

A large, abstract graphic on the left side of the slide consists of numerous teal-colored lines. These lines are thick and wavy, creating a sense of motion. They overlap each other to form a complex, textured pattern that covers most of the left half of the slide.

# **Flipping your classroom with an interactive JupyterBook website**

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# WELCOME + INTRO

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In this workshop, I will demonstrate how instructors can use existing or new Jupyter Notebooks, to create an interactive website using **JupyterBook**.

At the end of this workshop, you will be able to:

- describe the basic functionality of **JupyterBook**, including several key interactive features
- identify course materials that you already have that can be incorporated into a JupyterBook website
- create a simple example **JupyterBook** website of your own.

# MOTIVATION + NECESSITY

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**“Flipped classroom”** - a pedagogical approach where lecture and assignment components are reversed or “flipped”. Students work through short videos, readings, etc., asynchronously, while hands-on, active learning activities are done synchronously.

# FLIPPED CLASSROOM POLL

# CLIMATE DATA ANALYSIS

- Graduate course in UTSC MEnvSc program (CCIA stream)
- ~20 students
- 2-3 hours per week in a **computer lab**
- Emphasis on applications of statistical tools rather than theory
- Python-based, primarily using Jupyter Notebooks

Even though class sizes are small, accommodating all students with physical-distancing in the computer lab is not possible.

# JupyterBook

“Jupyter Book is an open source project for building beautiful, publication-quality books and documents from computational material.”

- [jupyterbook.org](https://jupyterbook.org)

jupyter{book}

# JupyterBook

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- **Build** content using Markdown or Jupyter Notebooks
  - Includes support for rich syntax such as citations and cross-references, math and equations, and figures.
- **Execute** Jupyter Notebook cells automatically
- **Include** interactivity (e.g. code, dropdowns, cell visibility, etc.),
- **Publish** as HTML website or pdf

# CLIMATE DATA ANALYSIS

Let's take a look:

[Course Website](#)

# JUPYTER NOTEBOOKS POLL

# **DEMO JupyterBook**

Today, we will take a look at a demo JupyterBook.

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1. Fork and clone the following github repository
2. Download from the following dropbox link

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1. Fork and clone the following github repository
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*\*\*You will also need to make sure that you have the **jupyter-book** package installed.\*\**

# DEMO JupyterBook

## Directory contents:

- Sub-directories
  - \_build
  - chapters
- Files
  - README.md
  - \_config.yml
  - \_toc.yml
  - requirements.txt

```
(base) Karen@Karens-MacBook-Pro-2:~/Dropbox/DPI-demo-jupyterbook$ ls  
README.md          _config.yml        chapters           requirements.txt  
_build             _toc.yml         front_image.png   video_demo.mp4
```

# **DEMO JupyterBook**

To view the website locally, click on:

**\_build/html/index.html**

# BUILD YOUR JupyterBook

To build the website after you have made changes:

- Navigate to the directory above the jupyterbook directory
- Type the build command in the command line

```
$ jupyter-book build DPI-demo-jupyterbook
```

```
(base) Karen@Karens-MacBook-Pro-2:~/Dropbox$ jupyter-book build DPI-demo-jupyterbook/
```

# PUBLISH YOUR JupyterBook

There are several ways to publish your JupyterBook:

- Publish as a website (e.g. using GitHub Pages, as I have done for the demo)
- Build a PDF

...and others (see [jupyterbook.org](https://jupyterbook.org) for details)

# TAKE-HOME

- Countless studies point to the value of the “flipped classroom” for student engagement and learning – **JupyterBook**, combined with synchronous, hands-on activities, provides one approach to flipping your classroom.
- Jupyter Notebooks are widely used as teaching tools across many different academic disciplines; thus many instructors already have well-developed notebooks that can be easily incorporated into a **JupyterBook**.
- Interactivity allows for students to test their knowledge and practice as they go.

# TAKE-HOME

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“The course provided me with a deeper understanding of the subject matter.”

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Previous 3-year average:

4.3 / 5

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**Average in 2020:**

**4.9 / 5**

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# THANKS!

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