



SCHOOL OF BUSINESS

Data Product Manager

NANODEGREE SYLLABUS



Overview

The goal of this Nanodegree Program is to supply learners with the foundational skills all data product managers use including how to apply data science techniques, data engineering processes, and market experimentation tests to deliver customized product experiences.

A graduate of this program will be able to:

- Visualize your data with Tableau for statistical analysis and identify unique relationships between variables via hypothesis testing and modeling.
- Evaluate the output captured in statistical analyses and translate them into insights to inform product decisions.
- Understand which data is best collected through quantitative versus qualitative methods, and how to interpret it.
- Utilize user data to create user personas that can be translated into code and build user journey maps that describe the stages a user engages with the product
- Extract insights from user journey maps to define KPIs of suggested product enhancements.

This program is comprised of 3 courses and 3 projects. Each project you build will be an opportunity to demonstrate what you've learned in the lessons. Your completed projects will become part of a career portfolio that will demonstrate your acquired skills in Data Product Management.

Program Information



ESTIMATED TIME TO COMPLETE

3 months; study 10 hrs/week



LEVEL

Practitioner



PREREQUISITES

- Basic understanding of data terminology (i.e. big data, database, algorithms, etc.)
- Some experience with data analysis (basic SQL & Tableau), and a general understanding of product management is helpful.



HARDWARE/SOFTWARE REQUIRED

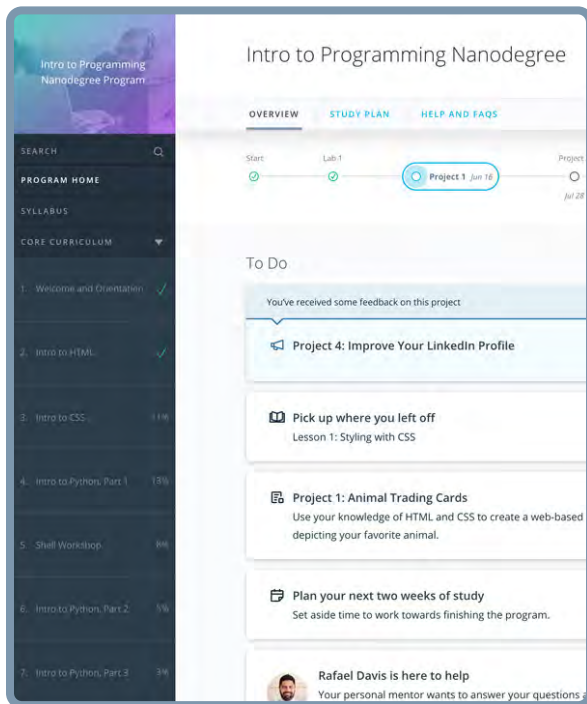
- SQL, Tableau, Google Slides or Microsoft PowerPoint, Google Sheets or Microsoft Excel
- 64-bit Computer; Minimum operating system (OS) requirements are: Windows 8.1 or later, or Apple MacOS 10.10 (Yosemite) and later, or any Linux OS that supports the browsers mentioned above
- Any Chrome OS that supports the browsers mentioned above



LEARN MORE ABOUT THIS NANODEGREE

Contact us at enterpriseNDs@udacity.com.

Our Classroom Experience



REAL-WORLD PROJECTS

Learners build new skills through industry-relevant projects and receive personalized feedback from our network of 900+ project reviewers. Our simple user interface makes it easy to submit projects as often as needed and receive unlimited feedback.

KNOWLEDGE

Answers to most questions can be found with Knowledge, our proprietary wiki. Learners can search questions asked by others and discover in real-time how to solve challenges.

