

Commerce Data Academy: A Case Study in Data Science Education

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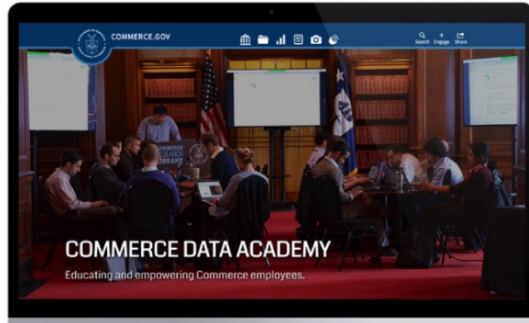


Commerce Data Academy

<https://www.commerce.gov/page/commerce-data-academy>

- Started as a pilot project in February 2016; formal launch was May 5, 2016
- Initially offered classes in Agile Development, HTML & CSS, Storytelling with Data, and Excelling at Excel
- Received 422 registrations for first 4 classes
- 90% attendance rate

About the Courses



- Offered three types of courses
- Materials available on GitHub
- Classes recorded, transcribed, and posted on DOC's YouTube channel

Data Science (Python and R)

- Beginner, intermediate, and advanced courses
- Short courses
- Data Science for Leadership
- Internship/immersive experience
- Data Analysis, Machine Learning, Data Wrangling, Data Storytelling, Deep Learning

Software Engineering

- Beginner, intermediate, and advanced courses offered
- Short courses
- Software Carpentry
- Cybersecurity for Managers
- Internship/immersive experience
- Git and GitHub, JavaScript, jQuery

User Experience (UX)/User Interface (UI) Design

- Introductory courses offered
- Short courses
- Design and Photoshop
- Qualitative Data Collection
- User Experience Design

Students

- Short courses: DOC employees and contractors
- Data Science for Leaders: senior- and upper-level management
- In-Residence program: select DOC employees
- Unpaid internships: local college and high school students

Instructors and Instructional Providers

- General Assembly
- Data Society
- Commerce Data Service Staff
- NIST staff
- Software Carpentry volunteers
- U.S. PTO staff

Course Durations

- Short courses=3 hours
- Software Carpentry=2 full days
- Data Science for Leaders=8 1-hour sessions
- In-Residence Program=3-4 months total (1-month bootcamp + 3-month residency)
- Internships=3-6 months long

Library Partnership

- Hosted short courses
- Advertised courses in newsletter
- Acquired new books and displayed them



HR/Professional Development

- Attended Learning Resource Coordinators' meetings
- Met with leadership from bureaus
- Input classes into DOC's Learning Management System (LMS)

Marketing

- Distributed flyers
- Commerce Data Academy website
- All-staff Email Announcements
- EventBrite and Google Forms for registration

Contracting

- Developed a Blanket Purchasing Agreement (BPA)
- Researched available instructors and instructional models
 - Data Incubator
 - Data Carpentry
 - Bootcamps
 - MOOCs

Results

- Started as a pilot; built an entire program.
- 38 short courses and leadership courses in 1 year to 1,500 unique DOC employees.
- Trained 15 employees with in-residence program.
- Provided internships for 3 college and 2 high school students.

In-Residence Program

- Staff applied to participate; selected 15 people
- Residents attended 4-week bootcamp
- Worked with bureaus to identify problem, dataset, and potential solution
- Residents spent 3 months working directly with CDS staff
- Products implemented in bureaus

Lessons Learned: Roadblocks/Challenges

- Technology
- Infrastructure
- Contracting
- Resources
- Patience



Source: Photo by Matthew Hamilton on Unsplash

Positives

- FedScoop 50 award for Tech Program of the Year in 2016
- Continuing high demand for new and repeated courses
- Built a learning community
- Helped employees understand what's possible with data

Ideals

- Comprehensive curriculum & certification
- Beginning, intermediate, advanced levels
- In-house datasets & relevant case studies
- Performance metrics
- Blended learning
- Multiple formats for busy schedules
- Long-term learning opportunities
- Build career pipeline and data capacity

Agencies and Companies with Similar Programs

Census Academy <https://www.census.gov/academy>

Health and Human Services

<https://datasociety.com/case-studies/hhs/>

Northrup Grumman <https://datasociety.com/case-studies/northrop-grumman/>

CapitalOne Tech College

<https://medium.com/capital-one-tech/from-the-cios-view-building-a-nimble-learning-organization-f0f2d64506a>

Additional Resources

- [Commerce Data Academy Archive Website](#)
- [Empowering Commerce Employees with the Latest Data Skills](#)
- [An Experiment in Data Skills Training - The Commerce Data Academy](#)
- [Commerce offers feds data, coding training with new Data Academy](#)

Additional Resources, cont'd

- [U.S. Department of Commerce Opens Data Academy for Data Driven Decision Training](#)
- [Commerce Data Academy – 2016 Federal Tech Program Of The Year](#)
- [Commerce, PTO launch new data training program, patent portal](#)
- [Commerce Department creates in-house coding classes for employees](#)

Additional Resources, cont'd.

GitHub Repository:

<https://github.com/CommerceDataService/DataAcademy>

National Neighborhood Indicators
Partnership (NNIP):

<https://www.neighborhoodindicators.org/data-tech/course-catalog/introduction-data-analysis-r>