

Welcome to COGS 18: Introduction to Python

COGS 18

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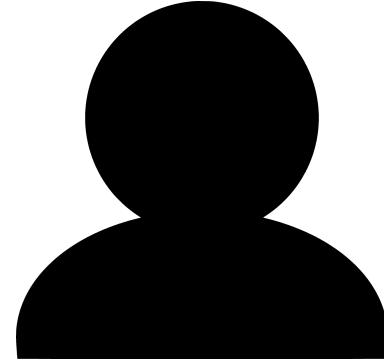




Annapurna



Divya



Hui



Liz



Rachel



Zoe

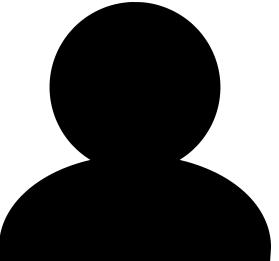
TAs



Akshay



Emanoel



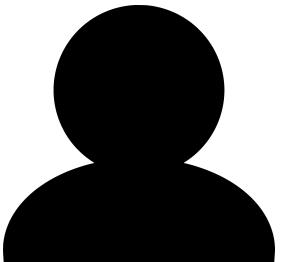
Phoebe



Bella



Roxy



Jenny



Yiting



Jonathan



Princess



Zidane



Marissa



Zoe



Pranav



Coco

The (dreaded) waitlist

1. I do not handle the waitlist - our staff (cogsadvising@ucsd.edu) do
2. I do not have access to the waitlist nor the system that enrolls students from the waitlist.
3. Typically ~1-2 students from each section are enrolled (drop-dependent).
4. Enrollment cannot exceed no. of seats due to testing limitations.
5. The waitlist clears at the end of week 2.
6. You should complete the pre-course assessment if you hope to be enrolled.

If you email me about the waitlist or your specific circumstance/need to take this course this quarter, I will point you to cogsadvising@ucsd.edu.

Let's chat: Teaching &
Learning Programming

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Why Python?

simple(r) syntax

widely-used

Jupyter Notebooks

*"It's not the best language for anything, but
it's the second best for everything"*



Intro Programming courses
are often **thought of as**
difficult and are courses with
the highest dropout rates



```
31     self._init()
32     self.file = None
33     self.fingerprints = set()
34     self.logdups = True
35     self.debug = debug
36     self.logger = logging.getLogger(__name__)
37     if path:
38         self.file = open(os.path.join(path, "fingerprint"))
39         self.file.seek(0)
40         self.fingerprints.update([line.strip() for line in self.file])
41
42     @classmethod
43     def from_settings(cls, settings):
44         debug = settings.getbool("DEBUG", False)
45         return cls(job_dir(settings), debug)
46
47     def request_seen(self, request):
48         fp = self.request_fingerprint(request)
49         if fp in self.fingerprints:
50             return True
51         self.fingerprints.add(fp)
52         if self.file:
53             self.file.write(fp + "\n")
```

....yet, the only thing that is slightly predictive of success in an intro programming course is...*how successful the student thinks they will be*

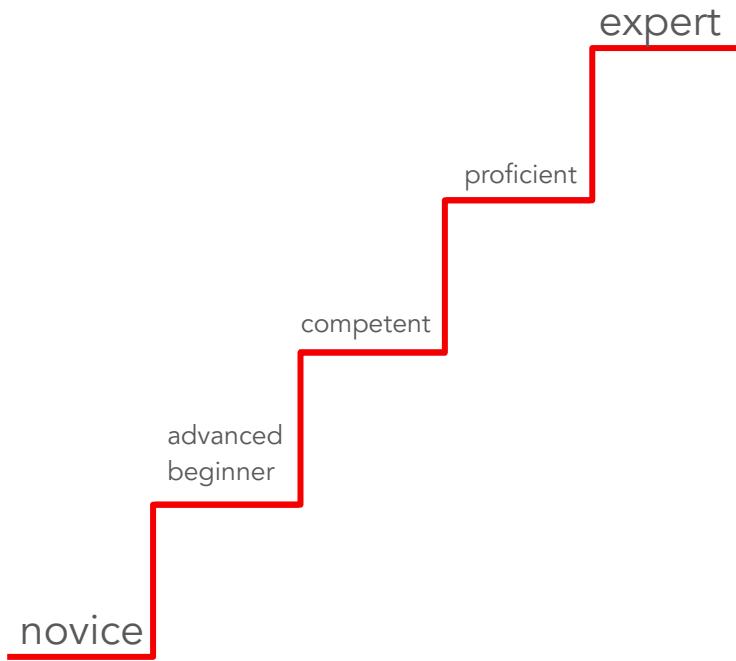
Things that do NOT predict success:

- gender
- age
- personality
- math ability

If you think you're going to be unsuccessful...



