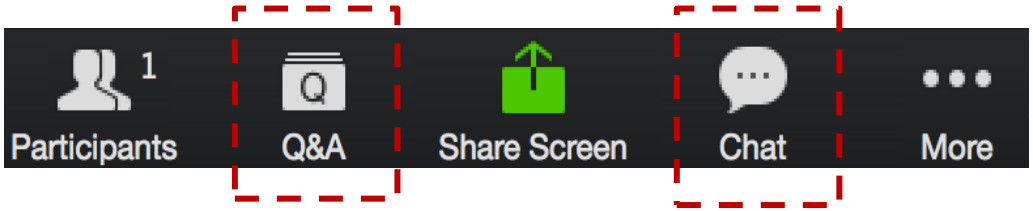
Berkeley Engineering | BerkeleyHaas

PROFESSIONAL CERTIFICATE IN MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE

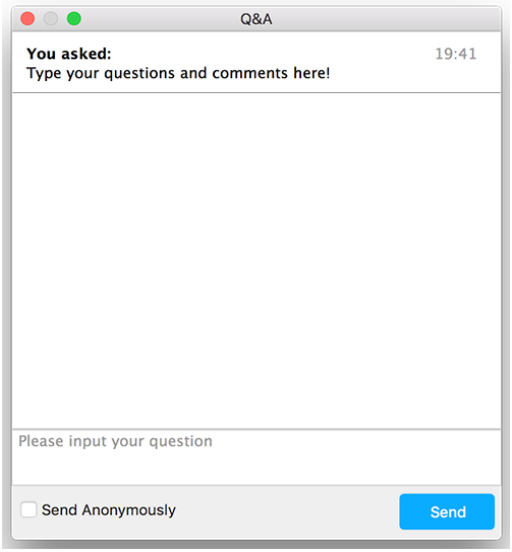
Introductory Webinar

March 8, 2022, at 6pm UTC

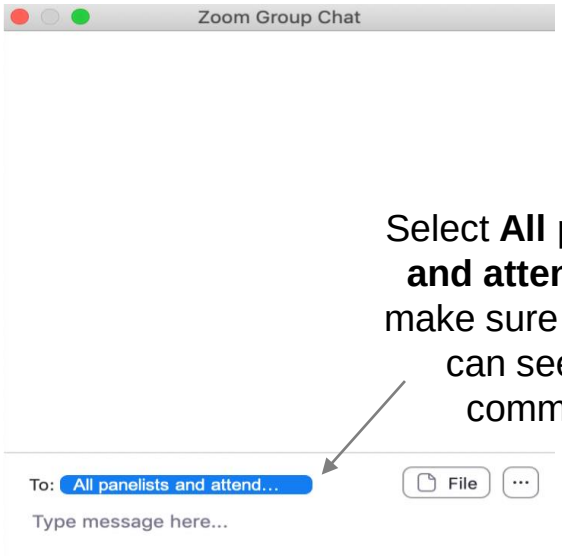
GUIDELINES ON ZOOM



Use the **Q&A box** to type your questions



Use the **Chat** to tell us: Who you are; Where you are from; What are your motivations for taking this course



Select **All panelists and attendees** to make sure everyone can see your comments

AGENDA

1. **Introductions**
   - Learning Facilitators
   - University of California, Berkeley – Faculty
   - Student Success Coach
   - Career Coach
   - Program Participants
2. **Learning Journey**
   - Program Overview
   - Weekly Content
   - Live Webinars
   - Office Hours
   - Passing Criteria
3. **Learning Platform Demo**
   - Canvas
4. **Recommendations**

1. INTRODUCTIONS – LEARNING FACILITATOR

Savio Saldanha

Managing Consultant for Analytics and Machine Learning and Artificial Intelligence at Ernst and Young.

1. INTRODUCTIONS – LEARNING FACILITATOR

Matilde D'Amelio

Head of Programme and Senior Lecturer for the Master of Science Management with Digital Marketing and Data Analytics for the BPP School of Business.

