# EPSY 5261: Introductory Statistical Methods

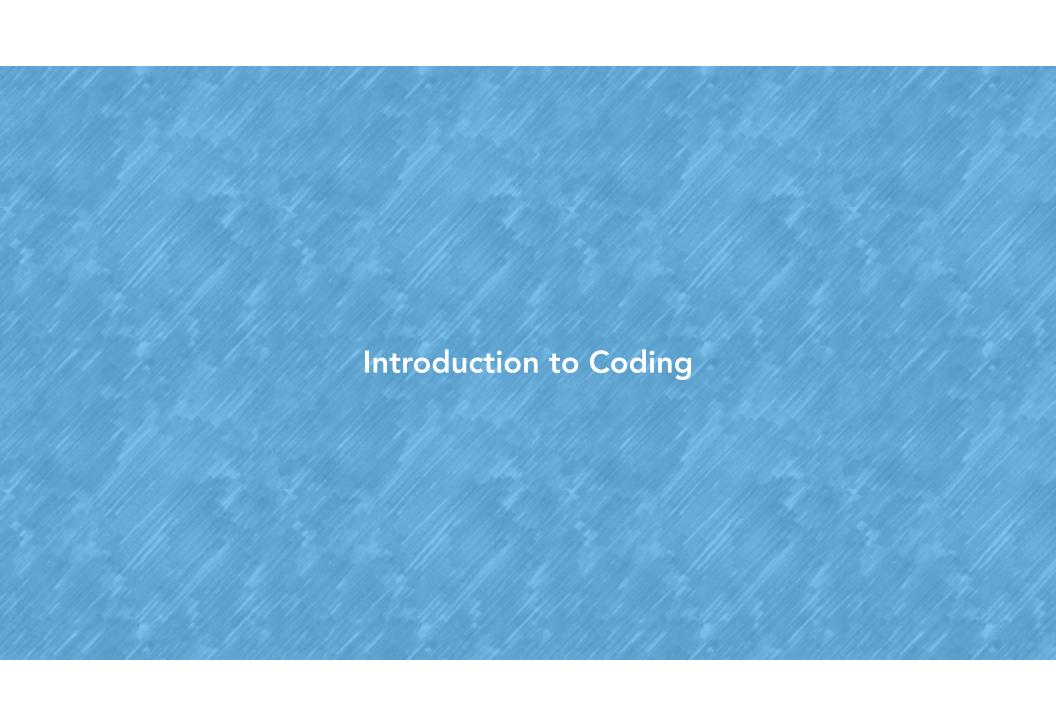
Day 2
Introduction to Coding

#### Learning Goals

- At the end of this lesson, you should be able to...
  - Read basic code
  - Write basic code
  - Explain the structure of a function for coding



# Write instructions to make a grilled cheese....



## Coding

- Computers understand code
- To write code for the computer to "run" or "execute" we write functions

#### **Functions**

Functions are used to "do" things. For example, to create a grilled cheese we might use the following function:

butter bread()

This function allows us to (figuratively) butter some bread.

#### Arguments

Functions often include **arguments** that specify options for the function.

butter\_bread(type = "wheat")

Here the argument type= is used to indicate what type of bread to butter. We assigned that argument the option "wheat".

#### Example Continued

```
butter_bread(type = "wheat")
```

The function is butter\_bread()
The argument is type
The argument option we assigned is "wheat"

#### Your Turn

fry\_sandwich(time = 5)

The function is:

The argument is:

The argument option we assigned is:

#### Notice!

The syntax has a specific structure and semantic. If the structure isn't correct, the computer won't give you the right output - it might give you nothing! Or, it might give you an error!

```
butter bread(type = "wheat")
```

- •Functions (and arguments) have particular names; in butter\_bread() there is an underscore in the function name and it is all lower case letters...it is not Butter\_Bread() or butterbread()
- •The functions always include parenthesis
- •The option in the argument is assigned with an equal sign; type = "wheat"
- •Option in the argument are enclosed in **quotation marks** for words (character strings) and **not in quotation marks** for numbers (numeric values)

In R...

- Parenthesis matter
- Capitalization matters
- Quotes must be used correctly

#### Reading Code

Reading code has been shown to help learners better understand and write their own code. Here we read the "+" as "and then do"

```
butter_bread(type = "wheat") +
add_cheese(flavor = "colby") +
fry sandwich(time = 6)
```

### Looking Ahead

- We will use R Studio (which runs R) for writing and analyzing code
- In class and in the textbook you will be introduced to the R functions and arguments you need for the course.
- •On the lab assignments, you will need to use these functions and arguments by modifying them (e.g., using type="American" rather than type="colby")

#### Danger: Learning Ahead

You will make syntactical mistakes as you code (e.g., misspelling, forgetting a parenthesis). This is a natural part of the learning process—and even happens to expert coders. Learning how to de-bug code is just as important as learning to code.