LEARNER HUB

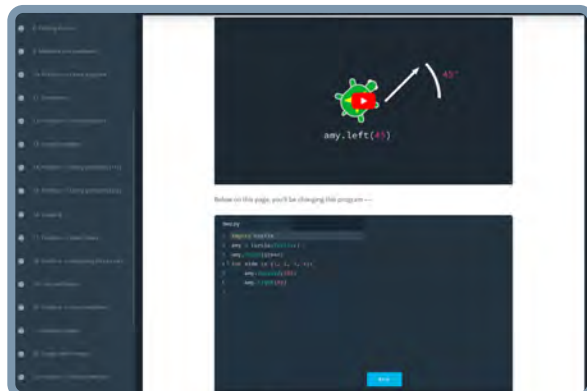
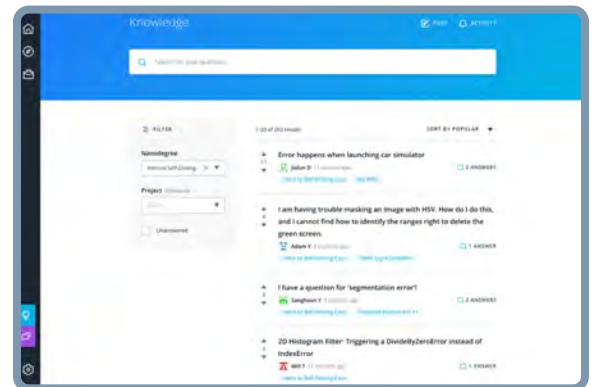
Learners leverage the power of community through a simple, yet powerful chat interface built within the classroom. Learner Hub connects learners with their technical mentor and fellow learners.

WORKSPACES

Learners can check the output and quality of their code by testing it on interactive workspaces that are integrated into the classroom.

QUIZZES

Understanding concepts learned during lessons is made simple with auto-graded quizzes. Learners can easily go back and brush up on concepts at anytime during the course.



CUSTOM STUDY PLANS

Mentors create a custom study plan tailored to learners' needs. This plan keeps track of progress toward learner goals.

PROGRESS TRACKER

Personalized milestone reminders help learners stay on track and focused as they work to complete their Nanodegree program.

Learn with the Best



JJ Miclat

INSTRUCTOR

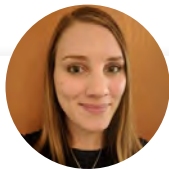
JJ is a product leader obsessed with creating simple, novel solutions for the world's most challenging issues. He's sunk his teeth into analytics & data product management for Beats Music, Apple, VSCO, & Collective Health.



Vaishali Agarwal

INSTRUCTOR

Vaishali has 12+ years' experience in tech ecosystem ranging from product management, product development, content writing to coding. She is experienced in building platforms, high performance start-up divisions, streamlined operations, and managing customer expectations.



Anne Rynearson

INSTRUCTOR

Anne has 6+ years' experience in product management in the software industry, including EdTech and market research industries. She is an agile leader experienced in launching and growing both consumer and enterprise-facing products.

Nanodegree Program Overview

Course 1: Applying Data Science to Product Management

As products become more digital, the amount of data collected is increasing. Product managers now have the opportunity to utilize this data to not only enhance existing products but create completely new ones. Understand the role of data product managers within organizations and how they utilize data science, machine learning, and artificial intelligence to solve problems. Learn how to visualize your data with Tableau for statistical analysis and identify unique relationships between variables via hypothesis testing and modeling. Evaluate the output captured in statistical analyses and translate them into insights to inform product decisions.

Project 1

Develop a Data-Backed Product Proposal

A key responsibility of data product managers is analyzing market data to propose new product opportunities. In this project, you will apply the skills acquired in this course to create the MVP launch strategy for the first flying car taxi service, Flyber, in one of the most congested cities in America -- New York City. Your team acquired taxi data for a comparable initial analysis. The dataset contains real taxi drop-offs and pick-ups in New York City. First, you will analyze the existing use cases for and identify temporal, behavioral, and spatial trends of ground-based taxis from the dataset. Next, you will deep-dive into user research data, to understand the general sentiment, desire, concerns, and use cases of a flying cab service to prospective customers. Finally, you will synthesize your insights to create a data-backed product proposal that recommends what features the first flying taxi service should have to maximize consumer delight, adoption and profits.