1. INTRODUCTIONS – UC BERKELEY FACULTY

Gabriel Gomes

Assistant Research Engineer
Institute of Transportation Studies

Josh Hug

Associate Teaching Professor
Electrical Engineering and Computer

Jonathan Kolstad

Associate Professor | Egon & Joan Von Kaschnitz Distinguished Professorship

Reed Walker

Associate Professor | Transamerica Chair in Business Strategy
Business & Public Policy | Energy Institute | Sustainability

1. INTRODUCTIONS – STUDENT SUCCESS COACH

Holly Bees

Meet with me to discuss:

- Time management and task prioritization
- Study recommendations and course resources
- Imposter syndrome and general wellness

Book a meeting on Calendly:
https://calendly.com/holly-bees

We look forward to working with you!

- success-coaches@emeritus.org

1. INTRODUCTIONS – CAREER COACH

Stacy Moore

Meet with me to discuss:

- Career planning
- Job search strategy
- Resume, LinkedIn, and Cover Letters
- Networking
- Negotiations
- Interview prep and practice

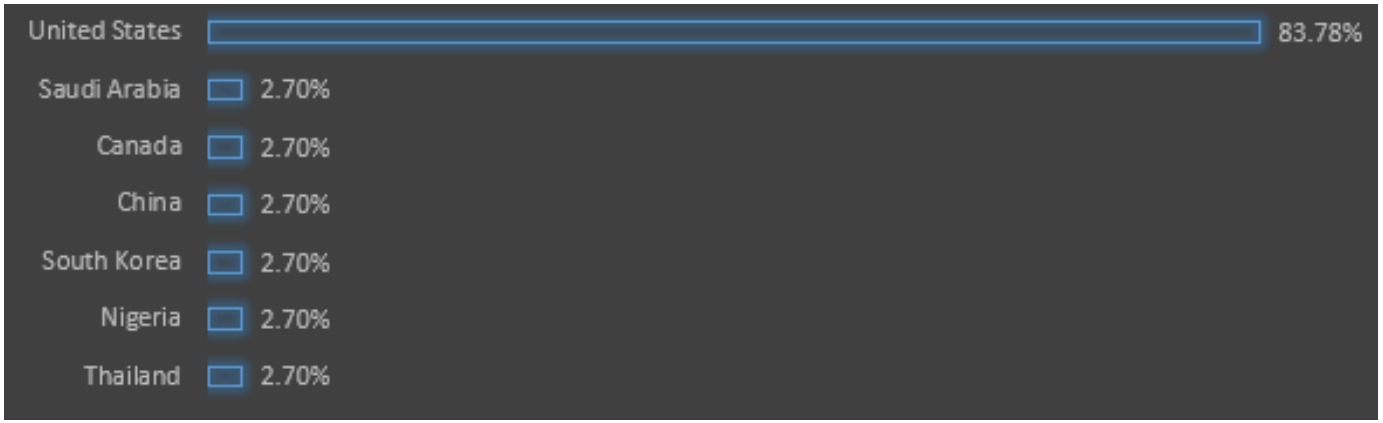
…ANYTHING career related!

Book a meeting on Calendly:

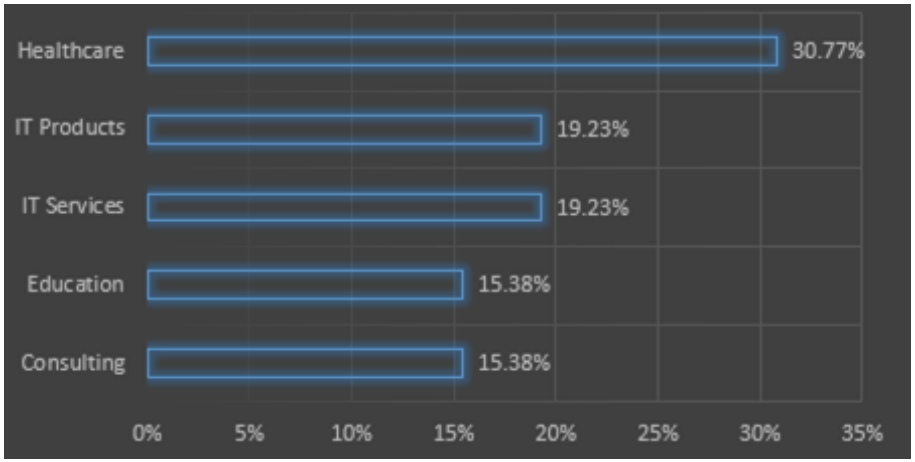
https://calendly.com/stacymoore1

1. INTRODUCTIONS – PROGRAM PARTICIPANTS

Countries



Industries



2. LEARNING JOURNEY – PROGRAM OVERVIEW

3 sections of content:

- First, you will work through some foundational material including probability, statistics, and programming.
- Next, you will explore various techniques used to model data, such as linear regression, logistic regression, decision trees, and neural networks. You will become familiar with important supporting concepts like the test/train split, the bias-variance trade-off, and the process of model selection.
- Finally, you will spend the last section of the program looking at some advanced topics in machine learning and artificial intelligence, such as ensemble techniques, recommendation systems, and natural language processing.

Learning Outcomes

- Apply real-world tools to model and analyze real-world data
- Communicate foundational concepts about AI/ML
- Draw useful conclusions from real-world data
- Identify the best ML model to solve a problem
- Implement the ML/data science life cycle

2. LEARNING JOURNEY – PROGRAM OVERVIEW

What to expect

- Module content released every Wednesday
- Around 10 activities per week
- Time commitment: 15-20 hours per week
- Recorded lectures from faculty
- Weekly office hours with Learning Facilitators
- 24 Modules (19 content modules, 3 practical application modules, and 2 Capstone)
- 3 break weeks

2. LEARNING JOURNEY – WEEKLY CONTENT

WEEK	MODULE TITLE
	Section 1: Foundations of ML/AI
0	Program Orientation
1	Introduction to Machine Learning
2	Fundamentals of Machine Learning
3	Introduction to Data Analysis
4	Fundamentals of Data Analysis
5	Practical Applications I
	Break Week
	Section 2: ML/AI Techniques
6	Clustering and Principal Component Analysis
7	Linear and Multiple Regression
8	Feature Engineering and Overfitting
9	Model Selection and Regularization
10	Time Series Analysis and Forecasting
11	Practical Applications II
	Break Week

2. LEARNING JOURNEY – WEEKLY CONTENT

WEEK	MODULE TITLE
	Break Week
12	Classification and k-Nearest Neighbors
13	Logistic Regression
14	Decision Trees
15	Gradient Descent and Optimization
16	Support Vector Machines
17	Practical Applications III
	Break Week
	Section 3: Advance Topics and Capstone
18	Natural Language Processing
19	Recommendation Systems
20	**Capstone I**
21	Ensemble Techniques (GBM, XGB, and Random Forest)
22	Deep Neural Networks I
23	Deep Neural Networks II
24	**Capstone II**

2. LEARNING JOURNEY – WEEKLY CONTENT

The program offers videos, weekly assignments and activities for you to apply and practise the concepts you have learnt each week.

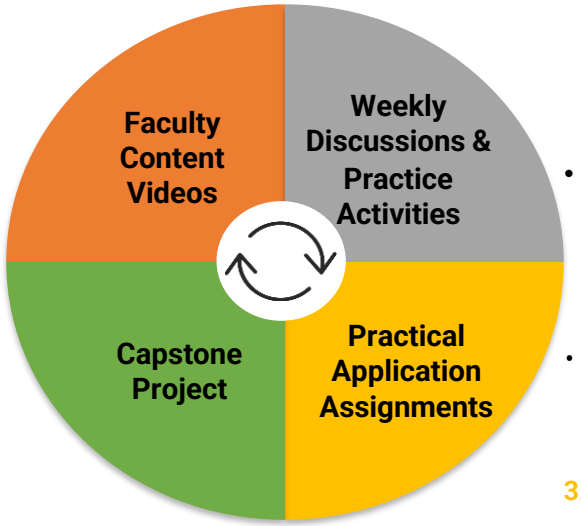
New content will be released on a weekly basis.