- On the first video quiz there is a question about how you feel about your likely success in this course - answer honestly! (There is no right answer.)
- Have no prior experience? You're in the right place!
 - Are super fearful?
 - Failed a programming course previously?
- There will be a group focused on additional support.



My goal is to have you all be able to **program at an introductory level**

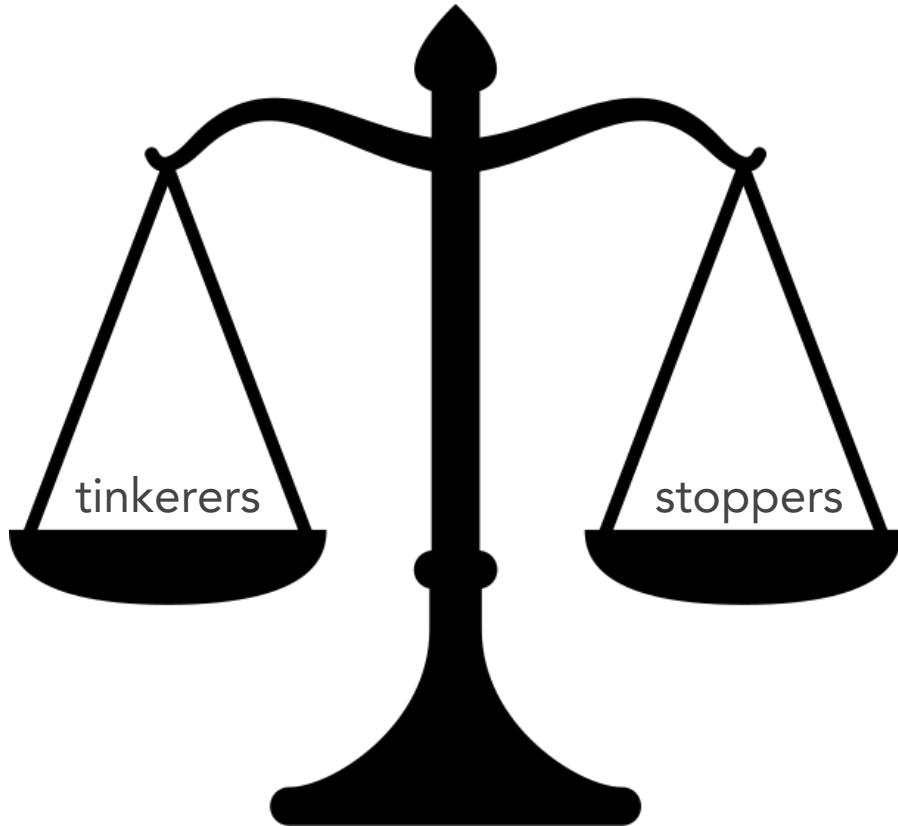
It's generally accepted that it takes people **10 years to move from novice to expert programmer**. But, there are lots of steps in between! We're working to move you further away from novice (& in the direction of expert) than you are right now.



Mixed Messages: We tell people learning to program will be **tough and frustrating** but that **if you're not having fun, you're doing it wrong**.



Building Blocks: Too often, we also tell people to “just try things out” without explaining basic concepts. Other courses aren’t taught this way...



Be a mover: Make forward progress. Strike a balance between just stopping and tinkering forever.

If you're not moving forward, consider the **2-hour rule**.

If you're trying to figure something out and struggling to move forward at all, consider the 2-hour rule. If you're stuck, **work on the problem for an hour**. If you're still stuck, walk away & **take a 30 min break**. Then, **try again for another 30 minutes** or so. If you're **still completely stuck, stop and contact us** (come to office hours, post on Ed). If you're not even sure what your question is, include what information that you do have - what you're stuck on, what you've tried, error messages you've received, etc.



