EMERITUS
INSTITUTE OF MANAGEMENT

Postgraduate Diploma in Data Science

IN COLLABORATION WITH

COLUMBIA | ENGINEERING
EXECUTIVE EDUCATION

Columbia, Applied Artificial Intelligence - Agenda

Introductions

- Columbia Faculty
- Emeritus
- Course Leaders
- Students

Learning Journey

- Course Features
- Course Calendar
- Webinar Schedule

Course Support

- Office Hours
- Support Tab

Course Tools

- Learning Platform: Canvas
- Vocareum

Introductions - Emeritus

Academic Delivery

Boston, US

Tom Dougherty
Practice Head, Analytics

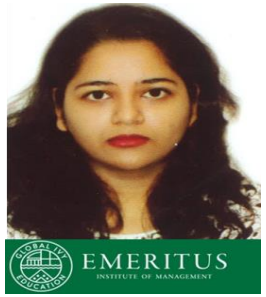
Adriana Heredia
Associate Practice Head, Analytics

Marie Mize
Teaching Support Team

Kristen Kehrer
Data Scientist

Course Support

Mumbai, India



Sabeena Merchant
Program Coordinator

Introductions - Course Leaders

Carleton Smith

- MS Predictive Analytics, DePaul University
- Researcher, Visual Informatics & Data Analytics, DePaul University
- Data Science Instructor at General Assembly

