MIT | PROFESSIONAL EDUCATION

Welcome to the
Applied Data Science Program

professional.mit.edu

Session Guidelines

Listen-only mode

FAQ

Type your questions in the Q&A box

Ask questions which are in the interest of the larger audience

professional.mit.edu

Agenda

- MIT Professional Education - Overview

- About Great Learning

- Program Vision, Structure & Delivery Model

- Alumni Speaks

- Next Steps

MIT Professional Education Overview

professional.mit.edu

Isola Spence

Program Manager, Short Programs, MIT-PE

- Experienced and passionate leader in higher education.

- Provides leadership and development guidance and implementation support to the Short Programs team at MIT Professional.

- Master' Degree in Administration, Planning and Social Policy with a focus in Higher Education from Harvard University

- In the past, she worked at Harvard University in implementing the Fulbright Foreign Student program to award recipients from Latin America and the Caribbean.

MIT Professional Education Mission

"To provide science and technology professionals around the world access to renowned MIT knowledge and expertise via advanced education programs designed for them"

➔ The MIT Professional Education mission is to provide a gateway to renowned MIT research, knowledge and expertise for working professionals engaged in science and technology worldwide, through advanced education programs designed for them.

➔ The programs are delivered by MIT faculty and promote technical excellence through ongoing educational engagement with communities of practice. MIT Professional Education fosters the development of innovative leaders equipped to address complex problems globally.

➔ The Institute is committed to generating, disseminating, and preserving knowledge, and to working with others to apply this knowledge for the benefit of humankind.

➔ MIT Professional Education is central to MIT's vision. It fulfills the mandate to connect practitioner-oriented education with industry, and to incorporate industry feedback and knowledge into MIT education and research.

professional.mit.edu

Short Programs: Overview

"Drawing expertise from the entire University, MIT Professional Education Short Programs support the development of innovative leaders equipped to address the complex challenges of today and tomorrow."

- 40+ short intensive courses plus ADSP which is a longer duration program

- Professional Certificate Programs: ML&AI, Biotechnology & Live Sciences, Innovation & Technology, Design & Manufacturing, and Real Estate Finance and Development

- Courses delivered by MIT faculty experts, incorporating their latest research into class content

- Most are 2-5 day classes held on campus in Cambridge or in a live virtual (synchronous online) format

- CEUs and digital certificates of completion awarded

- MIT PE Alumni LinkedIn Network

professional.mit.edu
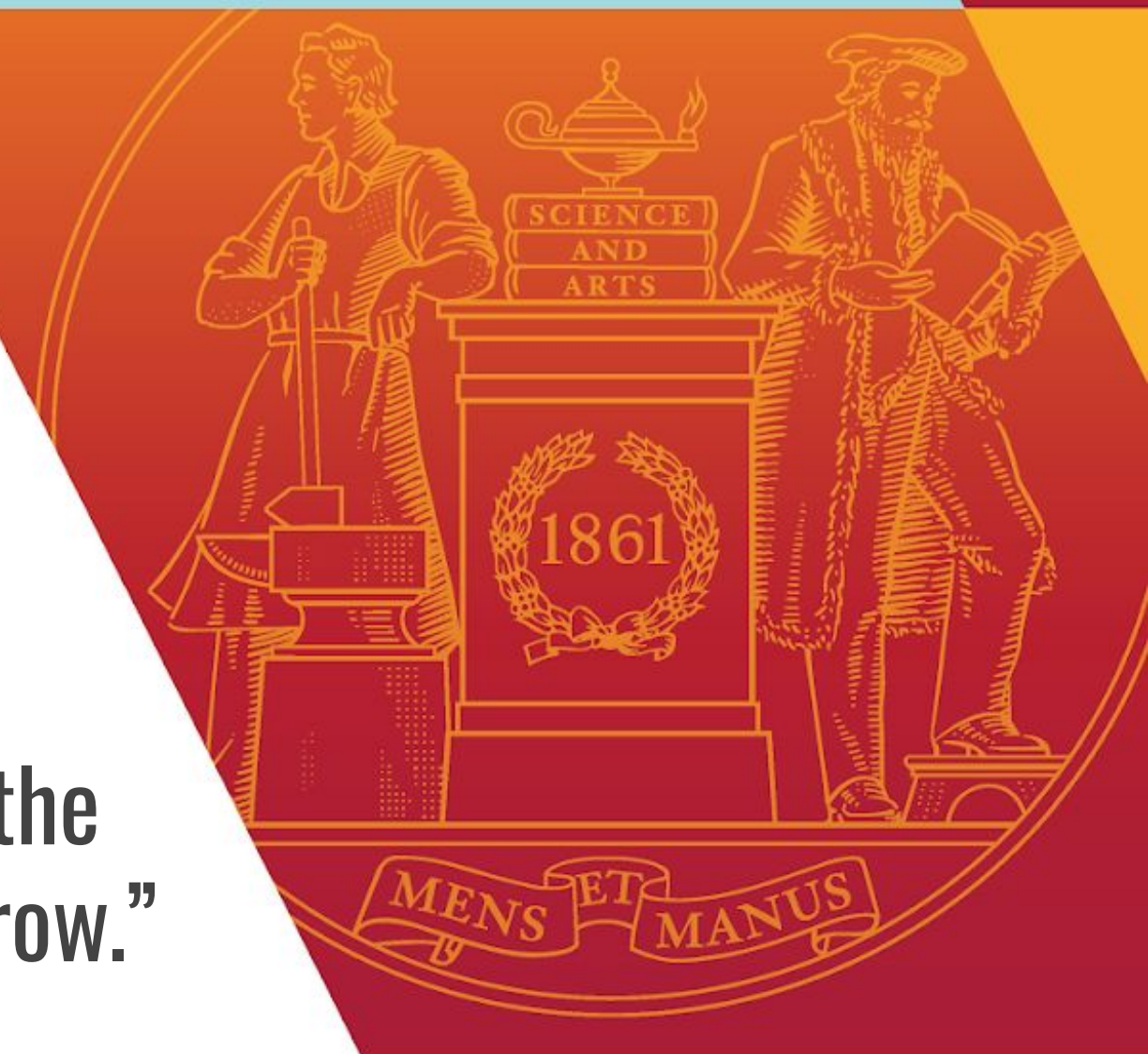
PE Programs - Key Outcomes

