ENTERPRISE

UDACITY

SCHOOL OF BUSINESS

Data Science for Business Leaders

Executive Program Syllabus

Overview

The goal of this executive program is to prepare students with functional business experience (e.g., marketing, sales, finance) to apply data science capabilities at a leadership level. It teaches core data science concepts and practices and details the business opportunities behind data science. This course prepares learners to identify and assess data science opportunities and provides hands-on experience with developing human capital and technical strategies critical to a business's data science capabilities.

Learning Objectives

A graduate of this program will be able to:

- Unlock the value of data in their organizations to inform strategic decisions for business operational improvement and growth.
- Define data science roadmap for their company that includes the human capital plan, the technical plan with the ability to present these plans and rationale to the CEO.
- Prepare a data and data architecture strategy and detail how a machine learning architecture strategy fits into it.

Built in collaboration with:

alteryx

Program information

Estimated Time

4-8 weeks at 5hrs/week*

Skill Level

Intermediate

Prerequisites

A well-prepared learner should:

- Have spent time in a business setting, have exposure to business decision-making, and have potentially worked on technical or IT projects
- Basic knowledge of mathematics (algebra, geometry, etc.)
- Basic statistics (able to calculate the mean, median, and mode from a data set)
- Prior exposure to statistics and probability in an academic or professional setting

Required Hardware/Software

Leaners need access to:

- Jupyter Notebook
- Google Sheets, Slides, and Forms

*The length of this program is an estimation of total hours the average student may take to complete all required coursework, including lecture and project time. If you spend about 5-10 hours per week working through the program, you should finish within the time provided. Actual hours may vary.

Course 1

Data Science for Business Leaders

Data science is seeing widespread adoption in business today. A 2020 survey by the analyst firm Cognilytica revealed that nearly 90% of respondents indicated that they will have some sort of in-progress AI implementation within the next two years. That said, knowing how to implement data science is critical; according to McKinsey, 86 percent of executives say their organizations have been at best only somewhat effective at meeting the primary objective of their data and analytics programs, including more than one quarter who say they've been ineffective.

The goal of the Data Science for Business Leaders Executive Program is to equip learners with the understanding of the strategic, human capital, and technical requirements that power the ability of data science to deliver enhanced business outcomes, as well as the strategic execution skills to develop an organizational data science strategy that unlocks this potential.

This course consists of four lessons that together cover data science and its business cases as well as the processes, people, and platforms necessary to execute data science initiatives for the business. Businesses often suspect that they want data science capabilities, and may even sense a need for data science capabilities, but are not sure where to start. What is data science? Who is a data scientist? What is possible through data science? All these questions are addressed in the first lesson, which provides a broad introduction to data science and what it can do for a business.

Creating a data science strategy isn't a standalone activity; it must be driven by your overarching business operations and strategy. Therefore, a critical starting point for any data strategy is articulation of a business' strategic objectives and identification of opportunities for data science-based transformation. These are the topics of the second lesson of the course.

The human capital component of data science is critical to delivering on a successful strategy. Who do we recruit, hire, and train for our data science organization? How is that organization structured in order to deliver value to our business? How do our data scientists carry out their work in a structured manner? How do we leverage data and data science to foster a data-driven culture throughout the business? These questions are addressed in the third lesson of the course.

Finally, executing the data science strategy requires technology—technology for data and technology for machine learning. Technology needs are specific to each business; it depends on the types of data to be leveraged for data science, the form and magnitude of that data, the types of data science models that a business plans to create, and the overall scale of operations represented by those data science models. The fourth lesson covers in great detail the parameters that must be considered both in creating a data and data architecture strategy, and in building a machine learning architecture to support data science initiatives.

Capstone Project

100-Day Data Science Plan

Upon assuming a new leadership role within a company (whether from an internal move or joining the company anew), it is common for an executive to be asked to prepare a plan for their first 100 days in the job. The capstone project asks students to prepare that 100-day data science plan for a company of their choosing; this could be the student's current company, some other existing company, or a fictitious business.

