Analytics Course Overviews

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Concentration

Please refer to the official Business Analytics and Management Science (BAMS) website for official information on the analytics concentration. Here, we'll provide breakdowns of key course offerings and give a preview of what you'll learn in each course.

Business Modeling: Prescriptive Analytics

- **Module:** Mod 3
- **Skills Learned:** Optimization, Simulation, Modeling
- **Course Summary:** The course focuses on leveraging data directly for informed business decisions, contrasting with predictive analytics. It explores various modeling techniques applicable across functional areas like marketing and finance. Topics include optimization, simulation, and regression models for decision-making.
- **Tools Used:** Excel

Business Statistics and Data Analytics (Core - Mod 1)

- **Module:** Core (Mod 1)
- **Skills Learned:** Statistics
- **Course Summary:** This course delves into essential statistical techniques for business decision-making, emphasizing practical applications. Topics include data analysis, hypothesis testing, and regression. Students gain proficiency in statistical analysis and Excel, vital for future managerial roles and MBA expectations.
- **Tools Used:** Excel

Customer Journeys

- **Module:** Mod 2
- **Skills Learned:** ???
- **Course Summary:** This course explores customer relationship management (CRM) principles and tools to enhance customer loyalty and lifetime value. Topics include customer acquisition, resource allocation for retention, and identifying high-value customers. Leveraging CRM systems, students analyze customer data to inform strategic decisions, connecting data-driven insights with relationship strategies for modern business success.
- **Tools Used:** ???

Data Analytics and Decision Making

- **Module:** Mod 3
- **Skills Learned:** Data Preparation, Exploration, and Analysis
- **Course Summary:** This course equips students with analytical techniques to enhance decision-making in modern organizations. Through hands-on exercises and real-world cases, students learn data mapping

and preparation, statistical analysis, and decision-making skills. The course emphasizes understanding datasets, selecting appropriate analytical methods, and integrating human judgment with analytical insights to address real-world decision problems effectively.
- **Tools Used:** JMP

Data Analytics: Tools and Opportunities

- **Module:** Mod 4
- **Skills Learned:** Machine Learning, Predictive Analytics
- **Course Summary:** This course provides advanced machine learning and data analytics skills for leading analytics-driven organizations. Topics include fundamental data analysis concepts, advanced predictive analytics, and hands-on work with tools like neural networks and artificial intelligence. Case discussions cover strategic opportunities and challenges in data-driven business models, with grading based on problem sets, case write-ups, and a final project.
- **Tools Used:** JMP

Data Science and AI in Business

- **Module:** Mod 3
- **Skills Learned:** Machine Learning, AI
- **Course Summary:** This course explores the transformative impact of Data Science and Artificial Intelligence (AI) on modern business. Emphasizing practical applications over theory, students gain hands-on experience in data procurement, preprocessing, model selection, and assessment. Using Python programming and cloud computing, students learn to leverage cutting-edge AI tools like ChatGPT to analyze vast datasets and derive actionable insights. By the course's end, students will demonstrate proficiency in applying data-driven perspectives to managerial decision-making and harnessing AI's potential in various business applications.
- **Tools Used:** Python, ChatGPT

Decision Making in the Energy Industry

- **Module:** Mod 4
- **Skills Learned:** Modeling, Optimization
- **Course Summary:** This course applies management science techniques to solve complex problems in the energy industry. Through spreadsheet modeling, students learn to identify objectives, constraints, and uncertainties, optimizing decisions to minimize costs, maximize profits, and control risks. Sample problems include refinery operations, competitive bidding, resource allocation, and electricity pricing. While focused on energy, the skills learned are applicable across various industries.
- **Tools Used:** Excel

Digital Marketing and Social Media

- **Module:** Mod 4
- **Skills Learned:** ???
- **Course Summary:** This course offers a comprehensive understanding of digital marketing and social media strategies for success in today's digital landscape. Suitable for various professionals, it covers topics like social media marketing, search engine marketing, and display advertising. Through case studies and hands-on projects, students gain practical experience in engaging customers across platforms like Facebook, Instagram, and TikTok. By course end, students emerge equipped with practical tools and a solid understanding of digital marketing to navigate this evolving industry.
- **Tools Used:** ???

Healthcare Analytics

- **Module:** Mod 4

- **Skills Learned:** ???
- **Course Summary:** This course introduces students to the transformative impact of analytics and data in healthcare. It addresses the shift towards data-driven decision-making in the healthcare ecosystem, emphasizing the need for business leaders to harness clinical, financial, and administrative data for strategic planning and operations. Ideal for future Strategy Consultants, Operations Managers, and Directors in healthcare, topics include quality-based reimbursement, population health management, and value-based contracting. Students engage in hands-on projects to apply their learning.
- **Tools Used:** ???

Investments

- **Module:** Mod 3
- **Skills Learned:** ???
- **Course Summary:** This course provides a rigorous study of investment management theory and empirical evidence. Topics include financial securities characteristics, risk-reward analysis, portfolio selection, asset allocation, asset pricing models, market efficiency, and behavioral finance. Emphasizing quantitative analysis, students acquire analytical tools for making sound investment decisions and understanding financial securities valuation paradigms.
- **Tools Used:** ???

Marketing Research

- **Module:** Mods 1, 3
- **Skills Learned:** ???
- **Course Summary:** This course delves into systematic information gathering and analytics for making marketing decisions. Students learn to identify opportunities, design products, packaging, and promotion plans, and understand customer values and preferences. Emphasizing the role of marketing research, the course provides exposure to quantitative tools and techniques to equip students with skills for modern marketing management.
- **Tools Used:** JMP, ChatGPT

People Analytics

- **Module:** Mod 3
- **Skills Learned:** ???
- **Course Summary:** This course explores the data-driven approach to managing people at work, known as people analytics. Students learn to apply sophisticated analysis to issues like recruiting, performance evaluation, and compensation to achieve strategic organizational goals. Topics include human capital management processes, organizational context, and analytical frameworks. Through critical analysis of real-world practices, students develop problem-solving and communication skills essential for effective leadership in leveraging human capital.
- **Tools Used:** ???

Pricing

- **Module:** Mod 4
- **Skills Learned:** ???
- **Course Summary:** This course equips students with the skills to address strategic and tactical pricing issues across various professional roles. Drawing on analytic marketing techniques and economic theory, it explores optimal pricing decisions and profit-maximizing strategies. Topics include pricing strategy fundamentals, tactics, and advanced topics such as customer-specific pricing and modern data-driven pricing practices. Through lectures, case discussions, and simulations, students apply their learning to practical situations