➔ **Gain expertise that will immediately benefit your work (and your organization)**

➔ **Acquire high-value credentials that will set you apart from others**

➔ **Advance your career while enhancing your ability to lead, manage, and influence**

➔ **Network with your industry peers globally**

professional.mit.edu

MIT | PROFESSIONAL EDUCATION

Professional Certificate Program in Machine Learning & Artificial Intelligence

Completion within 36 months; a minimum of 16 course days required for completion

Core Courses

- Machine learning for Big data & text processing: Foundations
  June 10-11, 2024 (2 days)

- Machine learning for Big data & text processing: Advanced
  June 12-14, 2024 (3 days)

Elective Courses (Other than ADSP)

- AI for Computational Design & Manufacturing
  July 15-19, 2024 (5 days)

- Machine learning for Healthcare
  TBD(2 days)

- Reinforcement Learning
  July 29-31, 2024 (3 days)

- Advanced Reinforcement Learning
  August 1-2 , 2024 (2 days)

- Deep learning for AI & Computer Vision
  TBD

- Bioprocess Data Analytics & Machine Learning
  TBD

- Designing Efficient deep learning systems
  July 8-9, 2024 (2 days)

- Machine Learning for Materials Informatics
  July 31-August 4, 2024 (4 days)

- Foundations of Data & Models: Regression Analytics
  TBD

- AI Strategies & Roadmap
  Jan 29-Feb 2, 2024 Virtual & July 15-19 ,2024 (5 days)

- Graph Algorithms & Machine Learning
  June 3-6, 2024 (4 days)

Course listings & summaries here

professional.mit.edu

Great Learning Overview

professional.mit.edu

About Great Learning

Launched in **2013**

Delivered **over 146 million hours** of impactful learning

7.1+ million learners

Established **track record** of learning outcomes

Great Learning Gurus – A network of 5800+ industry experts

Olympus – A proprietary technology platform

Continuous **Innovation** and **Improvements**

Great Learning

Collaboration

MIT PROFESSIONAL EDUCATION

Great Learning — POWER AHEAD
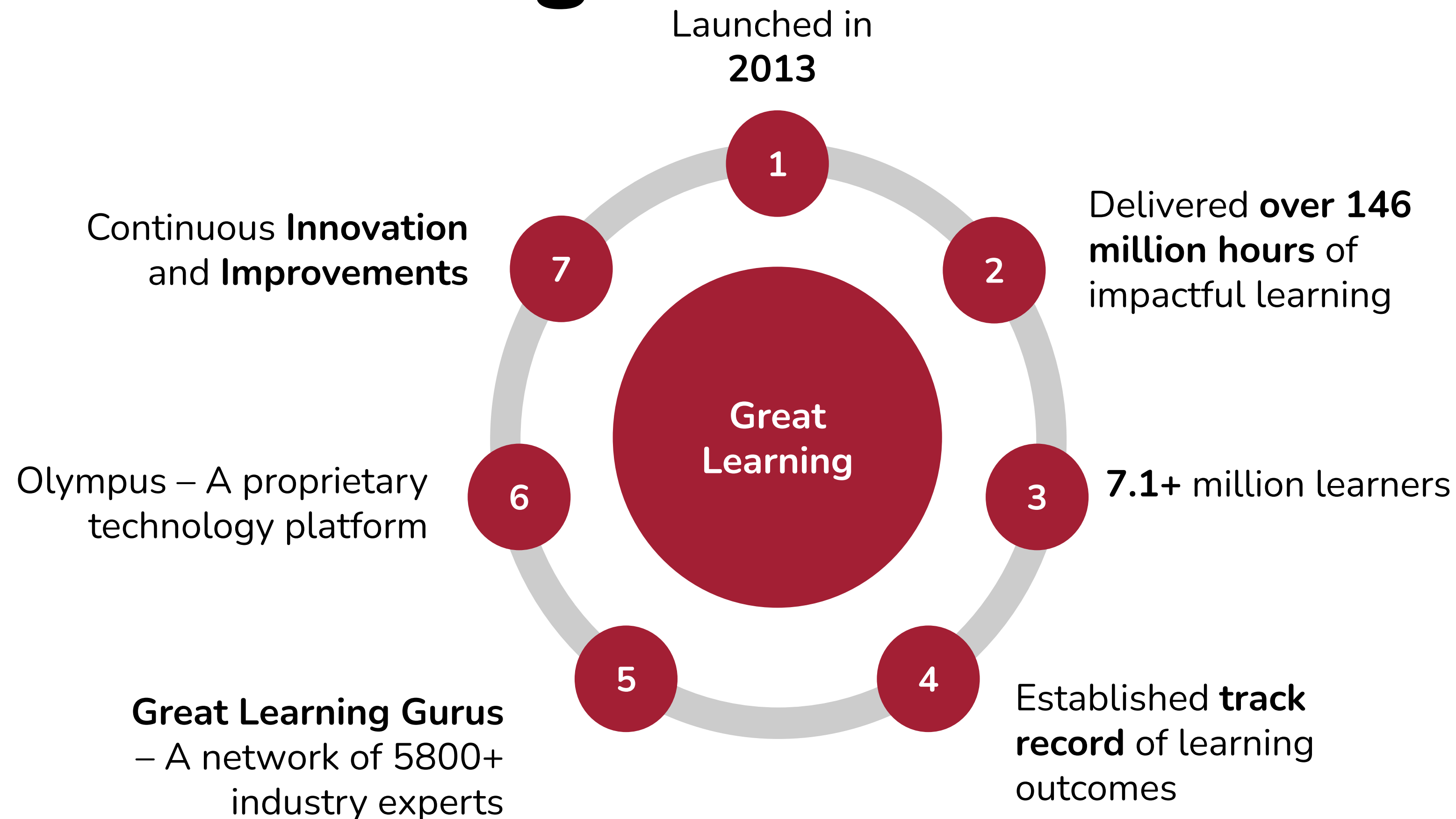
- **Academic Collaborator**
- Curriculum & Content Design
- Live Virtual Classrooms
- Case Studies / Course Projects
- Certificate