As part of this project, the student will build/create the following:

- The human capital plan for their data science organization
- The technical plan for their data science organization
  -Data and data architecture strategy
  -Machine learning architecture
- Identification of six data science opportunities for the organization
  -Rack and stack evaluation of these opportunities
  -Detail the risks, challenges, and key factors for success for each of these opportunities
- Roadmap for executing on these six data science opportunities.

The work product for this capstone project will be a detailed presentation to the CEO, detailing the learner's plan and the rationale behind their decisions.

Lesson 1

Introduction to Data Science

- Classify data science projects in terms of area, approach, and type of model.
- For a given area, approach, and model type, provide one example project from your business.
- Given the particulars of a data science project, identify areas of concern that might lead to the projects failing.
- Given the particulars of a data science project, identify steps that could be taken to help ensure the project succeeds.

Lesson 2

Business Case for Data Science

- Define an organization's data science roadmap.
- Identify the best projects(s) to start with.
- Detail strategies for successfully launching data science initiatives.
- Determine a starting point—the most appropriate first project (or suite of projects) to capture the most promising opportunities and launch the data science function with adequate momentum to ensure its long-term operation within the organization.
- Work with fellow executives to set and manage reasonable expectations of success for data science projects.
- Given a set of candidate data science projects, determine the relative strategic importance, cost, complexity of implementation, risk, likelihood of value capture, and magnitude of benefit for each of the five projects.
- For any data science project, identify strategies for meeting three key factors of success (executive sponsorship; strategic alignment with core business interests; scope conditions).

Lesson 3

Human Capital of Data Science

- Use the data science heat map as a tool for specifying roles within the data science organization.
- Manage data science operations using structured processes for work and communication.
- Given the particulars of a company's strategic and operating contexts, identify the data science organizational model best suited for that company.
- Given a data science strategy, identify and prioritize the mix of roles one would pursue to build out the data science organization.
- Describe the project and product management strategies best suited for a given company's data science organizations.
- Given a broad business challenge, describe how one would approach the development of a data science strategy using the structured problem solving method.
- Given a business context, identify strategies for promoting a data-driven culture throughout that business, particularly around guiding employees on how to think through breaking down problems of identifying data consumers, data needs/use cases, data sources, and related necessary pipeline/ transformations that need to happen.

Lesson 4

Data & Machine Learning Infrastructure Strategy

- Given a particular business context, prepare a detailed data and data architecture strategy.
- Given a particular business context, detail how a machine learning architecture strategy fits into its data and data architecture strategy.
- Identify the strengths and weaknesses of a given business' data and data architecture strategy.

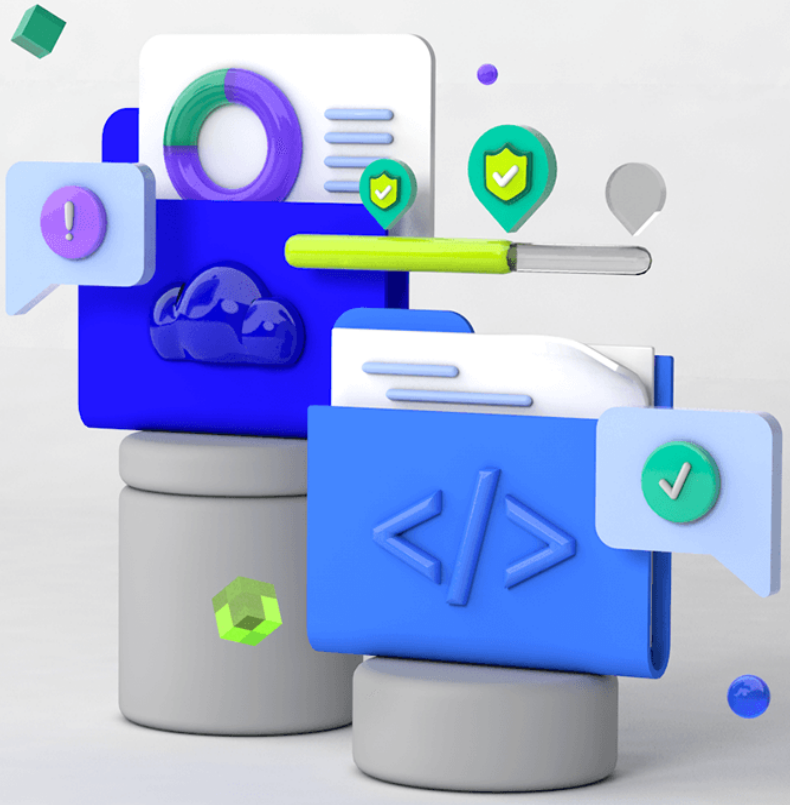
Meet your instructors.