LESSON TITLE

LEARNING OUTCOME

INTRODUCTION TO DATA PRODUCT MANAGEMENT

- Explain the concept and history of data product management
- Distinguish the different types of data product managers
- Identify the various internal stakeholders that data product managers work with
- Understand the fundamentals of general product management from talking to customers, analyzing data, designing high-level solutions, prioritizing work, setting a roadmap, facilitating development, launch communications, and product iteration.

Nanodegree Program Overview

LESSON TITLE	LEARNING OUTCOME
GRANULARITY, DISTRIBUTION, AND MODELING DATA	<ul style="list-style-type: none">• Analyze what is being measured in a dataset• Explain the benefits of aggregates or roll-up tables• Compare and contrast the differences between fact & dimensional tables• Calculate and analyze the distribution of a dataset
TRENDS, ENRICHMENT, & VISUALIZATION	<ul style="list-style-type: none">• Identify and differentiate different visualizations, and justify when to apply the right visualization for the appropriate analyses (spatial, temporal, distribution, correlation) - box plot, line chart, donut chart, density map, histogram• Implement enriching datasets, and utilize common online repositories for publicly available datasets for analysis
MIDTERM: DEVELOP A DATA-BACKED PRODUCT PROPOSAL (PART 1)	<ul style="list-style-type: none">• Utilize SQL and other data analysis techniques to explore and enrich a dataset to identify customer pain points, trends, and opportunities
SETTING PRODUCT OBJECTIVES & STRATEGY	<ul style="list-style-type: none">• Interpret data and insights to come up with product objectives• Design KPIs that measure if your products are meeting their objectives• Utilize best practices and different techniques for setting up explicit feedback mechanisms• Create experiments that generate meaningful results in a timely, resourceful manner• Drive instrumentation strategies for proper event data collection
PROPOSAL SYNTHESIS & DESIGN	<ul style="list-style-type: none">• Assemble & arrange your narrative based on stakeholders• Weave data visualizations and insights into presentations in a consumable format• Develop the key points to hit in a product proposal presentation

Nanodegree Program Overview

Course 2: Establishing Data Infrastructure

Products that collect data from its users can only leverage such data if it gets processed and stored properly. Data product managers need to ensure their products have the appropriate supporting data pipelines in place so that data collected from users can be extracted, transformed and loaded into a data lake or warehouse that can be used for statistical analysis. Learn about data infrastructure components including data pipelines, data producers, data consumers, data storage and data processing. Master the nuances of evaluating strategic decisions for data pipeline technology, including security and compliance. Apply learnings to make step-by-step decisions for data infrastructure of an organization. Create solutions for real-world data infrastructure problems and evaluate tradeoffs.

Project 2

Build a Scalable Data Strategy

Once a product has been launched into the market, the amount of data collected typically dramatically increases and requires the appropriate infrastructure to support such growth. In this project, you will continue as a data product manager for Flyber, a flying-taxi service that has been massively successful in New York City after its first product launch, and create a data strategy to not only handle the massive amount of incoming data but also process it to get the business insights needed to grow the business. First, you will define the data needs of primary business stakeholders within the organization and create a data model to ensure the data collected supports those needs. Then, you will perform the necessary extraction and transformation of the data to make the data relevant to answer business questions. Lastly, you will interpret data visualizations to understand the scale of Flyer's data growth and choose an appropriate data warehouse to enable that growth.

