used for other things such as version controls, developing packages, writing Shiny apps – which are out of scope of this session.

- To function properly, RStudio needs R and hence both need to be installed on the system

Data Type: Summary

Data Type	Description
Vector	It’s a collection of numbers OR text
Lists	A list is a collection of various objects under same name
Matrix	A matrix is a 2D data structure to bind vectors of same length. The elements of matrix must be of same type.
Data Frames	The elements of Data Frames can be of a different type.



Vector: One column or row of data -- One type (Numeric or Text)
Matrix: Multiple columns and/or rows of data -- One type (Numeric or Text)
Data Frame: Multiple columns and/or rows of data -- Multiple inputs

http://venus.ifca.unican.es/Rintro/_images/dataStructuresNew.png

Download Data Files

http://bit.ly/2MVaTmv

Tour of RStudio

Write a simple code

- Install R and R studio
- Create a program to :
  1. Input three values a=22, b=34 and c=102
  2. Calculate the average of a, b, c values
  3. Store the average in the variable 'avg' and print its value.

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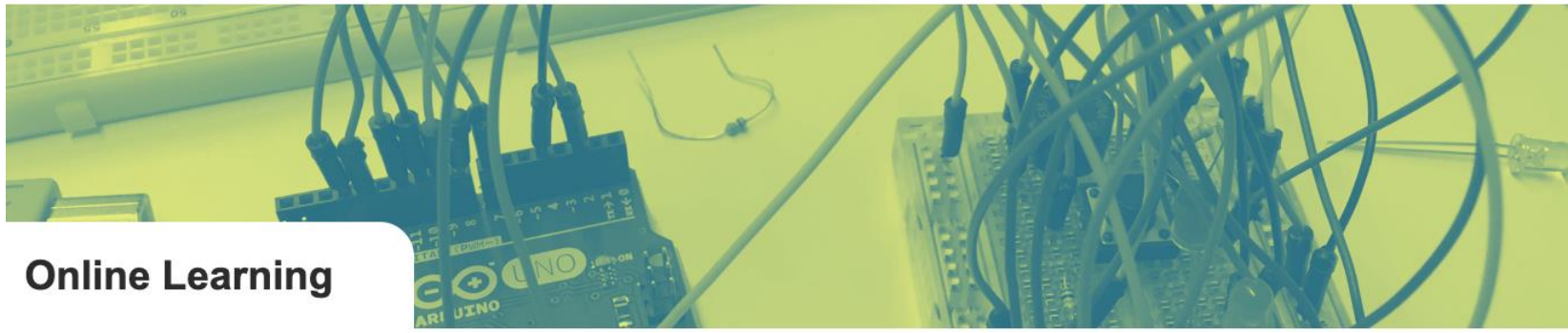
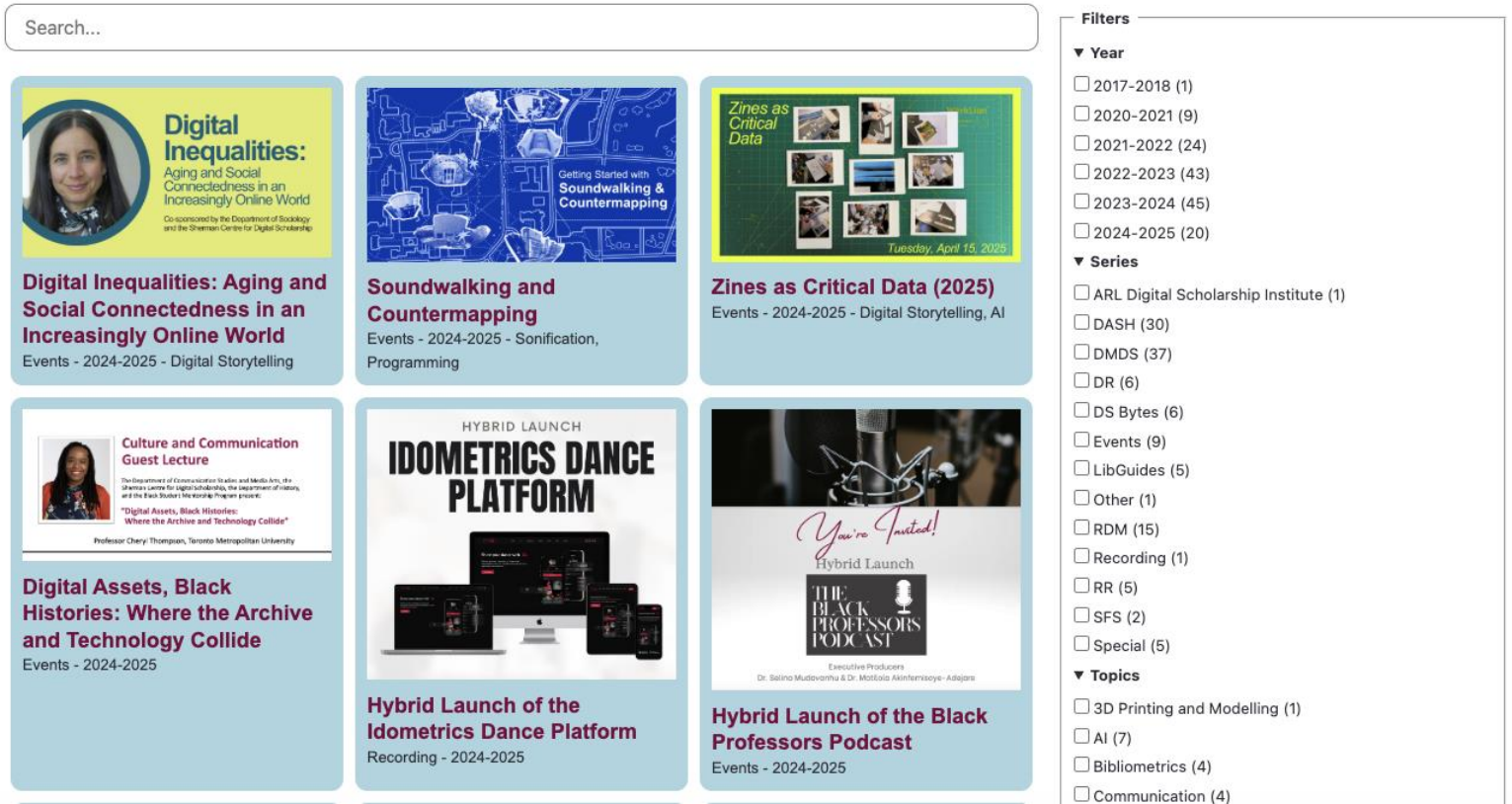


New skills are just a click away. These workshop recordings and online modules will teach you about data analysis, digital scholarship, innovative software, and more. You can also view a text list of these resources, sorted by original workshop or event series.



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