1. Faculty Content Videos

- Each week will have recorded lectures hosted by Berkeley Engineering and Berkeley Haas Professors
- The videos are intended to provide instruction on content
- You can watch the videos at your convenience: whenever you want and as many times as you need

4. Capstone Project

- The capstone reflects the effort you have put forth in this program and showcases your ability to develop and answer a question of interest using the tools you have learned. Your final capstone project will focus on both the application of a predictive model and your ability to communicate your findings
- The capstone is introduced in Module 10 and the final version will be submitted in Module 24. In the meantime there are going to be group and 1:1 (optional) discussion with your learning facilitator. Intermediate submissions are due in Modules 11, 17 and 20.
- **Capstone counts towards your Certificate of Participation and you need to complete it**



2. The Forums and Practice Activities

- **Forums**
  - Encourage collaborating, exploring and sharing thoughts and experiences with your fellow participants
  - Learning Facilitators will moderate discussions and occasionally provide additional insights/resources
- **Practice Activities**
  - Check your understanding and practice the concepts introduced in the videos
  - These activities have several formats: quizzes, codio activities and try-it
- **Some weekly discussion and practice activities count towards your Certificate of Participation**

3. Practical Application Assignments

- Assignments allow you to apply what you have learnt from the video presentations and readings
- Assignments must be completed individually
- There are three practical application assignments in Modules 5, 11 and 17
- **All assignments count towards your Certificate of Participation**

2. LEARNING JOURNEY – PASSING CRITERIA

An outline of the BH-PCMLAI passing criteria

Category	Module #	Weight
</> **Codio Activities**	Modules 1–4, 6–10, 12–16, 18, 19, 21–23	20%
End-of-Module Quizzes	Modules 1–4, 6–10, 12–16, 18, 19, 21–23	10%
</> **Discussions/Try-It Activities**	Modules 1-4, 6–10, 12–16, 18, 19, 21–23	20%
Practical Application Problems	Modules 5, 11, 17	20%
Capstone Project	Modules 20, 24	30%

Please note that your grade for each category will be calculated using this formula:

$$\frac{Earned\ points}{Available\ points} \times Proportional\ weighting$$

The adjusted values across categories will be counted and multiplied by 100 to calculate the final grade.

✓ In addition to the required assignments, discussions, and quizzes, there are optional knowledge checks and discussions to reinforce your learning by practicing the concepts you learn in each module.

2. LEARNING JOURNEY – LIVE SESSIONS

1 Introductory Webinar

- This current session

Weekly Office Hours

- LF will host weekly OH
- Attendance is optional but highly recommended.

One-on-One Consultation Sessions

- LF will hold up to two 1:1 30-min sessions with each participant.
- **Once** during Modules 12-14 in response to Module 11 assignment; **once** during Modules 20-24 to review capstone.
- Instructions will be shared on how to book these consultation sessions at a later stage.