LESSON TITLE

LEARNING OUTCOME

INTRODUCTION TO DATA PIPELINES

- Understand the importance and need of data pipelines
- Understand the various components of data pipelines
- Learn how to organize data pipeline components to automate end-to-end data flow
- Create conceptual data pipelines
- Learn about the influence of SaaS and IoT on the data infrastructure world
- Understand classic data problems that can be addressed by data pipelines

DATA CONSUMERS

- Learn about primary data consumers and their data needs
- Identify data consumers in an organization and relevant data use cases based on their business goals
- Understand the components in building a relational data model
- Apply relational data models to business scenarios

Nanodegree Program Overview

LESSON TITLE	LEARNING OUTCOME
DATA PRODUCERS	<ul style="list-style-type: none">• Use debugging techniques to find errors• Define exception handling and use of different types of exceptions in finding errors• Run and test your automations with default values and re-usable code
INTRODUCTION TO ORCHESTRATOR	<ul style="list-style-type: none">• Learn how to create event data models and implement them to get business insights• Understand primary product management KPIs (Active Users, Session Length, Bounce Rate, Conversion Rate and Click-through-Rate)• Use data collected from event models to calculate product KPIs• Identify primary data producers in an organization• Distinguish between backend data producers (Saas, ERPs and Data stores)• Differentiate between types of data (structured vs. semi-structured vs. unstructured)
DATA STRATEGY	<ul style="list-style-type: none">• Understand the difference between ETL and ELT processes• Distinguish between batch processing and stream processing• Select the appropriate data processing components for the product based on data needs• Distinguish between a data warehouse and data lake• Differentiate between SQL and NoSQL databases• Determine the appropriate data storage components for a particular data infrastructure of a product based on data needs• Assess capabilities of various data warehousing options (build vs buy, cloud vs on-prem, open source vs proprietary and insource vs outsource) to make strategic decisions for data infrastructure• Understand data security and compliance (PII, PCI, HIPAA, GDPR and CCPA components related to product use cases)

Nanodegree Program Overview

Course 3: Leveraging Data in Iterative Product Design

The best products adapt to market changes over time and are constantly being refined based on user feedback. With a robust data pipeline, the amount of data collected through product usage is extremely valuable to product managers for enhancing their products. Understand which data is best collected through quantitative versus qualitative methods, and how to interpret it. Learn how to apply chi-square tests to determine if results from data analysis are statistically significant. Utilize user data to create user personas that are actionable for development teams to translate into code and for building out user journey maps that describe the stages a user engages with the product along with the associated risks and opportunities. Extract insights from user journey maps to define KPIs of suggested product enhancements and design the relative hypotheses and experiments that are needed to prove the assumptions of product enhancements.

Project 3

Create an Iterative Design Path

As products exist in the market over time, opportunities for product design improvements arise. In this project, you will continue in the role as a data product manager for Flyber, a flying-taxi service that has grown its user base exponentially, and define customer segments and relevant new product feature opportunities. First, you will evaluate data from a conducted A/B test to identify key behavioral and descriptive attributes of users to define user personas and map out the significant stages of the user journey within the Flyber app. Then, you'll create an assumption map to explain the testable risks, opportunities, and correlated KPIs for product design improvements of the app experience, including the most impactful page and most significant subset of users. Lastly, you'll use the completed assumption map as well as the developed user persona and journey to construct hypotheses for new product features of the Flyber app and experiments to validate these hypotheses.

LESSON TITLE

LEARNING OUTCOME

CHOOSE & MEASURE KPIS

- Describe how data collection and usages changes depending on the state of the software (from pre-launch to product with existing customer base)
- Choose common KPIs for different business models (freemium, SAAS, eCommerce)
- Calculate the most popular KPIs for user acquisition, activation, retention, and revenue
- Suggest additional data that should be collected to allow for KPI tracking.