- **Delivery Collaborator**
- Mentored Learning
- Learning Management System
- Program Manager
- Academic Support

Program Vision & Outcomes

Amish Suchak

Data Scientist (Team Lead), XSOLIS

- 7+ years of work experience in Machine Learning & Data Science.
- Completed his degree in Electrical and Computer Engineering from University of Florida.
- Amish is a seasoned professional in the field of data science, currently serving as a Team Lead at XSOLIS

professional.mit.edu

Applied Data Science Program - Vision

➔ Address the needs of **future-focused professionals** looking to harness data in new and innovative ways for smarter decision making

➔ Enable professionals to expand their **repertoire of knowledge** required to deal with the data science challenges of the future

➔ Deliver solid **mathematical and conceptual foundations** across the breadth of data science body of knowledge in the context of various practical problems

➔ Bring together the best of **academic focus and industry perspectives** with learning by doing pedagogy to enable meaningful learning outcomes

Key Learning Outcomes

01   Strong foundation in data science techniques and algorithms

02   Understanding of the contemporary approaches and work in data science field

03   Knowledge of how to apply these techniques to solve problems in various industry contexts

professional.mit.edu

Key Learning Expectations

The program's vision is to address the needs of future-focused professionals looking to harness data in new and innovative ways for smarter decision-making.

Python is the programming language utilized in the program to showcase the implementation of different Data Science techniques.

The Applied Data Science Program focuses on how to apply Data Science techniques and algorithms hands-on, to a variety of business problems.

The program encompasses diverse levels of Data Science methods, ranging from fundamentals to advanced, that requires to at least intuitively understand and appreciate some beyond basic level of mathematics.

professional.mit.edu

Program Structure

Design of the Program

**MIT | PROFESSIONAL EDUCATION**

- 12 weeks with 2 revision weeks

- 12 + Mentored Learning Sessions by Industry Professionals
  2 Sessions per week for core courses
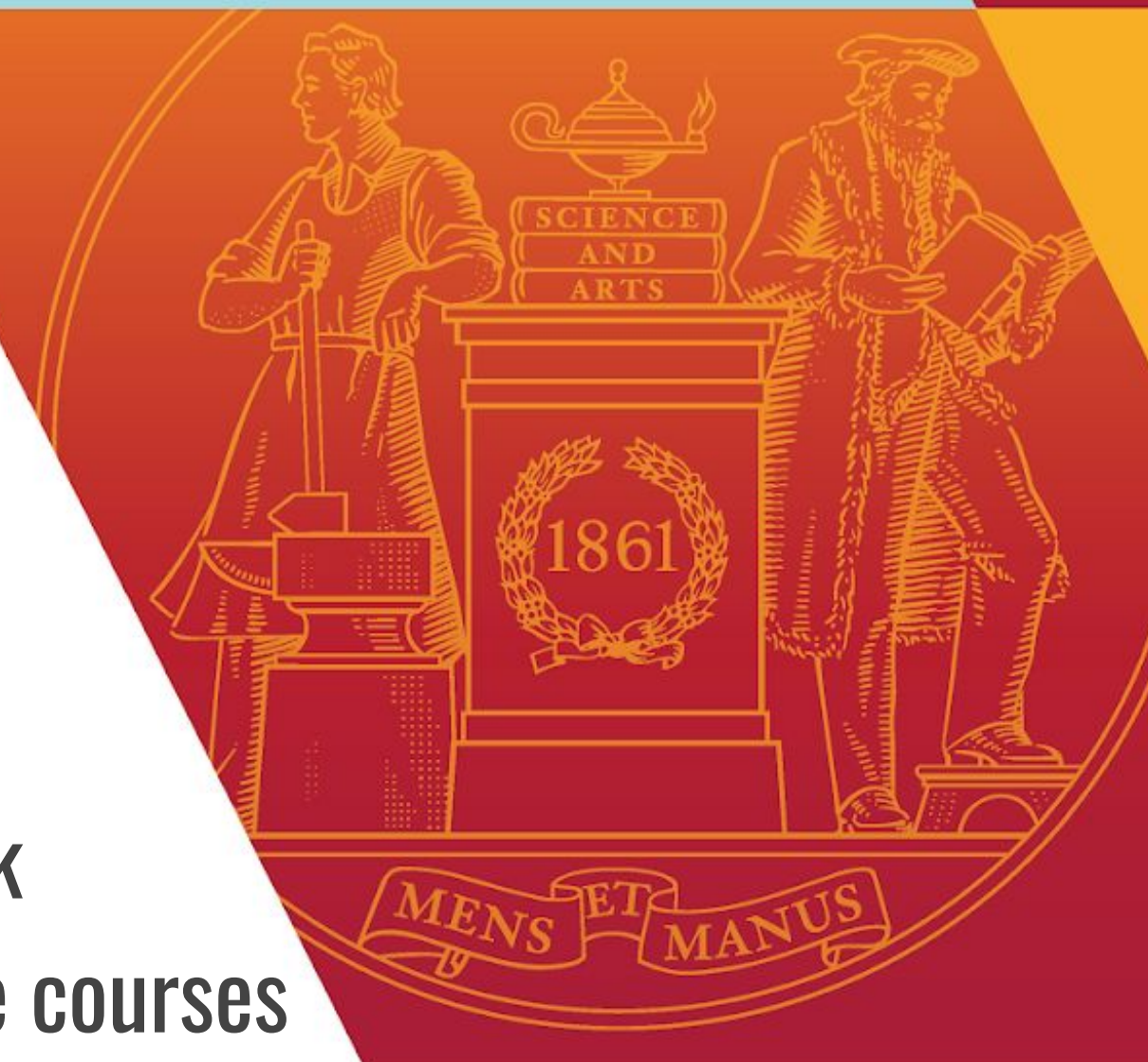 1 Session per week for all other weekends

