

Planning and Approval of New Degree Programs CPS Northeastern University

Overview

The purpose of the BS in Analytics is to attend a growing demand of junior professionals on data analytics in several industries, especially marketing, finance, management and health and to maintain a steady growth on enrollments given the high market demand and the lack of such program on the Boston area.

The Market Analysis for the BS in Analytics conducted by Office of Strategic Research & Analysis points to an opportunity to be pioneer in the Boston metro area with this kind of program:

“A number of key Northeastern competitors such as SNHU, NYU, and ASU, offer bachelor’s degree completion programs in analytics, but the market does not seem overly crowded. Northeastern would have the opportunity to be a first mover in the Boston metro area for an adult-focused, flexible bachelor’s in analytics. There is also limited competition across regional campus sites suggesting this proposed degree would be a viable expansion opportunity for Northeastern.”

The BS in Analytics (BSA) offered by CPS will have general foundation courses, specific data analysis foundation courses, major required courses (such as Introduction to Analytics, Predictive Analytics, Introduction to Programming, Data Visualization and Communication, Data Warehousing and Data Mining, and SQL), as well as elective courses. Initially, we do not plan to add any minor, but to offer professional electives in at least three areas pointed by the market research as having the most demand for data analyst positions: business, marketing and finance.

The proposed BSA becomes unique by offering courses that will develop the students’ reasoning, analytics and argumentation skills, essential abilities for a successful data analyst. It also offers a comprehensive database foundation that most of the existing bachelors in analytics do not.

It aligns with the vision of NEU 2025 by promoting the development of the skills to become agile, adaptable, and creative problem solvers demanded by the 21st century’s professional market and lifestyle. The BSA immerses the students in humanics—the integration of technological, data, and human literacies—in the most literal aspect; it is “humanics” by definition. It also infuses experiential learning in most of its required courses and with great rigor at the capstone one.

Preliminary Proposal

1. Program and its Purpose

The proposed BS in Analytics (BSA) is part of the Analytics & Enterprise Intelligence domain. The purpose of the BSA is to attend to the growing demand for junior professionals working in data analytics in several industries, especially marketing, finance, management and health, and to maintain a steady growth on enrollments given the high market demand and the lack of such program on the Boston area. The attached Market Analysis has a comprehensive analysis of this market opportunity.

The BSA is based on the premise that students need to acquire basic data and information analytical skills, as well reasoning skills. This can be accomplished by emphasizing mathematical and philosophical logic, which lay out the foundation for argumentation, reasoning, and analytical thinking. With those skills as a foundation, students need to learn about data structure, data mining, database management, warehousing techniques and programming in order to learn how to fetch and process data for analysis. Once that is mastered, students need to draw meaning from the data, run statistical analysis and communicate the story told by the data through visualization tools. Learning how to program with R and Python is necessary to become a successful data analyst; learning basics of project management and leadership are important assets in the data analyst toolkit. The program will be delivered online to provide flexibility to working professionals.

The proposed start date for the BSA is Fall 2019; it is designed as an eight semester program, requiring successful completion of 120 credit hours. It will have nine new BSA courses (ALY), with the remaining courses drawn from the CPS bachelor's portfolio. Please see attachment A for the proposed curriculum with the course map, NU path, and plan of study.

2. Alignment with University mission

The BSA supports the mission of NEU by infusing experiential learning in most of its required courses and with great rigor at the capstone. It also aligns with NEU 2025 vision by promoting the development of the skills to become agile, adaptable, and creative problem solvers demanded by the 21st century's professional market and life style. The BSA immerses the students in humanics—the integration of technological, data, and human literacies—in the most literal aspect; it is “humanics” by definition.