Eduard Valera

- MS Electronics Eng, UPC & MS Electrical Eng Northeastern University
- Researcher, underwater communications, MIT
- Bioinformatician, Center Genomic Regulation

James Faghmous

- PhD CS University of Minnesota
- Researcher, techniques to predict algorithms for Big Data, University of Minnesota
- Assistant Professor, Stanford University

Introductions – Columbia Faculty

Hardeep Johar

Lecturer, Industrial Engineer & Ops Researcher

- MA Economics, Birla Institute of Technology & Science
- PhD Information Systems, Stern School of Business, NY University
- Quantitative Trader at Morgan Stanley, Credit Suisse and Deutsche Bank
- Adjunct Professor & Lecturer at Columbia

Vineet Goyal

Assistant Professor, Industrial Engineer & Ops Researcher

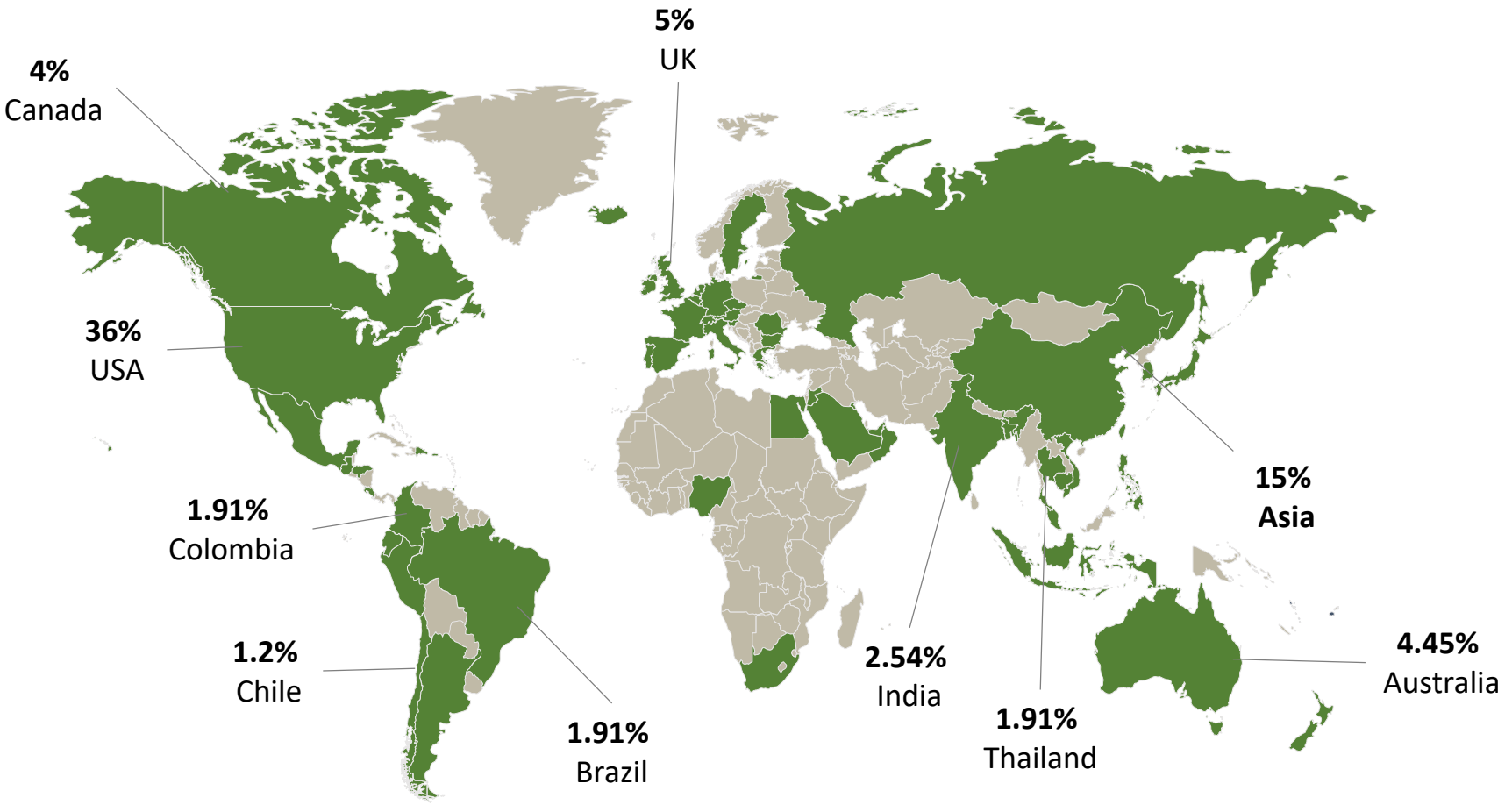
- PhD in Algorithms, Combinatorics and Optimization, Carnegie Mellon
- Postdoctoral Associate at MIT's Operations Research Center
- Assistant Professor at Columbia