COGS 18: How this course is going to work

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To avoid the common pitfalls of intro programming courses, we're going to take the following approach:

Note: Google Forms are for extra credit only; every lecture attended is EC (up to 2%); can attend either lecture time on a given day

1. First 2/3 of course: basic concepts
2. Pre-lecture videos + quiz (comprehension)
3. In-class practice (no stakes)
 - a. Google Forms for comprehension
 - b. time to apply what was just explained
4. Coding Labs (low stakes)
 - a. Staff/classmates there to help
 - b. Multiple attempts for full credit
5. Assignments (mid stakes)
 - a. Completed individually (*can work together*)
 - b. Assignments Programmatically graded
6. Oral Exams + Exams + Final (higher stakes)
 - a. Closed notes
 - b. Exams: TTC-CBTF (Oral exams in lab)
 - c. Completed totally individually



Your point of contact for COGS 18
will be the course website:
<https://cogs18.github.io>

| | | |
|--------------------|---|---|
| Course Website | https://cogs18.github.io | Syllabus, lecture notes, links to stuff below |
| Canvas | https://canvas.ucsd.edu/courses/64347 | grades, OH times/locations |
| PrairieLearn | https://us.prairielearn.com/pl/course_instance/161488 | Assessments (Video quizzes, coding labs, assignments, exams) and regrade requests |
| Ed | https://edstem.org/us/courses/77515/ | questions, discussion |
| Anonymous Feedback | Submit via Google Form | if I ever offend you, use an example you hate, or to provide general feedback |

In technical
classes, Ed is a
particularly
helpful resource

There are rules:

1. No duplicates.
2. Include Assignment & Question in Summary line.
3. Posts must include your question, what you've tried so far, and resources used.
4. Public posts are best.
5. Helping one another is encouraged.
6. No assignment code in public posts.
7. We're not robots.

Order I reply:

1. Ed
2. Email
3. Canvas

COGS 18: How You'll Be Evaluated

| | % of Grade | Requirement |
|--------------------------|------------|---------------------|
| Pre- and Post-Assessment | 4% | 2 surveys (4 total) |
| Video Quizzes | 12% | 12 VQs |
| Coding Labs | 16% | 8 Coding Labs |
| Assignments | 25% | 5 assignments |
| Oral Exams | 5% | 2 oral exams |
| Midterms | 24% | 2 midterms |
| Final | 14% | Complete final exam |

The “I already know Python” option

Graded on:

- Pre- and Post (2% each)
- (2) Oral Exams (5% each)
- (2) Midterm Exams (25%)
- Final Exam (36%)

Opt in:

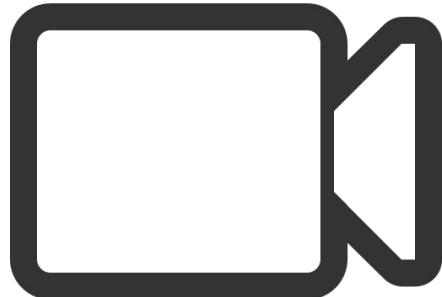
- Via [Google Form](#) (link also on syllabus)
- Once you opt in you cannot change your mind
- If you are unsure, proceed with full course for now; you can always opt-in later.

Pre- and Post-Assessment surveys (4%) Students will have to complete two surveys at the beginning of the course: 1) Coding pre-assessment (~30 min); 2) Information about you (~15 min)

Notes:

1. Be sure to **type your PID in correctly** to the survey. This is being used to determine you've submitted both surveys.
2. This is an intro programming course. **You are NOT expected to know the answers to the questions on the pre-assessment yet.**
3. Completion is required for this course (**#finaid**); however, YOU get to decide if you opt into your responses being used for research. Also, correctness does not matter for credit, but real effort does.

Video Quizzes (12%)



The night before most lectures (Mon and Wed), you'll have ~3 videos (~3 min each) to watch from our textbook and a quiz to complete. Each quiz is worth 1% of your grade.

Why? Student feedback/experience. We're taking the most basic concepts out of lecture to allow for harder examples and more hands-on activities in-class

Q1: VQ1: Variables

Total points: 0/1

0%

Assessment is **open** and you can answer questions.