3. Enrollment Forecast and Implementation Plan

From 2014 through 2018 (Figure 1), the BS in Management and BS in Information Technology offered at CPS averaged yearly growth of 4.6% and 11% respectively. The BS in IT provides the best model for projecting BSA enrollments within CPS, so a yearly 11% growth rate is reasonable, but since the market demand is very high and should yield a higher yearly growth, we factored a 20% yearly growth rate. Figure 2, provides two enrollment scenarios, one with a starting cohort of 30 students and the other with 50 students.

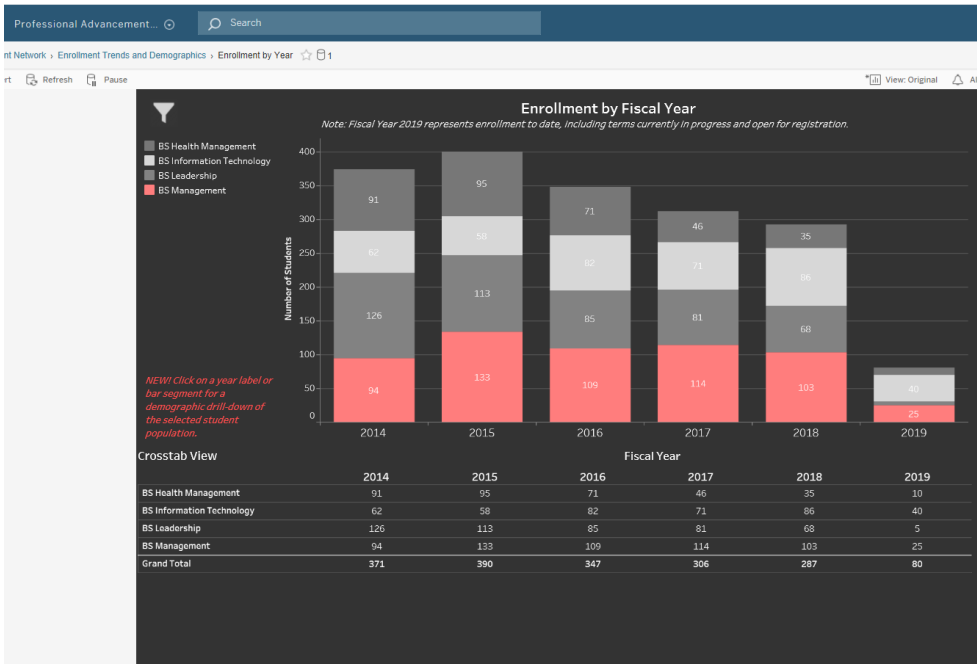


Figure 1

New BSA Students - 20% of yearly growth

2019	2020	2021	2022	2023
30	36	43	52	62
50	60	72	86	103

Figure 2

The BSA will be launched initially in Boston, followed by regional campuses in the future (pending state licensure). The chart below shows the Initial and Future plans for launching the BSA by modality and location.

Launch Plan by Modality and Campus Location				
	BOS	CHAR	SEA	SV
On-ground	F		F	F
Hybrid/Blended	F	F	F	F
Online	I			

The program information and marketing materials for the BSA are intended to be listed on websites of programs such as: BS in IT, BS in MGT, BS in Leadership.

Appropriate courses, such as Introduction to Analytics, Predictive Analytics and Data Visualization & Communication, will be offered as electives in current undergraduate programs like BS in IT and BS in PJM.

The only Northeastern undergraduate program that might cause confusion in terms of similarity with the BSA is the BS in Data Science offered by the College of Computer and Information Science; however, the CCIS degree is more technical and focused on database science.

The Market Analysis for the BS in Analytics conducted by Office of Strategic Research & Analysis makes the case for a demand in the Boston area for this kind of Bachelor's program:

“While the master's market for analytics is well established, the bachelor's market is more emergent in nature and would likely offer a smaller-scale opportunity compared to the MPS in Analytics. Graduates of CPS' proposed BS in Analytics would be positioned to succeed in a robust analytics job market. There is little evidence to directly gauge consumer interest in analytics bachelor's degrees, but employer surveys note that job candidates with analytics education backgrounds are attractive in the hiring process for analytics positions. Further, conferral trends for analytics related programs are relatively strong. “

This proposal has the support and approval of Philomena Mantella and Mary Loeffelholz, especially in view of a combined offering with a BS in PJM. Our collective input received from industry points to this being of high interest by future employers. Please see market analysis (attachment B).