Costis Maglaras

Professor, Columbia Business School

- PhD in Electrical Engineering, Stanford
- Executive member of Columbia University's Data Science Institute
- Research on the interface of stochastic modeling and data science

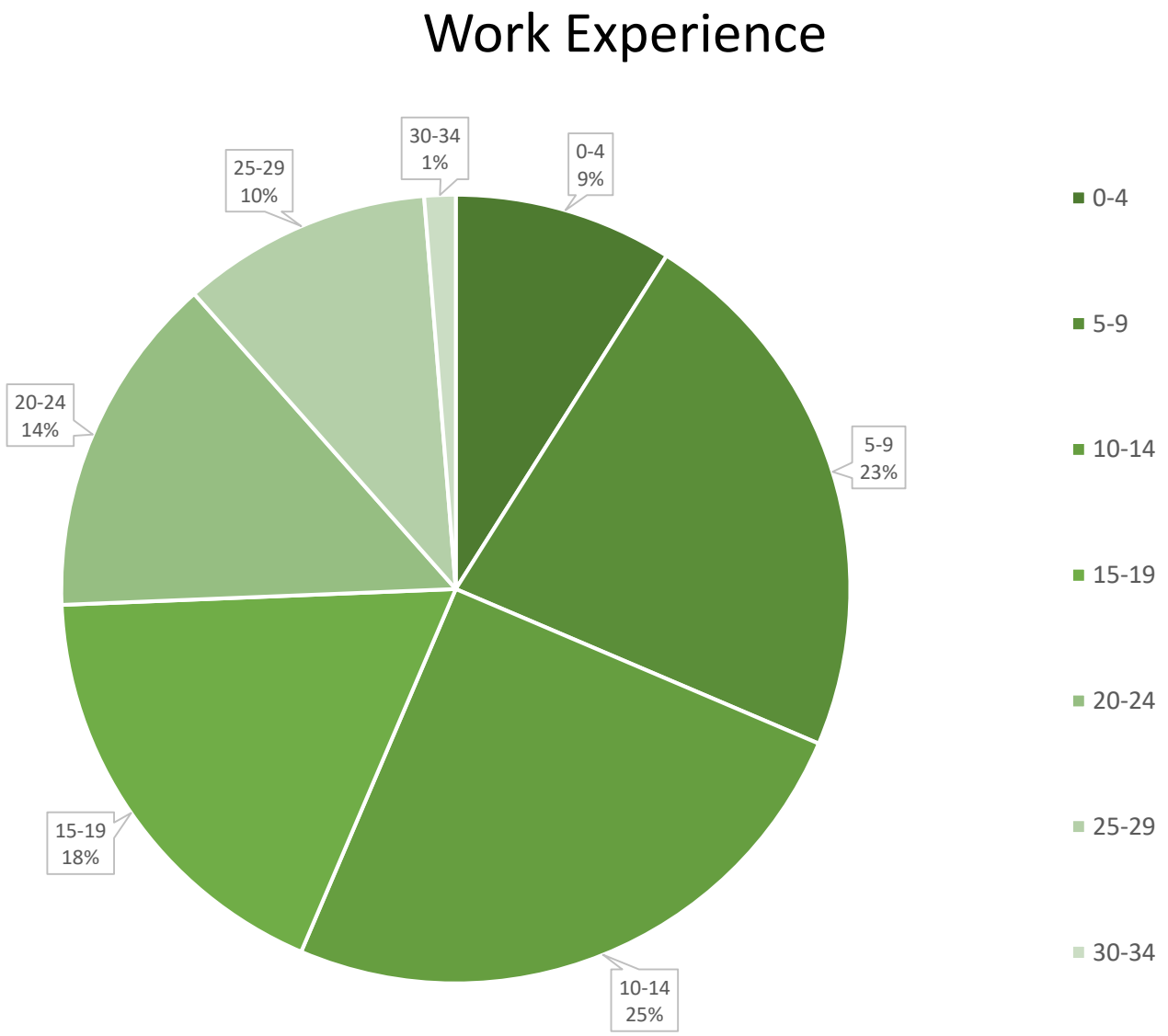
Introductions - Getting to know you



157
participants

37
countries

Introductions - Getting to know you

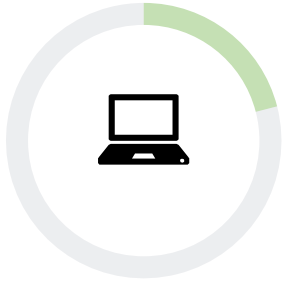


Introductions - Getting to know you

Industries

22%

Banking & Financial Services



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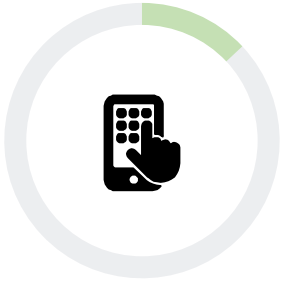
IT Services



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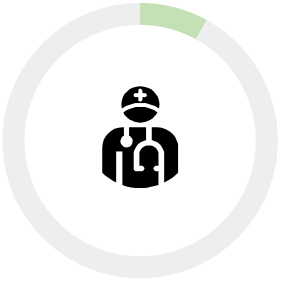
IT Products

12%

Consulting

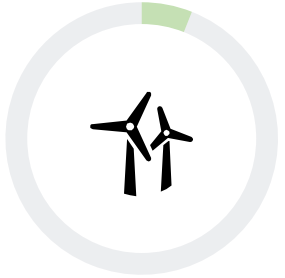


8%

Healthcare

7%

Education



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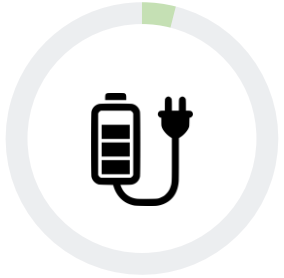
Energy