Mentorship Sessions

Topics

- Industry Overview
- Industry Guidance
- Networking

2. LEARNING JOURNEY – OFFICE HOURS

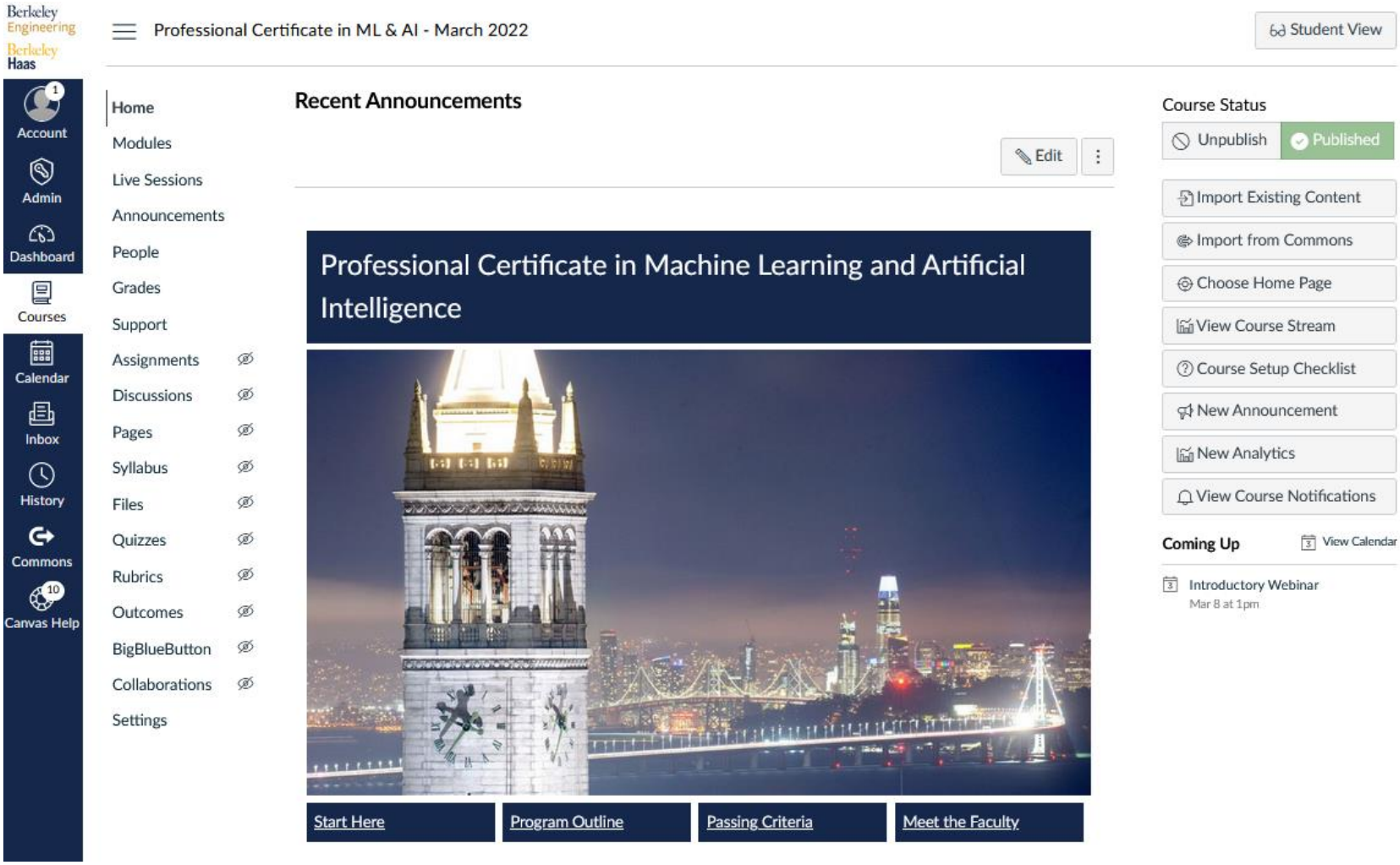
Matilde D'Amelio - Thursdays

Savio Saldanha - Mondays

- Learning Facilitators will host weekly Office Hours
- During Office Hours they will
  - ✓ Review content of the week
  - ✓ Practical examples
  - ✓ Go over questions on assignments
  - ✓ Answer other questions live

- 1:1 sessions for consultation on capstone (Modules 12-13, and Modules 21-22)
- Mentorship sessions
- Attendance is not compulsory but highly encouraged

3. PLATFORM DEMO – CANVAS



4. RECOMMENDATIONS

Attend and participate in Office Hours with Learning Facilitators.

Connect with career coach and student success coach for additional support.

Dedicate proper time and effort to successfully complete program activities.

Participate in the weekly forums: ask questions if something is not clear and collaborate with your other learners.

Complete Weekly Feedback Surveys and provide us your insights. They will help us improve!

QUESTIONS?

We wish you the best of luck on your learning journey!