There is a growing need for analytics professionals and/or analytical competencies/skills at every level: from the CEO to the Analytics entry job in all industries. Currently, the highest number of openings are in three sectors: finance and insurance, information technology, and professional, scientific, and technical services. The BS in Analytics seeks to prepare students to be ready for entry-level jobs in Analytics, as well as being prepared to move into the Masters in Professional Studies in Analytics for advanced training.

Companies need to build a pipeline of talent that can tackle a multitude of challenges in different industries: with the BS in Analytics, CPS/Northeastern is staging this learning and helping students stack skills to achieve their career goals as life-long learners.

The proposed BSA provides the foundation for a successful data analyst and allows students to take elective courses in their preferred domain of expertise. For example, if they want to be a data analyst in Project Management, they can take at least 3 electives from the BS in PJM to achieve industry-specific skills and competencies.

4. Programs offered by competitors

The Southern University of New Hampshire is the closest university offering the same kind of degree, but it does not offer any coursework on philosophy, and therefore might not prepare the future data analyst to have strong reasoning and argumentation skills. It does not seem to emphasize communicating with Data, or Leadership/Data Governance, or focus on the ethics of

information. (<https://www.snhu.edu/admission/academic-catalogs/coce-catalog#/programs/418kEN8Fg>).

New York University has a [BS in Applied Data Analytics and Visualization \(STEM\)](#) which emphasizes IT networking and data visualization, but does not seem to introduce programming or any programming language such as Python or R. The liberal arts credits are not previously defined:

([http://scps.nyu.edu/content/scps/academics/departments/mcghee/undergraduate/bachelors/bs-applied-data-analytics-and-visualization/core-major-curriculum.html#Liberal Arts Electives](http://scps.nyu.edu/content/scps/academics/departments/mcghee/undergraduate/bachelors/bs-applied-data-analytics-and-visualization/core-major-curriculum.html#Liberal_Arts_Electives)).

Ohio Christian University does not offer comprehensive statistic course work; it has unnecessary IT networks courses and does not seem to have emphasis on reasoning and argumentation skills: https://www.ohiochristian.edu/adult-graduate-online/bachelor-science_/bs-data-analytics).

Rasmussen College seems to put too much emphasis on programming in C and Java, which are not the most demanded languages for a data analyst: (<https://www.rasmussen.edu/degrees/technology/data-analytics/bachelors/>).

None of the competing bachelor's degrees offer the same varied professional electives as the proposed program.

The BS in Analytics does not offer threat to the current portfolio of CPS bachelor's degrees; instead, it broadens the scope of our existing BS in IT, PJM, MGT, MKT, FIN, HMG, CET, LDR and BTC, since all those programs can offer electives from the proposed BS in Analytics.

5. Resources to support the program

The current full-time faculty working in analytics will dedicate a portion of their workload to the BSA program during its first year or until enrollment numbers require a new full-time faculty to be hired. The plan is to hire a third faculty for the analytics domain by 2021 to support this bachelor's degree. At the moment there is an opening for a second full-time position in Seattle, and those two faculty will support the launch of the BSA.

There will be an increase in revenue by the new enrollments at the bachelor's level; the BSA will support CPS by offering another high-demand program to our degree-completion students.

6. Conclusion

The initial benefit of offering this degree is centered on meeting the high demand for data science and analytics skills, with new job postings projected to reach 2.72M by 2020. The BS in Analytics seeks to prepare students to be ready for entry-level jobs in Analytics, by teaching the basics in all the major competencies a successful junior analyst need to possess, as well as being prepared to move into the Master's in Professional Studies in Analytics.