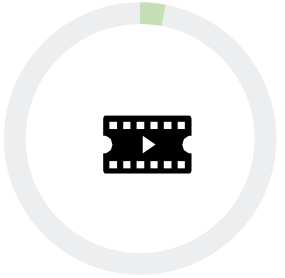


4%

Electronics / Hardware

4%

Telecommunications



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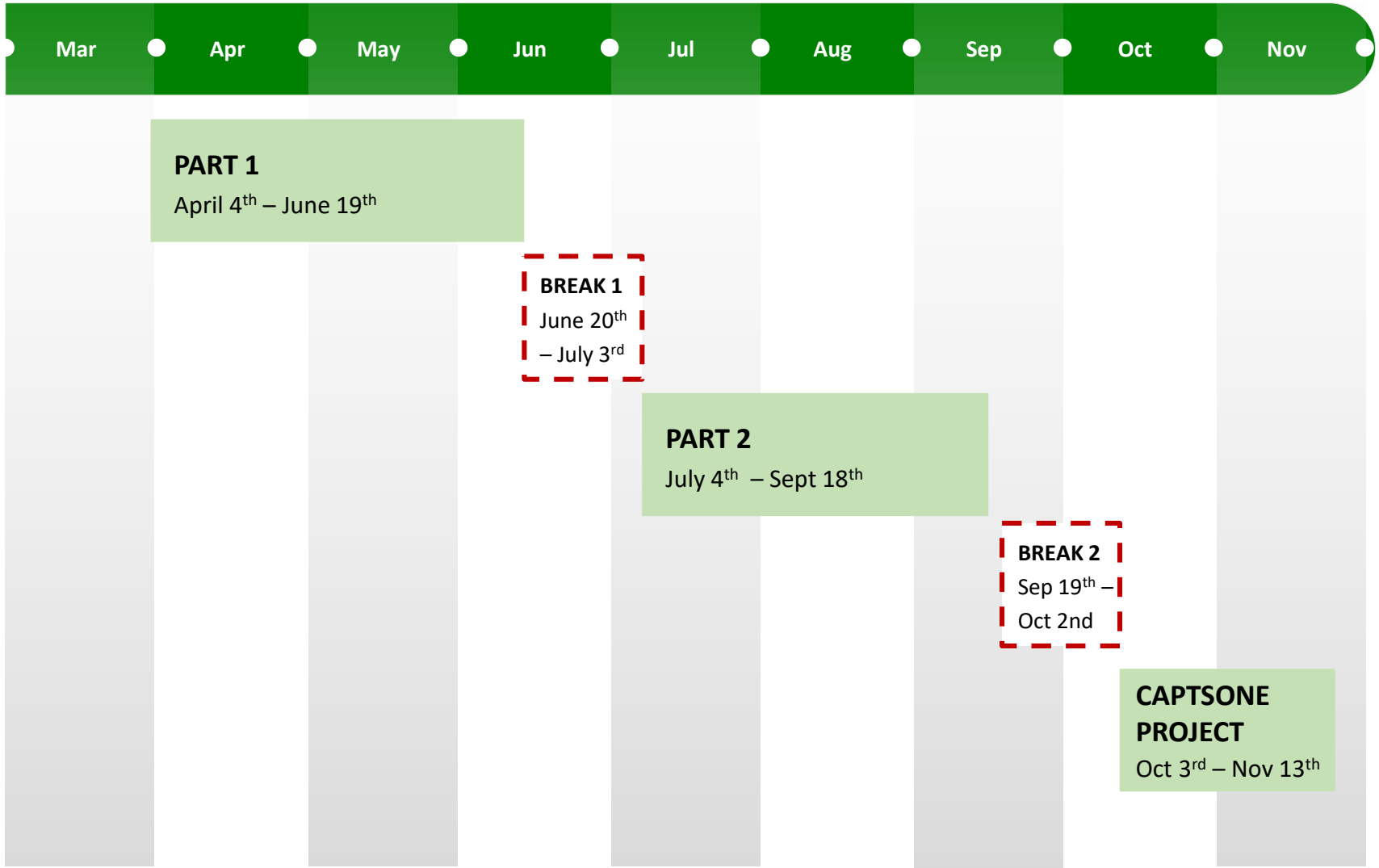
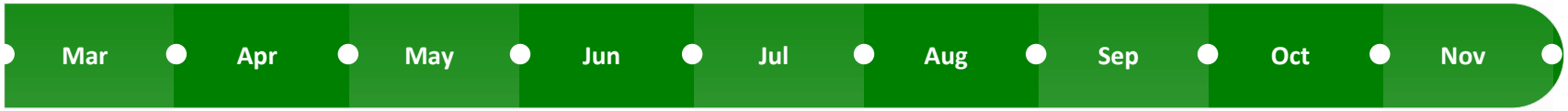
Media