Nanodegree Program Overview

LESSON TITLE	LEARNING OUTCOME
EVALUATE USER ACQUISITION & USAGE FUNNELS	<ul style="list-style-type: none">• Identify the steps in a typical user acquisition and activation funnel• Run analyses in Tableau to determine rate of user dropoff during each step of a funnel• Visualize a funnel analysis in Tableau in bar chart form
COHORT ANALYSIS	<ul style="list-style-type: none">• Explain the importance of segmenting user data by cohorts• Identify behavioral traits in a data set that could be used to analyze cohort behavior• Apply cohort analysis to segment funnel analysis• Calculate feature use within a product, both among all users and among selected cohorts using existing event data
QUALITATIVE & QUANTITATIVE DATA	<ul style="list-style-type: none">• Explain the benefits and drawbacks of quantitative data• Explain the benefits and drawbacks of qualitative data• Determine when qualitative data is most useful during the iterative design process• Describe unstructured and structured methods of qualitative research, including interviews/focus groups, surveys, and prototype testing• Explain the framework of “jobs to be done” as used during qualitative research• Narrow scope and choose which feature(s) to test first using the RICE framework
A/B TEST & MULTIVARIATE TEST	<ul style="list-style-type: none">• Explain the benefits and drawbacks of A/B testing• Explain the benefits and drawbacks of multivariate testing• Determine what type of test is appropriate given feature(s) of interest• Determine what user actions should be tracked during A/B and multivariate tests• Explain methods to create unbiased control and test groups of users• Apply the correct statistical methods to explain the difference between the experimental and control group data and make a decision

Our Nanodegree Programs Include:



Pre-Assessments

Our in-depth workforce assessments identify your team's current level of knowledge in key areas. Results are used to generate custom learning paths designed to equip your workforce with the most applicable skill sets.



Dashboard & Progress Reports

Our interactive dashboard (enterprise management console) allows administrators to manage employee onboarding, track course progress, perform bulk enrollments and more.



Industry Validation & Reviews

Learners' progress and subject knowledge is tested and validated by industry experts and leaders from our advisory board. These in-depth reviews ensure your teams have achieved competency.



Real World Hands-on Projects

Through a series of rigorous, real-world projects, your employees learn and apply new techniques, analyze results, and produce actionable insights. Project portfolios demonstrate learners' growing proficiency and subject mastery.

Our Review Process

Real-life Reviewers for Real-life Projects

Real-world projects are at the core of our Nanodegree programs because hands-on learning is the best way to master a new skill. Receiving relevant feedback from an industry expert is a critical part of that learning process, and infinitely more useful than that from peers or automated grading systems. Udacity has a network of over 900 experienced project reviewers who provide personalized and timely feedback to help all learners succeed.



Vaibhav
UDACITY LEARNER

"I never felt overwhelmed while pursuing the Nanodegree program due to the valuable support of the reviewers, and now I am more confident in converting my ideas to reality."

now at
CODING VISIONS INFOTECH

All Learners Benefit From:



Line-by-line feedback for coding projects



Industry tips and best practices



Advice on additional resources to research



Unlimited submissions and feedback loops

How it Works

Real-world projects are integrated within the classroom experience, making for a seamless review process flow.

- Go through the lessons and work on the projects that follow
- Get help from your technical mentor, if needed
- Submit your project work
- Receive personalized feedback from the reviewer
- If the submission is not satisfactory, resubmit your project
- Continue submitting and receiving feedback from the reviewer until you successfully complete your project

About our Project Reviewers

Our expert project reviewers are evaluated against the highest standards and graded based on learners' progress. Here's how they measure up to ensure your success.

900+

Expert Project Reviewers

Are hand-picked to provide detailed feedback on your project submissions.

1.8M

Projects Reviewed

Our reviewers have extensive experience in guiding learners through their course projects.

3

Hours Average Turnaround

You can resubmit your project on the same day for additional feedback.

4.85 /5

Average Reviewer Rating

Our learners love the quality of the feedback they receive from our experienced reviewers.



UDACITY
FOR ENTERPRISE

Udacity © 2020

2440 W El Camino Real, #101
Mountain View, CA 94040, USA - HQ

For more information visit: www.udacity.com/enterprise