- 3 Mandatory + 5 Practice Projects
  Templatized & problem solving focused
  with an optional full-code track

- 3 Live Sessions per week
  by MIT faculty for 5 core courses

- 1 Assessment per week
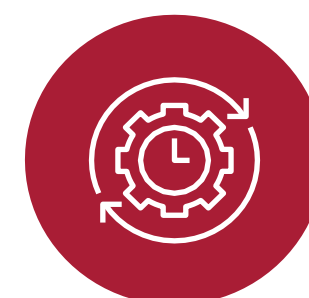
- 1 Capstone Project - 3 weeks
  2 Milestone Q&A Sessions + 1 Milestone Submission
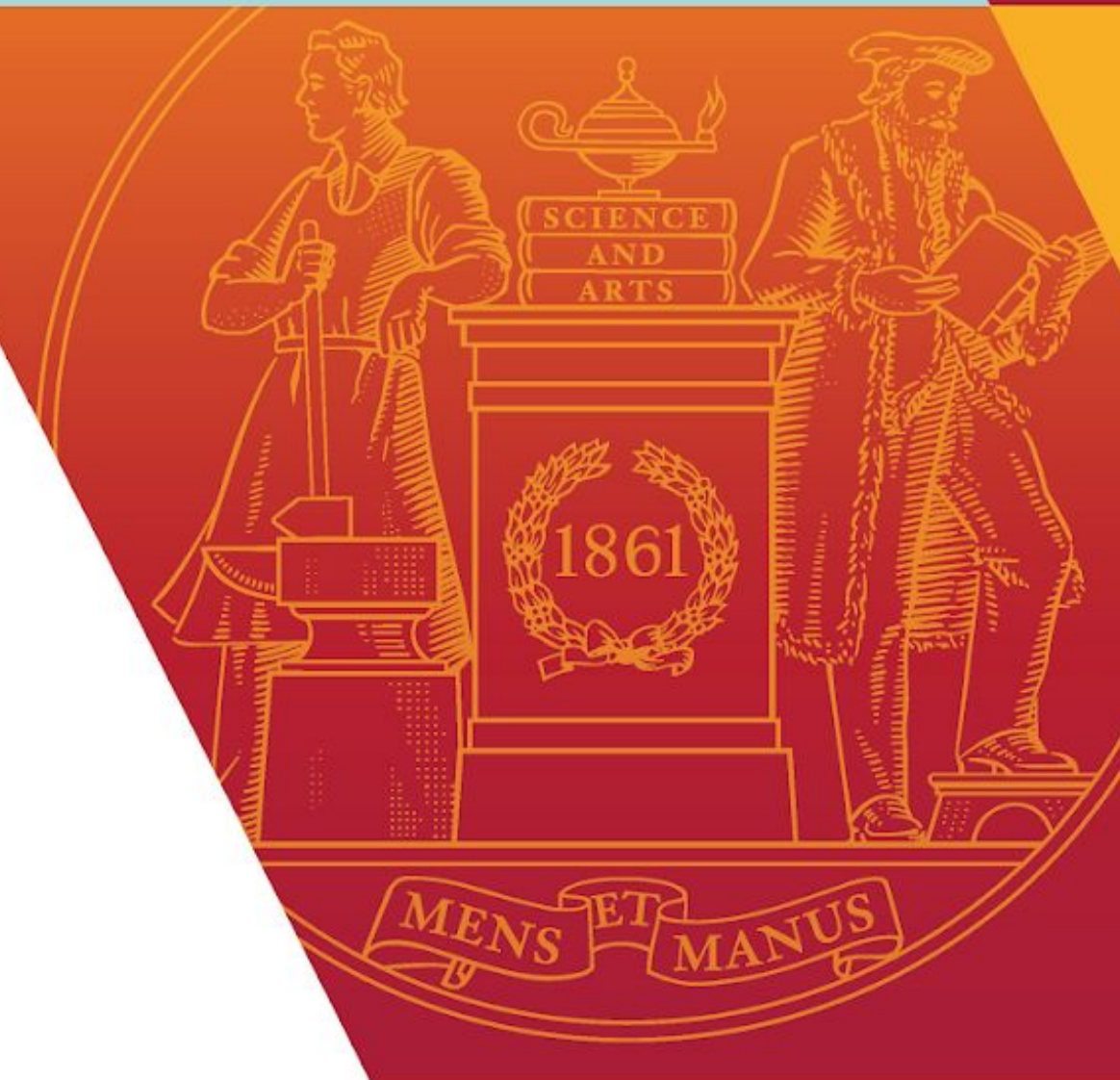 1 Final Submission + 1 Live Presentation

