

Programming for Data Science

Course Details

No Prerequisites Required

Course Dates

This is a self-paced course, so you can learn when it suits you.

Finish Date:

~~1st December 2018 0:00 AM UTC~~
14th December 2018 0:00 AM UTC

Time Commitment

Between 8 to 10 hours per section.

Assessments and certification

To qualify for a certificate, all questions, worked problems and assignments must be completed. edX will only issue certificates to participants that have chosen the 'Verified Track' and complete the course with a grade of 60% or higher. **When your certificate is available, you will be notified in your edX dashboard.**

Grading Scheme

Pass (60% or higher)

Fail (under 60%)

Related courses as part of the AdelaideX Big Data MicroMasters Program

Computational Thinking and Big Data

Big Data Fundamentals

Big Data Analysis

Big Data Capstone Project

[Find out more](#)

Course syllabus

Course overview

Technology is used by millions of us every day, but do we understand how the technology we use actually works?

While being able to use a computer or digital device is useful in our modern world, this course will help you understand how digital technologies work and will develop your coding skills.

You will learn algorithm design as well as fundamental programming concepts such as data, selection, iteration and functional decomposition, data abstraction and organisation.

This course will test your knowledge and skills in solving small-scale data science problems working with real-world datasets and develop your understanding of big data in the world around you.

What you'll learn

- Skills and understanding of computational thinking
- Understand and apply introductory programming concepts such as sequencing, iteration and selection
- How to analyse data and perform simple data visualisations using ProcessingJS
- Equip you to study computer science or other programming languages.

Section 1: Creative code – computational thinking

Section 1 learning objectives

- Understand what you can do with ProcessingJS.
- Be able to qualify and express how algorithms work.
- Apply the basics of ProcessingJS and start coding with colour.

Section 1 assessment requirements

- Quiz questions.

Section 2: Building blocks – breaking it down and building it up

Section 2 learning objectives

- Manipulate shape attributes, and work with weights and shapes using code.
- Start using variables and expressions.
- Detail why and how variables can make our code smarter.
- Understand how data can be represented and used as variables.

Section 2 assessment requirements

- Quiz questions and assignment.

Section 3: Repetition – creating and recognising patterns

Section 3 learning objectives

- Explain how and why using repetition can aid creating code.
- Apply your understanding of repetition and data.
- Begin using repetition to manipulate and visualise data.

Section 3 assessment requirements

- Quiz questions and assignment.

Section 4: Choice – which path to follow

Section 4 learning objectives

- Identify how to create simple and complicated choices in code.
- Detail how to create and use decision points with code.
- Apply and explain the use of repetition and choice on data.

Section 4 assessment requirements

- Quiz questions and assignment.

Section 5: Repetition – going further

Section 5 learning objectives

- Identify advantages of repetition for data visualisation.
- Apply and reflect upon the power of repetitions in code.
- Create curves, shapes, translate, rotate and scale data in code.

Section 5 assessment requirements

- Quiz questions and assignment.

Section 6: Testing and debugging

Section 6 learning objectives

- Understand why and how to comprehensively test your code.
- Debug code examples using line tracing techniques.
- Explore how your code formatting style can minimise errors and maximise readability.
- Understand why style is important in your code.

Section 6 assessment requirements

- Quiz questions and assignment.

Section 7: Arranging our data

Section 7 learning objectives

- Explore how and why arrays are used to represent data.
- See how static and dynamic arrays can represent data.
- Solve practical data problems using static and dynamic arrays.

Section 7 assessment requirements

- Quiz questions and assignment.

Section 8: Functions - reusable code

Section 8 learning objectives

- Understand how functions work in ProcessingJS.
- Demonstrate how to deconstruct a problem into useable functions.
- Build and use functions to develop practical solutions.

Section 8 assessment requirements

- Quiz questions and assignment.

Section 9: Data science in practice

Section 9 learning objectives

- Explore how data science is used to solve programming problems.
- Solve big data problems by applying skills and knowledge learnt throughout the course.

Section 9 assessment requirements

- Quiz questions and worked problems.

Section 10: Where next?

Section 10 learning objectives

- Understand the context of big data in programming.
- Transform a problem description into a complete working solution using the skills and knowledge you've learnt throughout the entire course.
- Explore how you can expand your current skills and knowledge by participating in future courses.

Section 10 assessment requirements

- Quiz questions and major assignment.

DISCUSSION FORUM ETIQUETTE AND FREQUENCY

We expect you to follow the [edX Code of Conduct](#) at all times and keep your posts/responses positive on the learning forums. Post regularly, at least once per discussion activity and be sure to respond to your peers, as instructed.