Programming for Data Science with Python

→ Grasp the programming fundamentals in Python, SQL, Command Line, and Git that are the most important programming languages used by data scientists today.

Powered by:

UDACITY

RMIT Online

Who this course is for

Our Programming for Data Science with Python course is ideal for professionals and non-programmers who are taking their first steps into data science or are seeking a versatile programming skillset for data analysis.

DURATION:
100% online, 12 weeks, with an estimated 8-10 hours per week.

PRICE:
$1500 GST inc.

PREREQUISITES / LEVEL OF STUDY:
None

METHOD OF STUDY:
Online study, including interactive videos, assignments, career services, and course enablement support from our Learner Success team.

ENROLMENT:
You can enrol at any time, the whole process only takes a few minutes.

RMIT Online

Why study Programming for Data Science with Python

With big data exploding across every industry, data scientists are some of the most in-demand professionals in Australia. According to the 2020 Emerging Jobs Report Australia by LinkedIn, data scientists and engineers ranked #7 and #8 in the top 15 emerging jobs, indicating that as industries evolve, the adoption of new technologies is opening up a wealth of demand for new talent.

If you're looking to seize the opportunity and future-proof your career, our Programming for Data Science with Python may be the course for you. Created with collaborative data science company Mode, you'll cover fundamental programming skills used in many data analysis and data science roles, including Python, SQL, Terminal, and Git.

By the end of this course, you'll walk away with an RMIT credential which can be validated, recognised, and shared on social media platforms. Throughout this course you'll also work on three projects:

- Investigating a relational database while working on PostgreSQL. You'll complete the entire data analysis process, starting by posing a question, running appropriate SQL queries to answer your question, and sharing your findings.
- You will use Python to answer interesting questions through data collection. You'll write code to collect the data, compute descriptive statistics, and create an interactive experience in the terminal that presents the answers to your questions.
- On GitHub, you'll post different versions of a Jupyter Notebook capturing your learnings from the course, and add comments to your project Git repository.

Advanced data analytics show that machine-generated data will grow to encompass more than **40% of internet data in 2020**

(INTERNATIONAL DATA CORP, 2019)

Complex problem solving and analytics skills were seen as some of the **most in-demand skills for the future**

(THE FUTURE OF WORK REPORT, WORLD ECONOMIC FORUM, 2016)

RMIT Online

How we'll support you

Our Programming for Data Science with Python course will be delivered to you in partnership with Udacity, meaning you'll have access to both Udacity's learning and career services as well as RMIT Online's course enablement support through our Learner Success team.

Udacity's support

Through Udacity, you will get academic support as well as specialised career services, including:

- Mentor support with your course work
- Access to a large student community
- Career coaching and a personalised careers plan
- Interview preparation and advice
- Resume review and optimisation tips
- Course project review and feedback

RMIT Online's course enablement support

Besides working on your own practical projects and receiving a digital credential from one of Australia's leading universities, our local Learner Success team will be available to support you with course enablement queries relating to:

- Logins and passwords
- Enrolment changes such as deferrals and withdrawals
- Course and project extensions
- Obtaining your RMIT badge
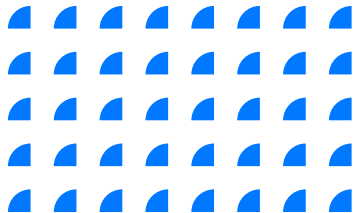
RMIT Online

Why study with RMIT Online

RMIT Online is for students who want real world training from industry professionals. We call this the RMIT Online edge. Get ready to sharpen those skills.

Digital credential

The cutting-edge skills you'll learn are rigorously assessed and recognised by both a leading university and key employers in the field of study through a digital credential.

Connect with industry

Through Udacity, you'll get access to some of the industry's top talent, who will be there to support you with course content and career related support.