Available credit: 100% (Staff override) [?](#)

| Question | Status | Available points ? | Awarded points ? |
|---|-------------------------|--|----------------------------------|
| w/o LLM: Lecture Review: Syllabus Review | | | |
| Question 1 | unanswered | 0.05, 0.02 ? MC | — / 0.05 |
| Question 2 | unanswered | 0.05 ? TF | — / 0.05 |
| Question 3 | unanswered | 0.05, 0.04, 0.03, 0.02 ? CB | — / 0.05 |
| w/o LLM: Variable Assignment | | | |
| Question 4 | unanswered | 0.1, 0.1, 0.1, 0.08, 0.08, 0.08, 0.06, 0.06, 0.06, 0.06, 0.04 ? Write code | — / 0.1 |
| Question 5 | unanswered | 0.1, 0.08, 0.06, 0.04 ? | — / 0.1 |
| w/o LLM: Integers and Floats | | | |
| Question 6 | unanswered | 0.1, 0.05 ? | — / 0.1 |
| Question 7 | unanswered | 0.05 ? | — / 0.05 |
| Question 8 | unanswered | 0.1, 0.05 ? | — / 0.1 |
| w/o LLM: Strings and Booleans | | | |
| Question 9 | unanswered | 0.1, 0.05 ? | — / 0.1 |
| Question 10 | unanswered | 0.1, 0.1, 0.1, 0.08, 0.08, 0.08, 0.06, 0.06, 0.06, 0.06, 0.04 ? | — / 0.1 |
| Question 11 | unanswered | 0.1, 0.05 ? | — / 0.1 |
| Question 12 | unanswered | 0.1 ? | — / 0.1 |



CodingLabs:
apply concepts
discussed in
lecture using
coding labs
(16%). Practice
makes progress.

Unlimited attempts for full credit (2% each)

- Coding Labs will be completed on PrairieLearn
- Encouraged to work with others

You **should attend the section to which you're assigned.** You *can* attend a different section. However, if one section becomes too crowded each week, we'll revisit this policy.

Note: CodingLabs (and Office Hours) begin **Week 2**

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(5) Assignments

(25%) : After you've seen the material in VQ, lecture, and coding lab....

Assignments due Sun @ 11:59 PM.

| Assignment | Week | Median Time Spent (hours) |
|------------|------|---------------------------|
| A1 | wk3 | 2 |
| A2 | wk4 | 4 |
| A3 | wk5 | 4 |
| A4 | wk7 | 5 |
| A5 | wk9 | 5 |

Oral Exams (5%)



- 5 min exams focused on **core concepts** and **ability to read/explain code**
- Will sign up for one slot in weeks 3-6 and another in 7-10
- Will take **place during/in lab**
- 1-on-1 with a staff member

(2) Midterms (24%)
+ Final Exam (14%): will be completed individually.

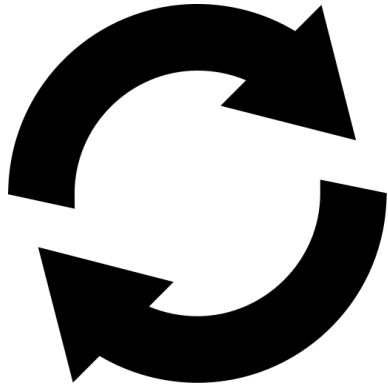
Two parts:

- In-person, closed notes
- Focused on: concepts, code reading and debugging

These completed at the TTC-CBTF.

Sign up for midterms asap! ...but don't just pick the latest time slot! (note: you won't be able to sign up for final exams yet)

You can sign up for a **practice exam slot week 1/2 (3/31-4/11)** (encouraged for: nervous test takers/anxious about new environments; NOT required)



Exam re-take (weeks 9 + 10)

- Must have taken exam as originally scheduled
- Can take *either* E1 or E2
- Will take 75% of highest score and 25% of lowest score
- You don't need to sign up for this yet. (it's optional; you don't know if you'll need it...)

Any questions about
course logistics?

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Where to turn for help
and practice when
learning to program?

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Many Avenues for help

- Office Hours
- Classmates
- Ed
- AI/LLMs (ChatGPT, CoPilot, etc.)
- Google with “in python”
- StackOverflow
- GitHub

You **ARE** encouraged to help one another in COGS 18.

ChatGPT

ChatGPT



Examples

"Explain quantum computing in simple terms" →

"Got any creative ideas for a 10 year old's birthday?" →

"How do I make an HTTP request in Javascript?" →



Capabilities

Remembers what user said earlier in the conversation

Allows user to provide follow-up corrections

Trained to decline inappropriate requests



Limitations

May occasionally generate incorrect information

May occasionally produce harmful instructions or biased content

Limited knowledge of world and events after 2021

Send a message...