**Find the detailed program information on Olympus Dashboard
Login to Olympus > Courses > Program Overview Course > Learner Handbook**

professional.mit.edu

Program Curriculum

Course 1
Foundations for Data Science

- Python
- Statistics

Course 2
Data Analysis & Visualization

- Data Exploration
- Networks
- Clustering

Course 3
Machine Learning

- Regression
- Classification - Logistic & kNN

Course 7
Capstone Project

- Milestone
- Synthesis & Presentation

Course 4
Practical Data Science

- Decision Tree & Random Forest
- Time Series

Course 5
Deep Learning

- Neural Networks
- CNN
- GNN

Course 6
Recommendation Systems

- Introduction
- Matrix, Tensors

professional.mit.edu

Live Virtual Classroom (LVC) Structure

Pre-reads shared with all learners to give an overview

Faculty gives an **overview** of the concept to be covered

Coverage of **theoretical concepts** in-depth and its interpretation

Practical Application of the concept

Clarification of queries on concepts covered during the lecture

Summarize the Session

professional.mit.edu

Learn from the MIT Faculty

Devavrat Shah

Director, Statistics and Data Science
Center (SDSC)

MIT

Munther Dahleh

Director, MIT Institute for Data,
Systems and Society (IDSS)

MIT

Caroline Uhler

Henry L. & Grace Doherty Associate
Professor, Institute for Data, Systems
and Society (IDSS)

MIT

John N. Tsitsiklis

Clarence J Lebel Professor, Dept. of
Electrical Engineering & Computer
Science (EECS)

MIT

Stefanie Jegelka

Associate Professor, Dept. of
Electrical Engineering & Computer
Science and member of Computer
Science and AI Lab (CSAIL) and
Institute for Data,Systems and
Society (IDSS)

MIT

professional.mit.edu

Mentored Learning Session Structure

Q&A & Industry Perspective
Can run throughout the session as it is meant to be an interactive one

8 - 10 mins — Mentors gauge the **level of understanding** of learners and identify things to focus on

15 - 20 mins — Clarification **of queries** on concepts from the course of the week

60 - 70 mins — **Live Session Case Study** continuation to work hands-on in python

20 - 25 mins — **Industry Perspective** through additional Q&A

2 - 5 mins — **Summarize** the Session

Note:
For week 1 & 2 there would be 1 mentored learning session over the weekend
From week 3-8 there would be 2 mentored learning sessions over the weekend

Program Assessments

In order to be eligible for certificate, you will have to complete all courses with minimum of 60% in each course

Course Assessment

- Time based MCQs
- Deadline driven
- Each week shall consist of 1 assessment

Mandatory Course Projects

- Work on 2 mandatory course projects with problem statements from different industries
  - Project 1 - Foundations for Data Science course
  - Project 2 - Select 1 elective project from 5 core MIT courses complementing the final Capstone project

Capstone Project

- Bring together all the learning from the program to solve a real world data science problem
- Simulation of industry project experience
- Live Presentations at the end of the project

Assessments in every course hold 90% weightage and Attendance of the weekend mentored learning sessions hold 10% weightage

Weekly Operating Rhythm

Delivery Schedule

| Course #	Course	Topic	Session Faculty	Session Date	Session Time
FOUNDATION WEEKS					
1	Foundations for Data Science	Python Foundations	Great Learning Mentor	Sep 30, 2023 or Oct 1, 2023	To be Announced
		Stats Foundations		Oct 7, 2023 or Oct 8, 2023	To be Announced
MIT CORE COURSES WEEKS					
2	Data Analysis & Visualization	Exploratory Data Analysis and Visualization	Prof. Caroline Uhler	Oct 9, 2023	09:30 am - 11:30 am ET
		Networks		Oct 11, 2023	09:30 am - 11:30 am ET
		Introduction to Unsupervised learning		Oct 12, 2023	09:30 am - 11:30 am ET
		Data Exploration and Networks	Great Learning Mentor	Oct 14, 2023	To be Announced
		Unsupervised Learning		Oct 15, 2023	To be Announced
3	Machine Learning	Introduction to Supervised Learning: Regression	Prof. John Tsitsiklis	Oct 16, 2023	09:30 am - 11:30 am ET
		Model Evaluation: Cross-Validation & Bootstrapping		Oct 18, 2023	09:30 am - 11:30 am ET
		Introduction to Supervised Learning: Classification		Oct 20, 2023	09:30 am - 11:30 am ET
		Introduction to Supervised Learning and Regression	Great Learning Mentor	Oct 21, 2023	To be Announced
		Introduction to Supervised Learning and Classification		Oct 22, 2023	To be Announced
	Revision Week 1	Conceptual Revision Session 1	Great Learning Mentor	To be Announced	
		Case Study Revision Session 1			
		Office Hours: Code Debugging Session 1			
4	Practical Data Science	Decision Trees	Prof. Munzer Dahleh	Oct 30, 2023	09:30 am - 11:30 am ET
		Random Forest		Nov 1, 2023	09:30 am - 11:30 am ET
		Time Series (Introduction)		Nov 3, 2023	09:30 am - 11:30 am ET
		Decision Trees and Random Forest	Great Learning Mentor	Nov 4, 2023	To be Announced
		Time Series		Nov 5, 2023	To be Announced
5	Deep Learning	Intro to Neural Networks	Prof. Stefanie Jegelka	Nov 6, 2023	09:30 am - 11:30 am ET
		Convolutional Neural Networks		Nov 8, 2023	09:30 am - 11:30 am ET
		Graph Neural Networks		Nov 10, 2023	09:30 am - 11:30 am ET
		Introduction to Deep Learning	Great Learning Mentor	Nov 11, 2023	To be Announced
		Convolutional Neural Networks		Nov 12, 2023	To be Announced
6	Recommendation Systems	Intro to Recommendation Systems	Prof. Devavrat Shah	Nov 13, 2023	09:30 am - 11:30 am ET
		Matrix		Nov 15, 2023	09:30 am - 11:30 am ET
		Tensor, NN for Recommendation Systems		Nov 17, 2023	09:30 am - 11:30 am ET
		Recommendation Systems Part 1	Great Learning Mentor	Nov 18, 2023	To be Announced
		Recommendation Systems Part 2		Nov 19, 2023	To be Announced
	Revision Week 2	Conceptual Revision Session 2	Great Learning Mentor	To be Announced	
		Case Study Revision Session 2			
		Office Hours: Code Debugging Session 2			
CAPSTONE WEEKS					
7	Capstone Project	Capstone Briefing Session	Great Learning Mentor		
		Capstone QnA Session		Dec 3, 2023	To be Announced
		Capstone QnA Session		Dec 10, 2023	To be Announced
		Capstone Live Presentations		Dec 16, 2023 & Dec 17, 2023	To be Announced