Real world skills

Our project-based assessments mean you'll roll up your sleeves and create a project for a real world business scenario, allowing you to see the immediate impact of your learning within your organisation.
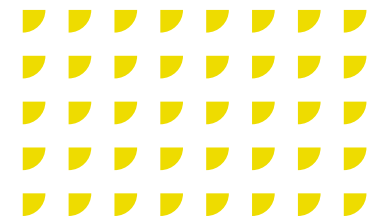
100% online flexible learning

The freedom of online learning means you can study whenever you want, wherever you want, in a manner that suits your work and lifestyle.

Collaborative online experience

Never feel like you're studying alone and feel supported with our Learner Success team.

RMIT Online

What you'll learn
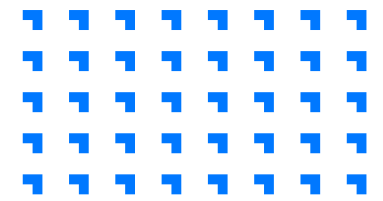
Part 1 : Introduction to SQL

Learn SQL fundamentals such as JOINs, aggregations, and subqueries and how to employ SQL to answer complex business problems.

Lesson title	Learning outcomes
Basic SQL	– Write common SQL commands including SELECT, FROM, and WHERE – Use logical operators like LIKE, AND, and OR
QL Joins	– Write JOINs in SQL, as you are now able to combine data from multiple sources to answer more complex business questions – Understand different types of JOINs and when to use each type
SQL Aggregations	– Write common aggregations in SQL including COUNT, SUM, MIN, and MAX – Write CASE and DATE functions, as well as work with NULLs
Advanced SQL Queries	– Use subqueries, also called CTEs, in a number of different situations – Use other window functions including RANK, NTILE, LAG, LEAD new functions along with partitions to complete complex tasks
Project	Create a relational database while working with PostgreSQL

RMIT Online
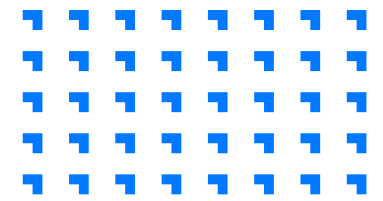
What you'll learn

## Part 2 : Introduction to Python programming

Learn to represent and store data using Python data types and variables, and use conditionals and loops to control the flow of your programs.
You'll harness the power of complex data structures like lists, sets, dictionaries, and tuples to store collections of related data.

Lesson title	Learning outcomes
Why Python Programming	– Understand why you should learn programming with Python
Data Types and Operators	– Represent data using Python's data types: integers, floats, booleans, strings, lists, tuples, sets, dictionaries, compound data structures – Perform computations and create logical statements using Python's operators: arithmetic, assignment, comparison, logical, membership, identity – Declare, assign, and reassign values using Python variables – Modify values using built-in functions and methods – Practice whitespace and style guidelines
Control Flow	– Write conditional expressions using if statements and boolean expressions to add decision making to your Python programs – Use for and while loops along with useful built-in functions to iterate over and manipulate lists, sets, and dictionaries – Skip iterations in loops using break and continue – Condense for loops to create lists efficiently with list comprehensions
Functions	– Define your own custom functions – Create and reference variables using the appropriate scope – Add documentation to functions using docstrings – Define lambda expressions to quickly create anonymous functions – Use iterators and generators to create streams of data

RMIT Online

Lesson title	Learning outcomes
Scripting	– Install Python 3 and set up your programming environment – Run and edit Python scripts – Interact with raw input from users – Identify and handle errors and exceptions in your code – Open, read, and write to files – Find and use modules in Python Standard Library and third-party libraries – Experiment in the terminal using a Python Interpreter
NumPy	– Create, access, modify, and sort multidimensional NumPy arrays (ndarrays) – Load and save ndarrays – Use slicing, boolean indexing, and set operations to select or change subsets of an ndarray – Understand difference between a view and a copy of ndarray – Perform element-wise operations on ndarrays – Use broadcasting to perform operations on ndarrays of different sizes.
Pandas	– Create, access, and modify the main objects in Pandas, Series and DataFrames – Perform arithmetic operations on Series and DataFrames – Load data into a DataFrame – Deal with Not a Number (NaN) values
Project	Write code to collect the data, compute descriptive statistics, and create an interactive experience in the terminal that presents the answers to your project question.