Learning Journey - Calendar



Learning Journey - Calendar

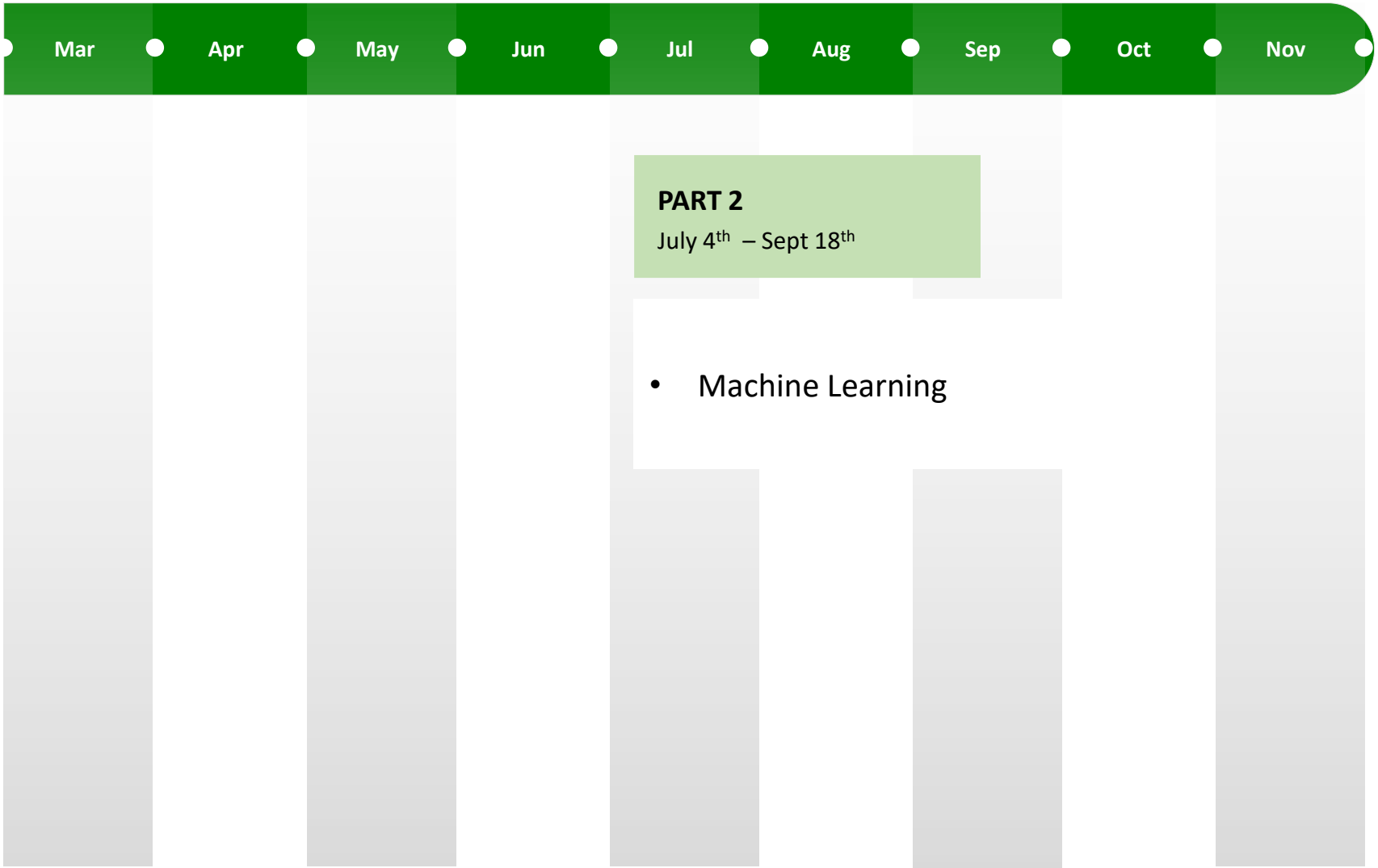


PART 1

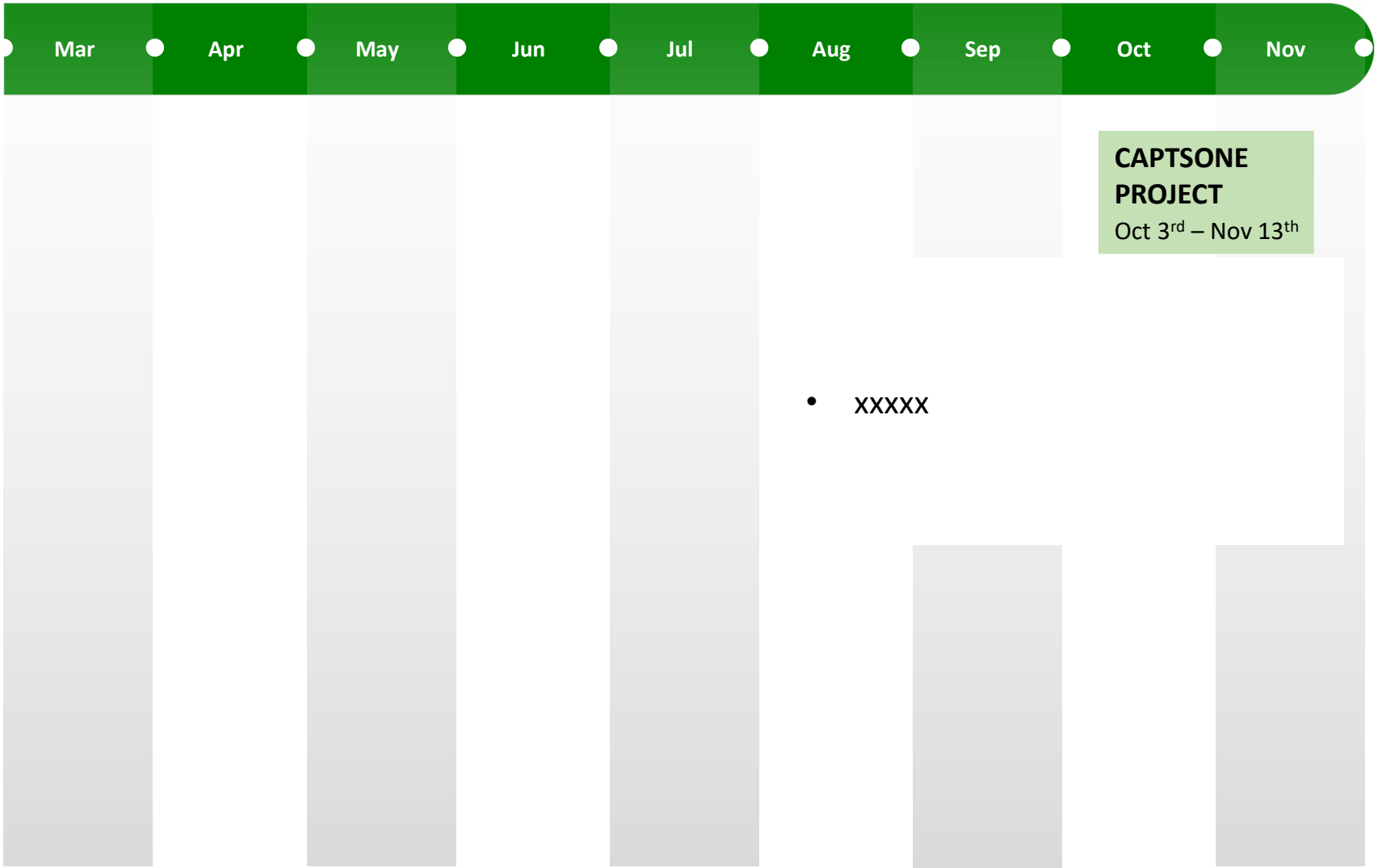
April 4th – June 19th

- Python
- Data Management
- Statistics
- Exploratory Data Analysis

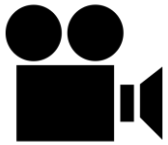
Learning Journey - Calendar



Learning Journey - Calendar



Learning Journey - Course Features



Faculty Videos

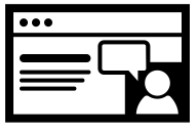
Professor from Columbia University explaining content of course.

Assignments

Apply models and methods learnt into to real world data sets.

Topic Webinars

Webinars on specific topics conducted by special practitioners



Assignment Webinars

Weekly webinars to explain how to complete the assignment

Office Hours

Extra help provided by Course Leaders on content and assignments.

Support

Tell us your problem through Canvas and we will take care of it

Learning Journey – Assignments

Week #	Assignment Name
Week 3	Foundational programming concepts: variables, loops, conditions and functions
Week 4	Python data structures
Week 5	SQL introduction; operations on columns and rows
Week 6	Sorting, grouping, and joins; functions on databases
Week 7	Data extraction - Part 1
Week 8	Data extraction - Part 2
Week 9	Representing statistical distributions in Python; comparison of distributions