When **CAN'T** you use LLMs in COGS 18? Exams

When **CAN** you use them? Everything else (but we'll be clear about what you *should* know without an LLM)

...but you need to be able to explain everything you turn in.

Be able to answer yes to BOTH:

- Can I explain each piece of code and each analysis carried out in what I'm submitting?
- Could I reproduce this code/analysis on my own?

**Using AI/LLMs
as a beginner**

Process:

- Try on your own first
- Avoid copy + pasting whole questions
- Come up with your own questions
- Read *and think* about the answers
- Work to understand



Why learning without LLMs?

You don't know what you don't know

Core concepts necessary for prompting

Discuss: Google Maps crutch (looking things up forever; not actually saving time)

How we'll help

(and how to best help one another)

Dialogue-based | questions & back-and-forth

Student-driven | work to help you find the solution

Example-heavy | ask about other examples, refer back to previous work, etc.

Scaffold with prior knowledge | review material first to get prerequisite knowledge

A message for
first-gen students,
transfer students,
and those who
don't have older
siblings/friends who
have attended
UCSD/university

If you are struggling, come to office hours. Attend extra help sessions. Ask questions on Ed. Reach out to me to ask for better approaches. Your classmates ARE doing this. And, you're not alone.

If you need a bit longer on something b/c you fell sick, a family thing came up, work called you in for an extra shift, etc., ask for an extension. Your classmates ARE doing this.

