

# Analytics, BS (Oakland)

Employers seeking analytics professionals with “moderate” levels of data analysis skills - typically positions at the bachelor’s level – most often prefer candidates with *Analytics* as a field of study. Skills frequently required in candidates are data analysis and the ability to interpret and communicate data analysis results to others, problem solving, mastery of spreadsheets, analysis tools, statistical software, relational databases as well as programming language. The general demand for Teamwork/Collaboration and Project Management reflects the need for employers to find analytics professionals with general business skills which can be used in a variety of function areas.

The Bachelor of Science in Analytics helps to meet the demand from employers with an undergraduate program and entry level education requirements that prepares learners as data analyst practitioners capable of applying data analysis methods, technological, professional, and strategic expertise necessary for supporting decision making in organizations. With emphasis on experiential learning, the program provides dynamic opportunities for learners with varying degrees of work experience to practice their knowledge both globally and collaboratively while implementing effective data analysis concepts to real-life company demands.

The program has general foundation courses (including mathematical and philosophical logic), specific data analysis foundation courses, major required courses, as well as a variety of elective courses on diverse domain areas.

## Program Requirements

Complete all courses listed below unless otherwise indicated.

## Universitywide Requirement

Minimum 120 total semester hours required

Minimum 2.000 GPA required

Students must earn a minimum of 60 Northeastern University semester hours in order to receive a bachelor’s degree.

*Note:* Individual program requirements may exceed the above minima.

## CPS Undergraduate Core Requirements

All College of Professional Studies undergraduate students are required to complete the CPS Undergraduate Core Requirements (<https://catalog.northeastern.edu/professional-studies/university-academics/general-education-requirements/>).

## Foundation Courses

30 semester hours required

| Code                                   | Title                                                                        | Hours |
|----------------------------------------|------------------------------------------------------------------------------|-------|
| <b>Computer Engineering Technology</b> |                                                                              |       |
| CET 2200                               | Data Structures and Algorithms                                               | 3     |
| <b>English</b>                         |                                                                              |       |
| ENG 1105<br>and ENG 1106               | College Writing 1<br>and Lab for ENG 1105                                    | 4     |
| ENG 1107<br>and ENG 1108               | College Writing 2<br>and Lab for ENG 1107                                    | 4     |
| ENG 3105<br>and ENG 3106               | Writing for the Professions: Science and Engineering<br>and Lab for ENG 3105 | 4     |
| <b>Information Technology</b>          |                                                                              |       |
| ITC 2016                               | End-User Data Analysis Tools                                                 | 3     |
| <b>Management</b>                      |                                                                              |       |
| MGT 1100<br>or MGT 2210                | Introduction to Business<br>Information within the Enterprise                | 3     |
| <b>Mathematics</b>                     |                                                                              |       |
| MTH 1100                               | College Algebra                                                              | 3     |
| MTH 2400                               | Technology and Applications of Discrete Mathematics                          | 3     |
| <b>Philosophy</b>                      |                                                                              |       |
| Complete one of the following:         |                                                                              | 3     |
| ITC 3620                               | Legal and Ethical Issues in Cybersecurity                                    |       |

|          |                                           |
|----------|-------------------------------------------|
| PHL 2100 | Business Ethics                           |
| PHL 2140 | Ethical Issues in Science and Engineering |

## Major Required Courses

33 semester hours required

| Code                          | Title                                                        | Hours |
|-------------------------------|--------------------------------------------------------------|-------|
| <b>Analytics</b>              |                                                              |       |
| ALY 2010                      | Probability Theory and Introductory Statistics               | 3     |
| ALY 2100                      | Introduction to Programming for Data Analytics               | 3     |
| ALY 3015                      | Intermediate Statistics for Data Analytics                   | 3     |
| ALY 3040                      | Data Mining                                                  | 3     |
| ALY 3070                      | Communication and Visualization for Data Analytics           | 3     |
| ALY 3110                      | Big Data and Web Mining                                      | 3     |
| ALY 4000                      | Analytics Using R                                            | 3     |
| ALY 4020                      | Predictive Analytics Using R and Python                      | 3     |
| <b>Information Technology</b> |                                                              |       |
| ITC 2300                      | Database Management Systems                                  | 3     |
| ITC 3320                      | Data Warehousing Technologies                                | 3     |
| ITC 3300<br>or ITC 3310       | Structured Query Language (SQL)<br>Exploring NoSQL Databases | 3     |

## Professional Electives

| Code                                                             | Title                                                          | Hours |
|------------------------------------------------------------------|----------------------------------------------------------------|-------|
| Complete 30 semester hours in the following subject areas below: |                                                                | 30    |
| ALY, AVM, BTC, CET, FIN, GET, HMG, ITC, LDR, MGT, MKT, PJM       |                                                                |       |
| Suggested Electives:                                             |                                                                |       |
| ACC 2100                                                         | Financial Accounting                                           |       |
| HRM 2320                                                         | Human Resources Management                                     |       |
| MKT 2100                                                         | Principles of Marketing                                        |       |
| PJM 1100                                                         | Project Management Fundamentals - Project Initiation and Close |       |

## Capstone

3 semester hours required

| Code     | Title              | Hours |
|----------|--------------------|-------|
| ALY 4850 | Analytics Capstone | 3     |

## Concentration or Electives Option

A concentration is not required. Students may complete the electives option in lieu of the concentration.