The Delivery Scheduled is updated on Olympus Dashboard

Login to Olympus > Courses > Program Overview Course > Program Delivery Scheduled

Weekly Operating Rhythm - Week 1 & 2

Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday
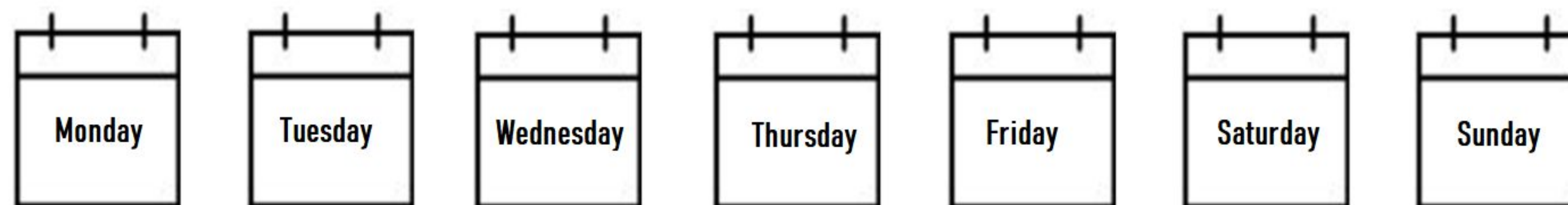
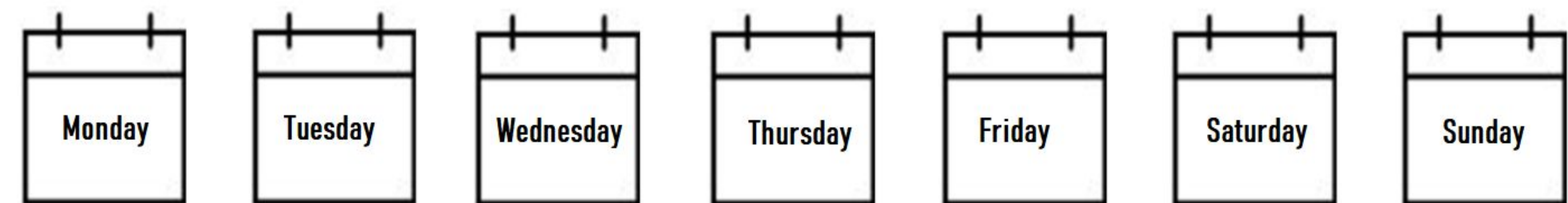**2 hours of mentorship**

Foundation Weeks

Weekdays
- Recorded Video Lectures
- Practice Assessments/Assignments
- 1 Assessment with deadline
- 1 Mandatory Course Project with deadline

Weekends
- Mentored Learning Session (MLS)
- 2 hours of mentorship either on Saturday or Sunday

professional.mit.edu

Weekly Operating Rhythm - Week 3 to 8

MIT | PROFESSIONAL EDUCATION

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
2 hours of live faculty lecture		2 hours of live faculty lecture		2 hours of live faculty lecture	2 hours of mentorship	2 hours of mentorship

Core MIT Lecture Weeks

Weekdays
- Pre-reads, Lecture Slides, Practice Project
- Live Virtual Classes (LVC)
- Post Session Summary, FAQ
- 1 Assessment per course with deadline
- 1 Mandatory Course Project (Elective) with deadline complementing the final Capstone project
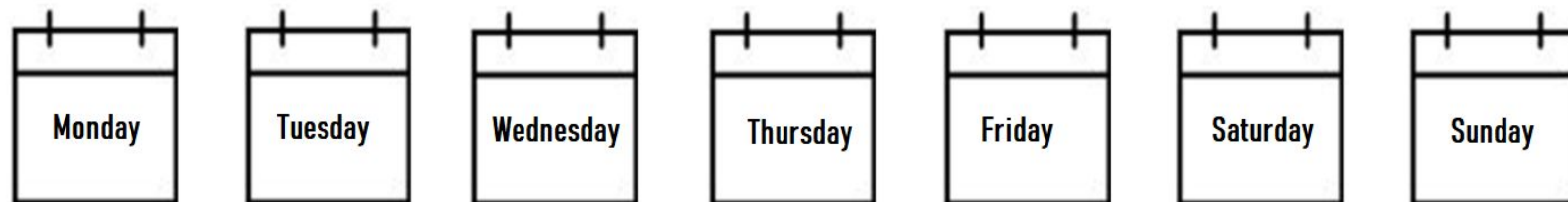
Weekends
- Mentored Learning Session (MLS)
- 2 hours of mentorship on both Saturday & Sunday