Week 10	Sampling using Python modules; advantages of sampling
Week 11	Obtaining quantitative estimates using hypothesis testing
Week 12	NumPy visualization; NumPy analysis tools
Week 13	Pandas objects, viewing data, selecting data, indexing & setting, operations using Pandas
Week 14	Basic regression and classification
Week 15	Linear regression
Week 16	Logistic regression
Week 17	Decision trees and random forests
Week 18	Ensemble methods
Week 19	Naive Bayes classifiers
Week 20	Neural networks
Week 21	K-means clustering
Week 22	Dimensionality reduction with PCA and LDA
Week 23	Text mining
Week 24	Time series analysis

Assignment Details

- One assignment per week.
- Total number of assignments: 22.

Assignment Release Process

- Assignment release: every Thursday.
- Assignment deadline: Thursday, 7 days after the assignment release.
- Solution release: Thursday, 21 days after assignment release.

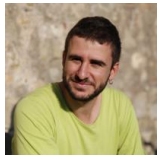
Assignment Grading

- Use of Vocareum, equipped with Jupyter Notebook
- When you submit your assignment, Vocareum generates a grading report
- Unlimited opportunities to submit your code for grading
- If multiple attempt, we will select highest score for final grade

Learning Journey – Webinar Schedule (Part 1)