- Applied AI (p. 2)
- Electives Option (p. 3)

*Note:* Please consult with your advisor.

### CONCENTRATION IN APPLIED AI

| Code                                                                                                   | Title                                         | Hours |
|--------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------|
| Complete the following courses:                                                                        |                                               |       |
| ALY 2550                                                                                               | Generative AI                                 | 3     |
| ALY 3510                                                                                               | AI Foundations: An Interdisciplinary Approach | 3     |
| ALY 4520                                                                                               | MLOps: Operationalizing AI                    | 3     |
| ALY 4570                                                                                               | Social Impacts and Issues of AI               | 3     |
| Complete one ALY or ITC course that has not been taken to fulfill major or concentration requirements. |                                               | 3     |

**ELECTIVES OPTION**

| Code                                                                                                                            | Title        | Hours     |
|---------------------------------------------------------------------------------------------------------------------------------|--------------|-----------|
| Complete a minimum of 24 semester hours to reach 120 semester hours. Courses from the major may not double count for Electives. |              |           |
| <b>Plan of Study</b>                                                                                                            |              |           |
| <b>Term 1</b>                                                                                                                   | <b>Hours</b> |           |
| MTH 1100                                                                                                                        |              | 3         |
| CET 2200                                                                                                                        |              | 3         |
| PHL 2100, 2140, or ITC 3620                                                                                                     |              | 3         |
| MGT 1100 or 2210                                                                                                                |              | 3         |
| ENG 1105<br>and ENG 1106                                                                                                        |              | 4         |
|                                                                                                                                 |              | <b>16</b> |
| <b>Term 2</b>                                                                                                                   | <b>Hours</b> |           |
| ITC 2300                                                                                                                        |              | 3         |
| ALY 2010                                                                                                                        |              | 3         |
| ENG 1107<br>and ENG 1108                                                                                                        |              | 4         |
| MTH 2400                                                                                                                        |              | 3         |
| Open Elective                                                                                                                   |              | 3         |
|                                                                                                                                 |              | <b>16</b> |
| <b>Term 3</b>                                                                                                                   | <b>Hours</b> |           |
| ALY 3015                                                                                                                        |              | 3         |
| ITC 2016                                                                                                                        |              | 3         |
| ENG 3105<br>and ENG 3106                                                                                                        |              | 4         |
| Open Elective                                                                                                                   |              | 3         |
| Open Elective                                                                                                                   |              | 3         |
|                                                                                                                                 |              | <b>16</b> |
| <b>Term 4</b>                                                                                                                   | <b>Hours</b> |           |
| ALY 2100                                                                                                                        |              | 3         |
| ALY 3040                                                                                                                        |              | 3         |
| Concentration or major elective                                                                                                 |              | 3         |
| Concentration or major elective                                                                                                 |              | 3         |
| Open Elective                                                                                                                   |              | 3         |
|                                                                                                                                 |              | <b>15</b> |
| <b>Term 5</b>                                                                                                                   | <b>Hours</b> |           |
| ALY 3070                                                                                                                        |              | 3         |
| ITC 3320                                                                                                                        |              | 3         |
| Concentration or major elective                                                                                                 |              | 3         |
| Concentration or major elective                                                                                                 |              | 3         |
| Open elective                                                                                                                   |              | 3         |
|                                                                                                                                 |              | <b>15</b> |
| <b>Term 6</b>                                                                                                                   | <b>Hours</b> |           |
| ALY 3110                                                                                                                        |              | 3         |
| ALY 4000                                                                                                                        |              | 3         |
| ITC 3300 or 3310                                                                                                                |              | 3         |
| Concentration or major elective                                                                                                 |              | 3         |
| Open Elective                                                                                                                   |              | 3         |
|                                                                                                                                 |              | <b>15</b> |
| <b>Term 7</b>                                                                                                                   | <b>Hours</b> |           |
| ALY 4020                                                                                                                        |              | 3         |

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|                                 |              |
|---------------------------------|--------------|
| Concentration or major elective | 3            |
| Concentration or major elective | 3            |
| Concentration or major elective | 3            |
| Open Elective                   | 3            |
| <hr/>                           |              |
| 15                              |              |
| <b>Term 8</b>                   | <b>Hours</b> |
| ALY 4850                        | 3            |
| Concentration or major elective | 3            |
| Concentration or major elective | 3            |
| Open Elective                   | 3            |
| <hr/>                           |              |
| 12                              |              |
| <hr/>                           |              |
| Total Hours: 120                |              |