RMIT Online
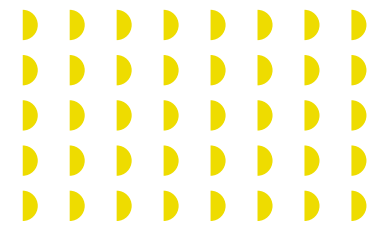
What you'll learn

Part 3 : Introduction to version control

Learn how to use version control and share your work with other people in the data science industry.

Lesson title	Learning outcomes
Shell Workshop	– The Unix shell is a powerful tool for developers of all sorts. Get a quick introduction to the basics of using it on your computer.
Purpose and Terminology	– Learn why developers use version control and discover ways you use version control in your daily life – Get an overview of essential Git vocabulary – Configure Git using the command line
Create a Git Repo	– Create your first Git repository with git init – Copy an existing Git repository with git clone – Review the current state of a repository with the powerful git status
Review a Repo's History	– Review a repo's commit history git log – Customize git log's output using command line flags in order to reveal more (or less) information about each commit – Use the git show command to display just one commit
Add Commits to a Repo	– Master the Git workflow and make commits to an example project – Use git diff to identify what parts of a file have been changed in a commit – Learn how to mark files as "untracked" using .gitignore

RMIT Online

Lesson title	Learning outcomes
Tagging, Branching, and Merging	– Organise your commits with tags and branches – Jump to particular tags and branches using git checkout – Learn how to merge together changes on different branches and crush those pesky merge conflicts
Undoing Changes	– Learn how and when to edit or delete an existing commit – Use git commits amend flag to alter the last commit – Use git reset and git revert to undo and erase commits
Project	Post your work on GitHub where you'll post different versions of a Jupyter Notebook capturing your learnings from the course, and add comments to your project Git repository.

Who's supporting you

Just because it's online, doesn't mean you're on your own. Through Udacity, you'll get to study with some of the industry's brightest minds who'll support you with course content and your career. At RMIT Online, our Learner Success team will be here to help you with any course activities just as deferrals, obtaining your credential, and more.
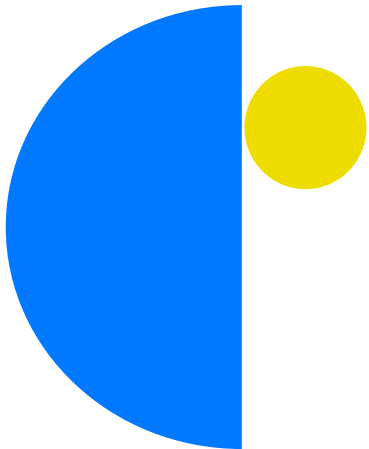
Learner success team

Our learner success team are here to help you with 1:1 coaching, tips on how to successfully study online, and any questions or concerns you may have.

RMIT Online

How online learning works

This is a basic breakdown of how your course works. You can always find more information at online.rmit.edu.au

Before the course starts

Before we get cracking, you'll need access to a computer with broadband connection. Any 64-bit operating system with at least 8GB of RAM should work.

During the course

A lot of your course will consist of video snippets. You can watch these whenever you like. For your course projects, you'll get valuable feedback from Udacity's experienced mentors.

Udacity's platform also grants student access to Knowledge, their proprietary wiki, which enables you to search commonly asked questions and get answers from other students.

Your workspace allows you to see your code in action and immediately see their output and quality, with the benefit of being able to run code in a single environment. Udacity also offers a Student Hub, a powerful chat interface that allows you to interact with other students in your course.

Tools

- Video lectures
- Student Hub
- Workspaces
- Quizzes
- Custom study plan
- Progress tracker

Enrolment

You can enrol online at any time.
The whole process only takes a few minutes.

Enrol now ➡

For more information about the course, head to our <u>FAQ</u> page.

If you have any questions about payment and enrolment, please get in touch via our <u>contact</u> form, or talk to our team directly **1300 145 032**

RMIT Online