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Innovative Undergraduate Degree Programs in Data Science and Business Analytics

Shahram Taj and Reinaldo Sanchez-Arias
Department of Data Science and Business Analytics
Florida Polytechnic University
Lakeland, FL 33805, USA
staj@floridapoly.edu, rsanchezarias@floridapoly.edu

Abstract

Department of Data Science and Business Analytics established in January 2018 in the College of Innovation and Technology at Florida Polytechnic University. Two highly innovative undergraduate degree programs are offered: Bachelor of Science in Data Science and Bachelor of Science in Business Analytics.

Data Science is an interdisciplinary field that uses scientific methods, processes, algorithms and systems to extract knowledge and insights from data in various forms, both structured and unstructured. New computational and analytic approaches to a vast array of forms, scales, and sources of data are now critical to research, decision-making, and action. The rigorous curriculum in Data Science program focuses on the fundamentals of applied mathematics, computer science, probability, statistics, optimization, and machine learning while incorporating real-world examples.

Business Analytics is analytics expertise with a business focus. It is a cutting-edge program especially designed to prepare students for top jobs in today's technology and data intensive business world. The curriculum provides extensive instruction in the disciplines of optimization, mathematical modeling, probabilistic and statistical analysis, simulation, computer programming, database, data and text mining, and cloud computing. The curriculum also includes classes in subject areas you would expect to find in a more traditional business program, such as economics, accounting, finance, operations management, supply chain management, entrepreneurship, business law, negotiation, project management, and strategy.

The curricula of two programs are intertwined by first year common and several common courses and senior yearlong industry project. In this paper we highlight curriculum development along with learning objectives.

Keywords
Data Science, Data Analytics and Big Data, Business Analytics

Biographies

Shahram Taj is a Professor and the Chair of the Department of Data Science and Business Analytics at Florida Polytechnic University. Prior to joining Florida Poly, he was Professor and Chair of the Department of Management and Marketing at Lawrence Technological University in Michigan from 2013 to 2016. He is an accomplished academician, executive consultant, and with an expertise in business model innovation, lean and sustainable operations, strategic management, production systems design, systems optimization/simulation, and supply chain management. Dr. Shahram Taj was the Cameron Endowed Chair of Management and Marketing at the University of St. Thomas in Houston from 2008 to 2013. He previously taught at the University of Detroit Mercy from 1987 to 2008 and earned the University of Detroit Mercy President's Award for Faculty Excellence. He also taught in the Global Entrepreneurial MBA Program at Fu Jen Catholic University in Taiwan from 2004 to 2006 and was a visiting professor at Peking University in China teaching in the Beijing International MBA Program in 2004. Dr. Taj has conducted over 100 projects at Ford, Visteon, New Venture Gear, GM-Holden, and Baker Hughes. The projects have covered productivity improvements, implementing lean manufacturing, and optimizing process design.

Reinaldo (Rei) Sanchez-Arias is an assistant professor in the Department of Data Science and Business Analytic at Florida Polytechnic University. He earned his doctorate at The University of Texas at El Paso, he was involved in research projects for the Army High Performance Computing Research Center in collaboration with a group at Stanford University. He interned at Repsol Oil Company USA during the summer of 2011, where he worked with the research and innovation geophysics department. Rei completed a postdoctoral researcher appointment for the AHPCRC working in reduced order models for underbody-blast simulations and compression techniques. From 2014 to 2016, Sanchez-Arias was part of the applied mathematics department at Wentworth Institute of Technology (WIT) in Boston, Massachusetts, where he taught courses for applied mathematics and engineering students, nominated and served as the faculty advisor for the Society of Industrial and Applied Mathematics (SIAM) student chapter, coordinated linear algebra and capstone courses, and helped develop different elective courses in applied mathematics. Dr. Sanchez-Arias served as the program director for the MS degree in Big Data Analytics at St. Thomas University in Miami from 2016 to 2018. Rei areas of interest include pattern recognition, computational linear algebra, data analysis, and operations research.