Please note: The schedule is subject to change based on the availability of MIT faculty

professional.mit.edu

Weekly Operating Rhythm - Revision Week

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday

Week 5 - Revision Week 1
- Conceptual Revision Session 1
- Case Study Revision Session 1
- Office Hours - Code Debugging Session 1

Week 9 - Revision Week 2
- Conceptual Revision Session 2
- Case Study Revision Session 2
- Office Hours - Code Debugging Session 2
- Capstone Briefing Session
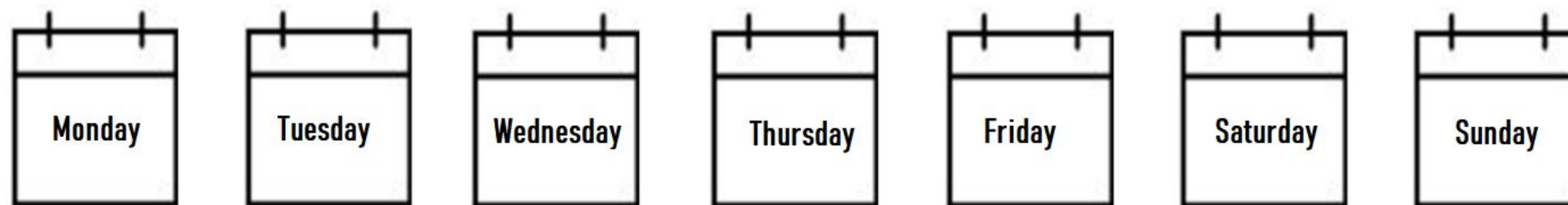- Elective Project submission

Revision & Submission Weeks

Key Points:

- Revision sessions focus on revising the concepts and case studies covered in the previous courses

- Capstone briefing session focuses on the guidelines, timelines and other details in the final Capstone project

- A code-debugging session known as 'Office Hours' will be conducted during the Revision Weeks

- As these are optional sessions, there will be no attendance marks for these sessions and will be conducted by an industry expert

- Revision Week may be utilised to revise previous topics or catch up on any missed submissions

professional.mit.edu

Weekly Operating Rhythm - Last 3 Weeks

Monday   **Tuesday**   **Wednesday**   **Thursday**   **Friday**   **Saturday**   **Sunday**

Submission Deadline

1.5 hours of mentorship

Hands-on Capstone Project Weeks

Weekdays
- Capstone Submissions- [1 Milestone Submission + 1 Final Submission]

Weekends
- Milestone Q&A sessions -1.5 hours of mentorship either on Saturday or Sunday for 2 weeks
- Live Presentation

How to Learn More Effectively?

- **Commit to the journey**
  - ○ 12-18 hours per week
  - ○ Follow weekly operating rhythm
  - ○ Attend live sessions and mentored learning sessions
  - ○ In case you are unable to attend a session, go through the recording
- **Prepare well for all sessions**
  - ○ Go through the pre-reads before the sessions
  - ○ Finish all the necessary topics from the last lecture through material shared
- **Practice, Discuss, Repeat**
  - ○ Go through case studies and practice them hands-on
  - ○ Discuss with peers and mentor
  - ○ Read, explore & concretize
- **Respect assessments**
  - ○ Appear for assessment to test your understanding
  - ○ Work on course project and work on the feedbacks that you get on your submissions
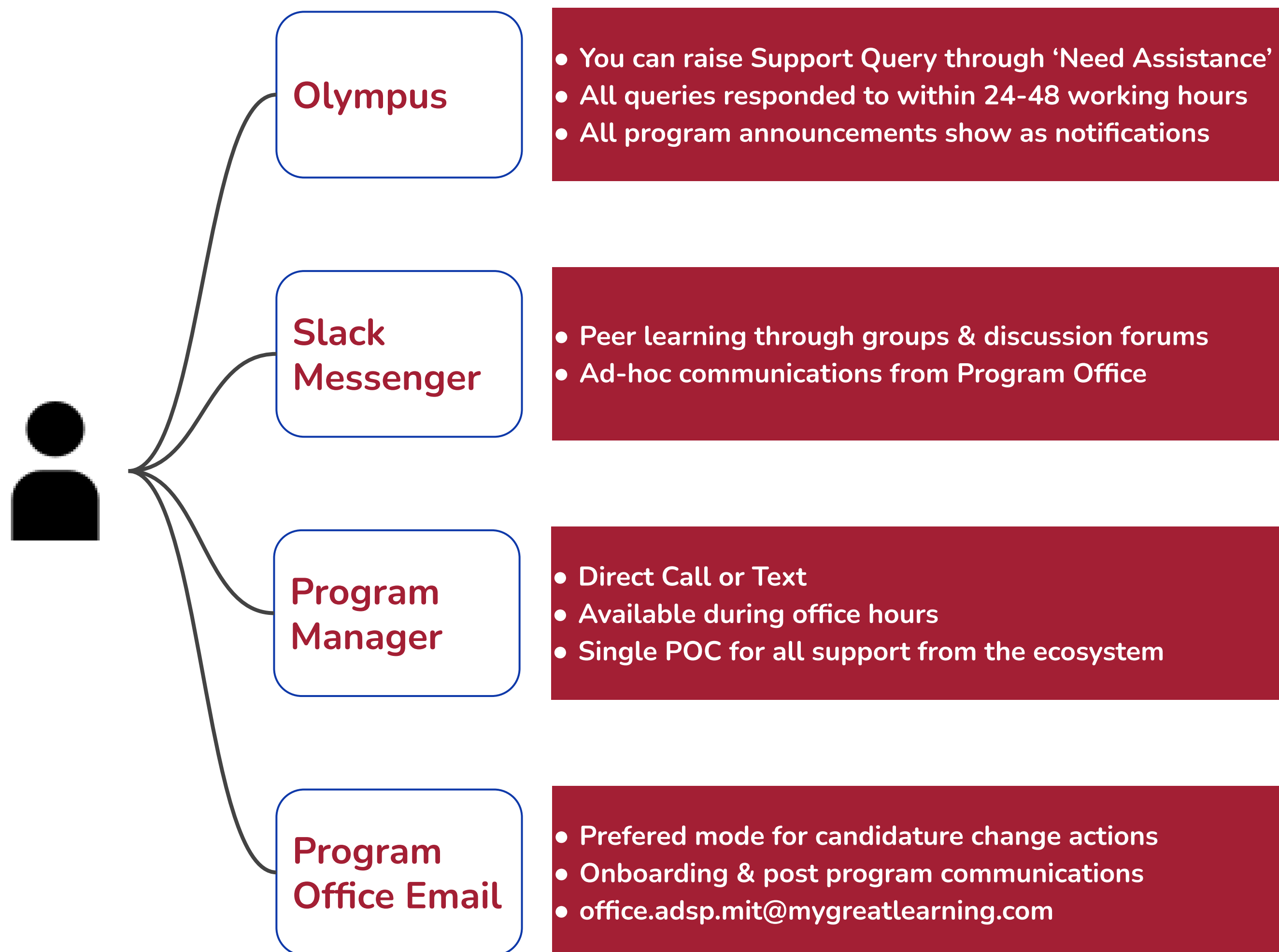 - ○ Submit the assignments on time

