

# Geographic Data Science

Introduction

Dani Arribas-Bel

**This course**

# (Self-)Quiz

- Have you ever used **data** to make decisions in your life?
- Have you ever heard the term “**Data Science**”?
- Have you ever written a line of **computer code**?

*More stats than a GIS course... more  
GIS than a stats course*

With a few twists!

# Philosophy

- (Lots of) methods and techniques
  - General overview
  - Intuition
  - Very little math
  - Lots of ways to continue on your own
- Emphasis on the application and use
- Close connection to “real world” applications

# Format

11 blocks with:

- **Concepts:** videos + slides, readings
- **Hands-on:** concepts in (interactive) action
- **Do-It-Yourself:** practical material to do on your own

# Content

- **Blocks A–C:** “big picture” content + computational tools (learning curve)
- **Blocks D–H:** “meat” of the course (lots of concepts packed)
- **Blocks I–K:** prepare an awesome Computational Essay

# Logistics – Website

[https://darribas.org/gds\\_course](https://darribas.org/gds_course)



ENVS363/563

## Geographic Data Science

Welcome to Geographic Data Science, a course taught by Dr. Dani Arribas-Bel in the Autumn of 2020 at the University of Liverpool.

### Contact

Dani Arribas-Bel – [D.Arribas-Bel@liverpool.ac.uk](mailto:D.Arribas-Bel@liverpool.ac.uk)