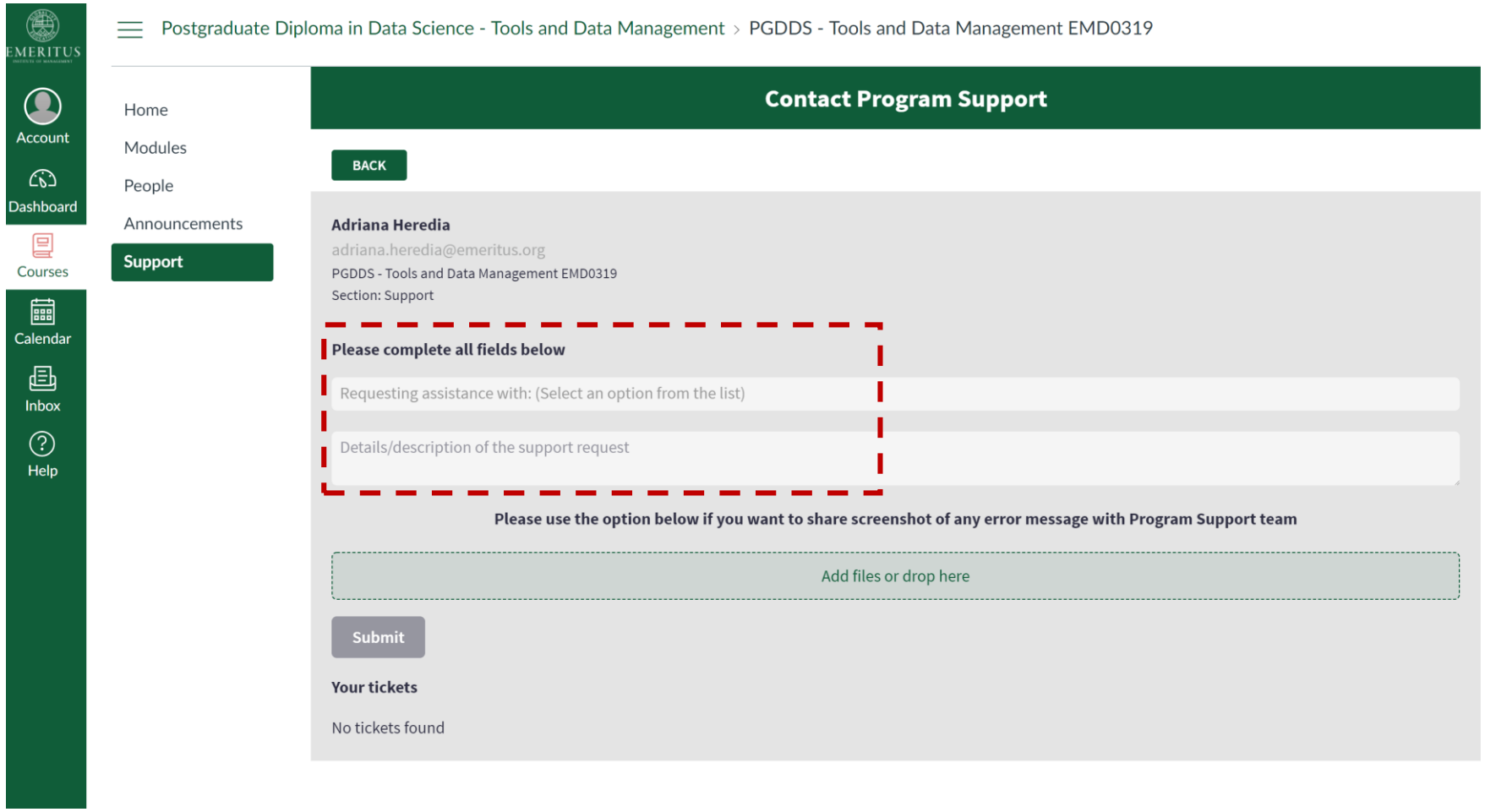
Week	Webinars	Date	
Week 1	Intro Webinar	3/29/19	Live
Week 3,4	Intermediate & Basics Python	TBD	
Week 5	Relational Databases	TBD	
Week 6	SQL	TBD	
Week 7	Data Extraction – Part 1	05/08/19	Live
Week 8	Data Extraction – Part 2	05/15/19	Live
Week 9	Statistical Distributions: the shape of data	TBD	
Week 10	Sampling: when you can't or won't have ALL the data	05/30/19	
Week 11	Hypothesis testing - answering questions about your data	06/06/19	
Week 12	Data analysis and visualization - using Python's NumPy for analysis	06/12/19	Live
Week 12	Data analysis and visualization - using Python's pandas for data wrangling	TBD	

Learning Journey – Office Hours

	Carleton Smith	Tuesday	3:00 PM UTC
	Eduard Valera	Wednesdays	4:00 PM UTC
	James Faghmous	Wednesdays	11:00 AM UTC

- Attend the office hour that best works for you.
- Participation in office hours in not required. Attend with specific questions you need answered.