professional.mit.edu

Program Support

Learning Support Ecosystem

Olympus
- You can raise Support Query through 'Need Assistance'
- All queries responded to within 24-48 working hours
- All program announcements show as notifications

Slack Messenger
- Peer learning through groups & discussion forums
- Ad-hoc communications from Program Office

Program Manager
- Direct Call or Text
- Available during office hours
- Single POC for all support from the ecosystem

Program Office Email
- Prefered mode for candidature change actions
- Onboarding & post program communications
- office.adsp.mit@mygreatlearning.com

GL Community

GL Smart Assistance

Faculty / Mentors

Peer Group

Program Manager

Academic Assistance

professional.mit.edu

Program Managers

Mayansha Prashi Surjeet Jasna Rishika

The contact information of the respective Program Manager is updated on Olympus Dashboard
Login to Olympus > Courses > Program Overview Course > Contact Program Office
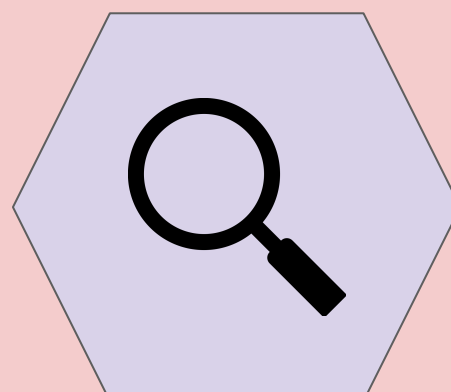
professional.mit.edu

Career Support

Career Prep

- Interview Q&A

- Industry and hiring insights

- Sample resume and templates

Get Guidance

- 1*1 Career Mentoring Session

- Resume / LinkedIn Reviews

professional.mit.edu

Give us a lot of feedback

Be *Descriptive* –
Take the time to detail your feedback

Be *Constructive* –
How can your learning be improved?

Be *Specific* –
Use instances, examples, etc.

Be *Realistic* –
We are balancing the whole class' needs

Post Session Feedback

Mid Term Feedback

End Term Feedback

Places to provide us feedback

Mentored Learning session

Please share your feedback for the Mentored Learning session

Mentor : Navaneeth S
Date : Mar 05
Topic : Recommendation Systems Part 2

START

18 Points

professional.mit.edu

Alumna Speaks

Laxmi Narayana Byagari

Vice President, Bank of America

- Laxmi is an accomplished and results-driven executive with a strong background in Economics, as he used Linear Regression to predict outcomes, and now aims to leverage his data science knowledge to further enhance his career and skills
- Laxmi recently completed the MIT Applied Data Science Program in August 2023 and was part of the May'23 cohort
- He has a Bachelor of Engineering - Computer Science and Engineering and a Master of Science - Economics and Finance

Next Steps

MIT | PROFESSIONAL EDUCATION

- ❖ Login to Olympus dashboard - olympus.mygreatlearning.com
  - ➢ Complete your profile on Olympus (Name, LinkedIn profile, details)
  - ➢ Update time zone on Olympus

- ❖ Go through the following courses on dashboard
  - ➢ Program Overview
  - ➢ Pre-work
  - ➢ Introduction to Data Science and AI
  - ➢ Foundations for Data Science

- ❖ Complete the Week 1 content in the Foundations for Data Science course & join us for the first mentored learning session on the weekend of September 30th, 2023

- ❖ Mentored session group details will be shared with you on your registered email id by September 26th, 2023

- ❖ Upcoming Session - Data Science Primer 1 [Repeat Session] at 11:30 am EST

professional.mit.edu

Thank you

Please fill out the feedback survey on Olympus.