#### Note

A PDF version of  
this course is

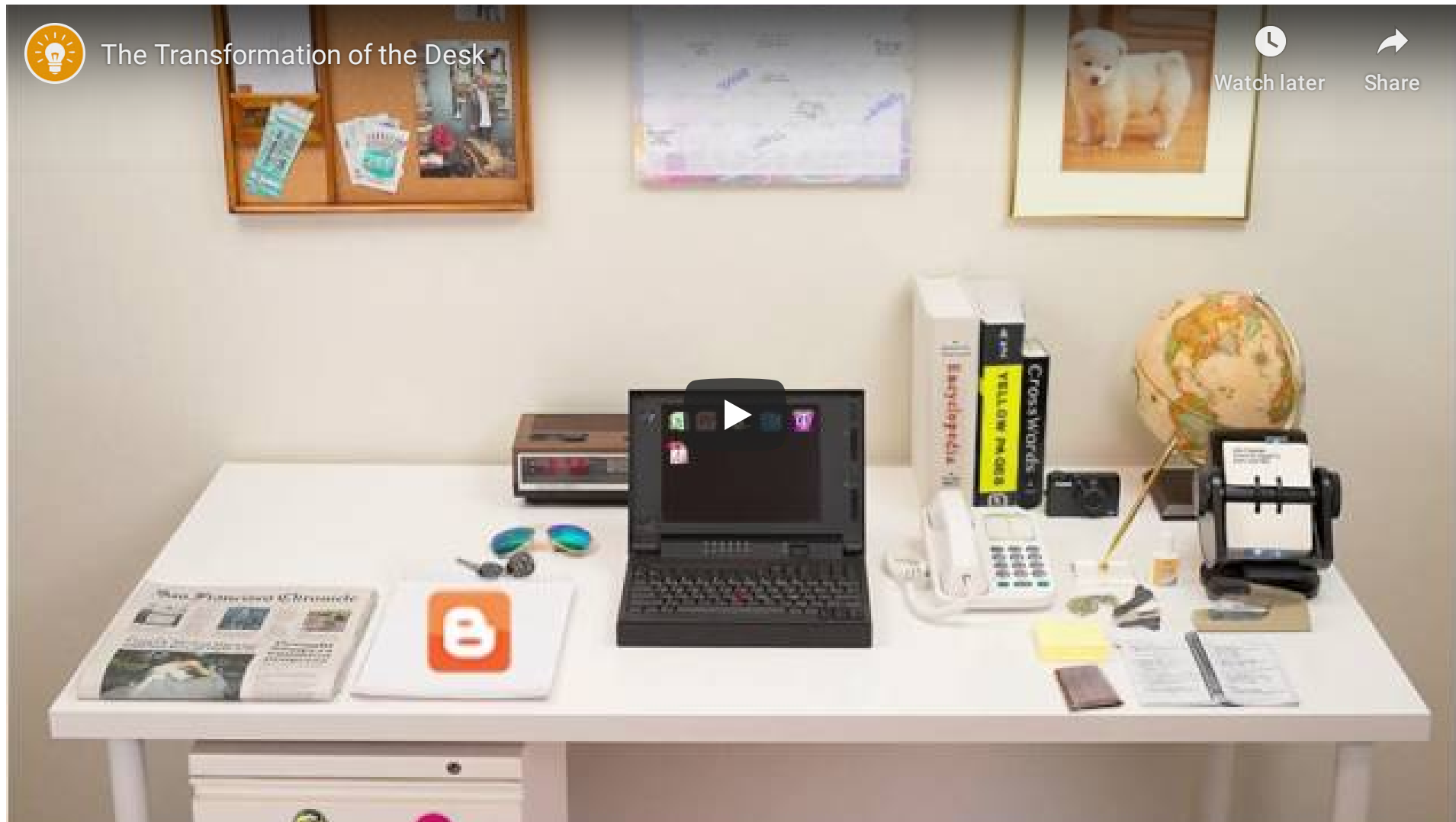


# Logistics – Teams [URL]

 Team

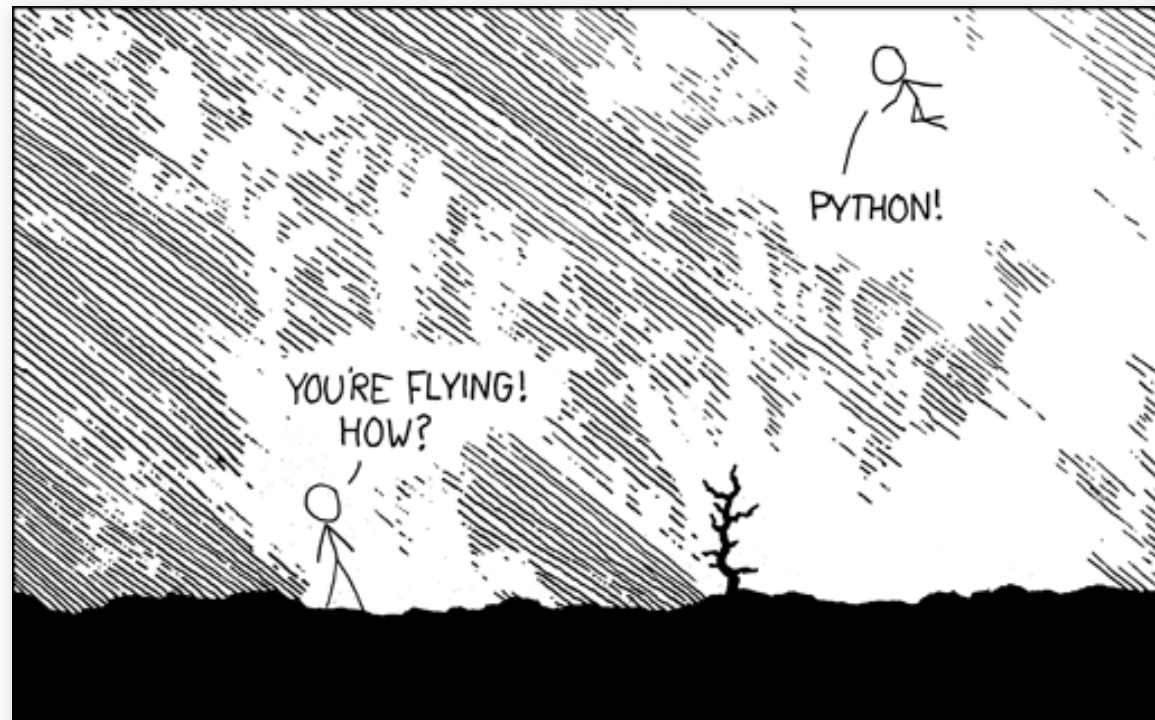
Team

# Code



Driving Vs automobile engineering

# Python



I LEARNED IT LAST NIGHT! EVERYTHING IS SO SIMPLE!  
HELLO WORLD IS JUST  
`print "Hello, world!"`

I DUNNO...  
DYNAMIC TYPING?  
WHITESPACE?

COME JOIN US!  
PROGRAMMING  
IS FUN AGAIN!  
IT'S A WHOLE  
NEW WORLD  
UP HERE!




BUT HOW ARE  
YOU FLYING?

I JUST TYPED  
`import antigravity`

THAT'S IT?

... I ALSO SAMPLED  
EVERYTHING IN THE  
MEDICINE CABINET  
FOR COMPARISON.



BUT I THINK THIS  
IS THE PYTHON.

# Python

- General purpose programming language
- “Sweet spot” between “*proof-of-concept*” and “*production-ready*”
- Industry standard: **GIS** (Esri, QGIS) and **Data Science** (Google, Facebook, Amazon, Netflix, The New York Times, NASA...)

# Self-directed learning

## Prepare

- This is a **flipped class**: it's like a gym, the “subscription” does not make you fit
- I won't be leading/lecturing on computer material
- **Bring** questions, comments, feedback, (informed) rants to Teams/class
- **Teams, Teams, Teams**
- **Collaborate** (it's **NOT** a zero-sum win!!!)

# More help!!!

This course is much more about “learning to learn” and problem solving rather than acquiring specific programming tricks or stats wizardry

- Learn to ask questions (but don't expect exact answers all the time!!!)
- Help others as much as you can (the best way to learn is to teach)
- Search heavily on Google + Stack Overflow

# Assignments

# Assignments

- In-lab computer tests: W.5 (25%) and W.10 (25%)
- Computational essay (W.12, 50%)
  - Equivalent to 2,500 word
  - Report (*notebook*) with code, figures (e.g. maps), and text
- Discussion board (5%)

**NOTE:** recommendation letters only for great students (>70)





A Course on Geographic Data Science by Dani Arribas-Bel is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.