Learning Journey - Support



- Complete the field you need support with
- Describe what is your problem

The right team will assist you with your problem

Program Grading & Passing Criteria

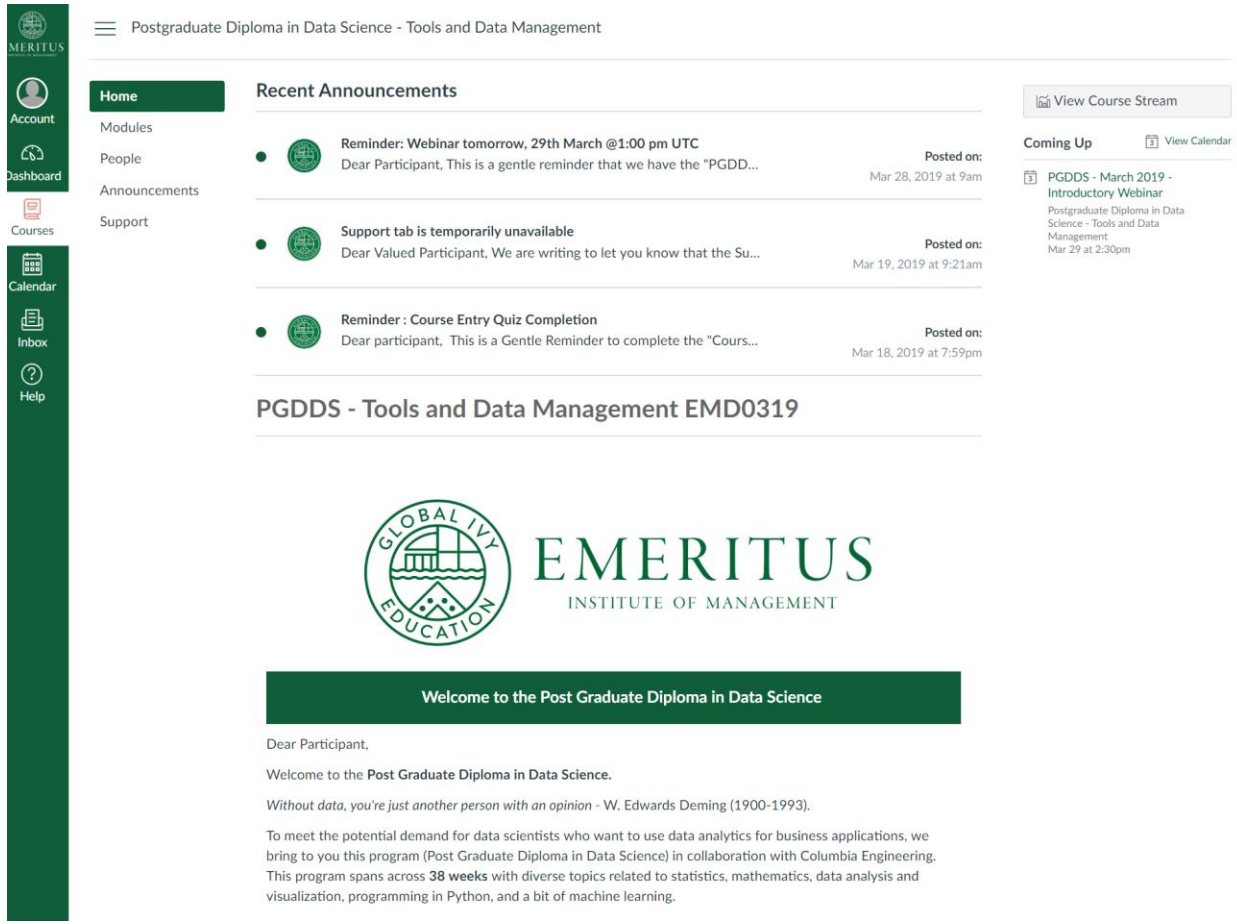
Program Grading

- GPA scale, that runs from 0-10
- GPA is calculated individually for each course – Course 1, Course 2 and Course 3
- Capstone Project: Exceeds Expectations; Meets Expectations; Below Expectations

Passing Criteria

- Distinctions: awarded to the top 25% of the cohort
- Pass: awarded to students who receive a GPA of 5 or higher
- Low Pass: awarded to students who receive a GPA of 4 or higher but lower than 5
- Fail: Students who receive GPA below 4 or do not complete the course.

Learning Platform - Canvas



- You will find all the course material: videos, assignments, webinars and schedules for office hours on Canvas.
- Use the learning platform to contact your Course Leader with any course related questions.
- Use the support tab for any technical issues.

Link to access PGDDS Course: https://student.emeritus.org/courses/540

Grading Tool – Vocareum

Q&A