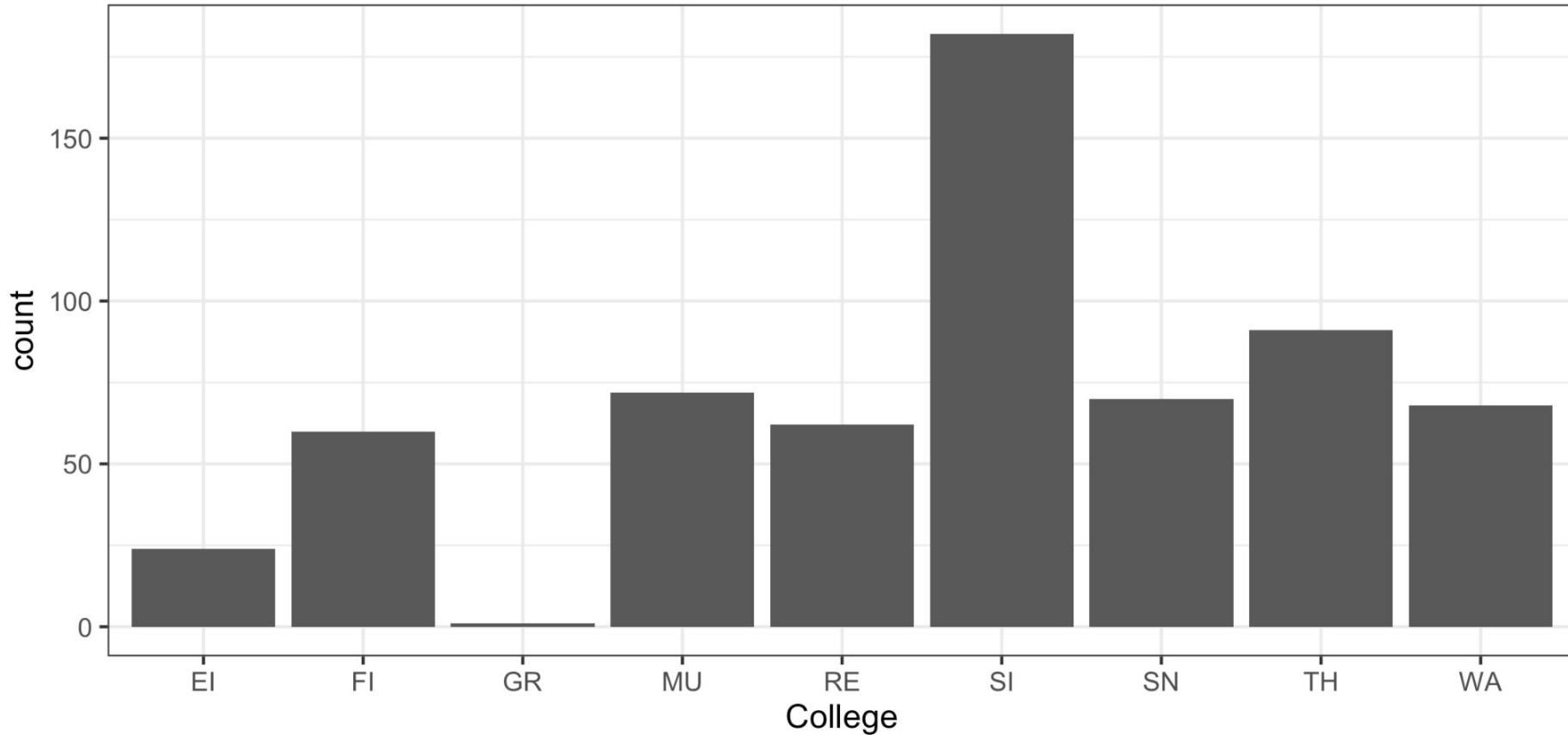


Today I used a PDF slideshow,
but every other day of class,
lecture notes will be presented
in a Jupyter notebook