Ed Wiley

Chief Technology Officer at Enveda Theraupatics

Mr. Wiley has over 20 years of experience building, leading, and advising world-class machine learning, AI, and data science teams at companies at stages from startup to Fortune 50, holding titles such as CIO, CTO, and chief data scientist.

Udacity's learning experience



Hands-on Projects

Open-ended, experiential projects are designed to reflect actual workplace challenges. They aren't just multiple choice questions or step-by-step guides, but instead require critical thinking.

Quizzes

Auto-graded quizzes strengthen comprehension. Learners can return to lessons at any time during the course to refresh concepts.

Knowledge

Find answers to your questions with Knowledge, our proprietary wiki. Search questions asked by other students, connect with technical mentors, and discover how to solve the challenges that you encounter.

Custom Study Plans

Create a personalized study plan that fits your individual needs. Utilize this plan to keep track of movement toward your overall goal.

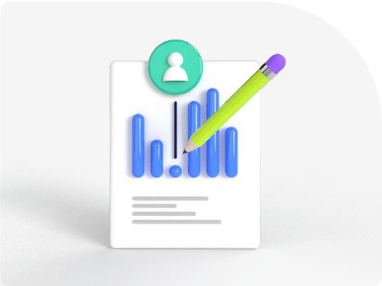
Workspaces

See your code in action. Check the output and quality of your code by running it on interactive workspaces that are integrated into the platform.

Progress Tracker

Take advantage of milestone reminders to stay on schedule and complete your program.

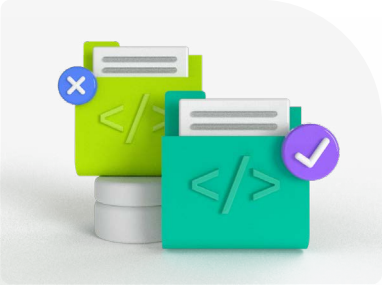
Our proven approach for building job-ready digital skills.



Pre-Assessments

Identify skills gaps.

- In-depth assessments benchmark your team's current level of knowledge in key areas.
- Results are used to generate custom learning paths.



Experienced Project Reviewers

Verify skills mastery.

- Personalized project feedback and critique includes line-by-line code review from skilled practitioners with an average turnaround time of 1.1 hours.
- Project review cycle creates a feedback loop with multiple opportunities for improvement—until the concept is mastered.
- Project reviewers leverage industry best practices and provide pro tips.

Technical Mentor Support

24/7 support unblocks learning.

- Learning accelerates as skilled mentors identify areas of achievement and potential for growth.
- Unlimited access to mentors means help arrives when it's needed most.
- 2 hr or less average question response time assures that skills development stays on track.

Mentor Network

Highly vetted for effectiveness.

- Mentors must complete a 5-step hiring process to join Udacity's selective network.
- After passing an objective and situational assessment, mentors must demonstrate communication and behavioral fit for a mentorship role.
- Mentors work across more than 30 different industries and often complete a Nanodegree program themselves.

Dashboard & Reporting

Track course progress.

- Udacity's enterprise management console simplifies management of bulk enrollments and employee onboarding.
- Interactive views help achieve targeted results to increase retention and productivity.
- Maximize ROI while optimizing job readiness.

UDACITY

Learn more at

udacity.com/enterprise →

12.16.22 | V1.0