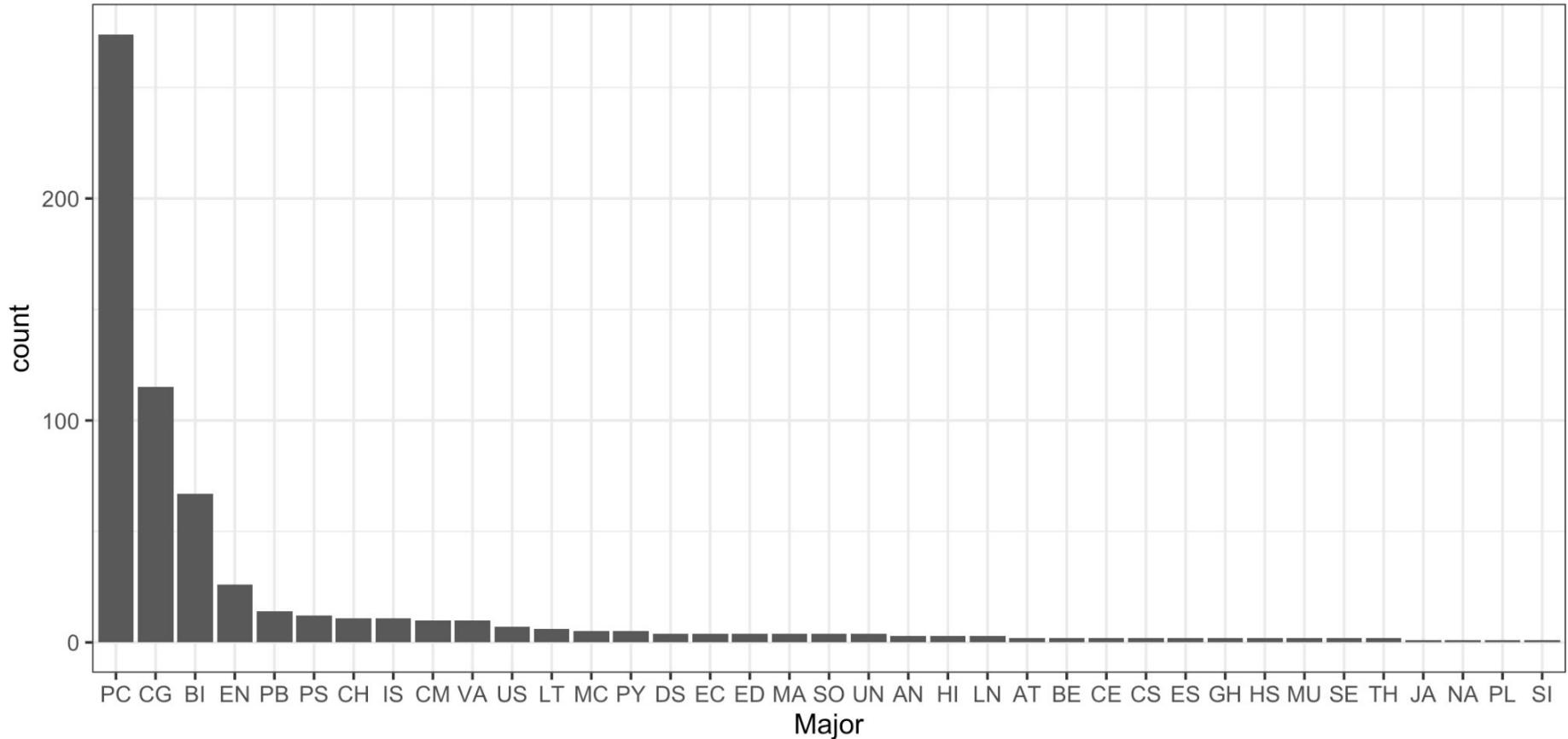
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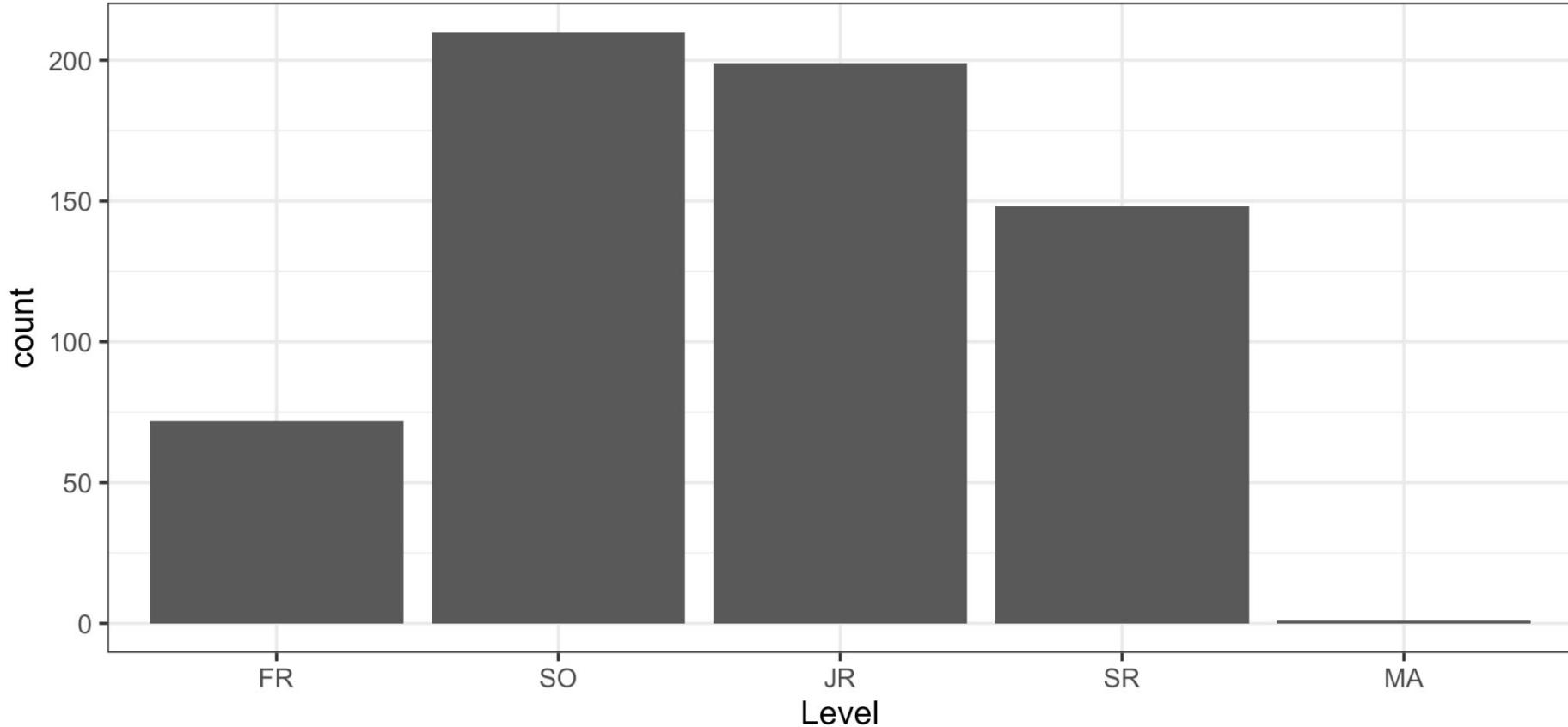
COGS 18: Colleges



COGS 18: Majors



COGS 18: Credit Level



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Please complete the two
pre-assessment surveys (~20-40min)
before Sunday after week 2.

Sign up for exam slots on
PrairieTest.