

BUDT - DECISION AND INFORMATION TECHNOLOGIES

BUDT700 Business Communication (1 Credit)

Consists of written and oral base-line assessments. Students will meet with Program administrators to receive feedback on these assessments and create an individualized development plan. Workshops and core course assignments, Smith-related activities and CMP assignments.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith School of Business.

Credit Only Granted for: BUDT758A or BUDT700.

Formerly: BUDT758A.

BUDT702 AI Augmented Database Management (2 Credits)

This course introduces the foundations of data management by integrating traditional database principles with contemporary artificial intelligence (AI), and analytics techniques. Students explore database management system (DBMS) architecture, the database environment, and data warehousing concepts within modern organizational contexts. The course emphasizes AI-enhanced data modeling using entity-relationship (ER) and relational models, principles of logical database design, normalization, and the application of intelligent analytics.

Students examine business rules and their role in ensuring data integrity, consistency, and governance. Practical components include structured query language (SQL), AI-assisted query generation and optimization to support data-driven decision-making. Additional topics may include distributed databases, web-based database services, cloud-based data environments, graph databases, and introductory data mining concepts.

Restriction: Must be admitted to the appropriate graduate business program; or permission of the Masters Programs Office at the Robert H. Smith School of Business.

BUDT703 Database Management Systems (3 Credits)

Introduction to the conceptual, logical and physical design of relational database systems and their use in business environments. Topics include information modeling and optimization via normalization; Structured Query Language (SQL); Data Warehousing.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith School of Business.

Credit Only Granted for: BUDT758Y OR BUDT703.

Formerly: BUDT758Y.

BUDT704 AI Augmented Data Processing and Analysis (3 Credits)

This course provides a comprehensive introduction to the world of data programming with Python, augmented by the power of Artificial Intelligence (AI). Designed for beginners, this course will equip students with the essential skills to analyze data, automate tasks, and build intelligent applications. Students will learn fundamental Python programming concepts, explore AI algorithms and techniques, and gain practical experience working with real-world data. Through hands-on labs and projects, students will discover how to leverage AI to extract meaningful insights from data, build AI-powered tools, and develop a deeper understanding of the growing role of AI in data science. No prior programming experience is required.

Restriction: Must be admitted to the appropriate graduate business program; or permission of the Masters Programs Office at the Robert H. Smith School of Business.

BUDT705 Data Visualization for Business (2 Credits)

An introduction to data visualization techniques. Data-driven decisions are increasingly embedded in business organizations, so professionals must be able to explore and communicate data with understandable and powerful visualizations.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith.

BUDT706 Social Media and Unstructured Data Analytics (2 Credits)

Firms operate in a world that is rapidly changing. Traditional product and service strategies are not sufficient when firms and consumers operate in a highly networked environment. Adoption of digital technologies is changing consumer behaviors and firms' competitive landscapes. Businesses need to craft strategies that leverage the vast amounts of data provided by the digital footprints of their customers. Predictive analytics, particularly social media and unstructured data analytics can provide clear, insightful, and actionable initiatives leveraging existing company data and data gathered from online channels and platforms. The course on social media and unstructured data analytics provides the conceptual understanding and analytical skills needed for businesses to succeed in today's rapidly changing environment. We will review concepts related to platforms, social media, network analytics and text analytics, and examine issues associated with business use of these technologies.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith School of Business.

BUDT721 Digital Transformation in Business (2 Credits)

Introduces students to the strategic role of digital transformation within businesses, and provides an overview for how major information technologies may be used to inform and transform the firm's strategic, operational, and tactical decisions. Topics discussed in the course include the strategic use of digital technologies to generate sustainable competitive value; the contributions of new forms of technology infrastructure; the evaluation of new technology investments and the resulting ROI; acquiring, managing and governing technological capabilities within the firm; understanding the role of enterprise systems and social technologies within the firm; and the management of disruptive technologies within and outside the firm.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith School of Business.

Credit Only Granted for: BUDT758E or BUDT721.

Formerly: BUDT758E.

BUDT722 Managing Digital Business Markets (2 Credits)

The objective is to understand the strategic and tactical issues involved in managing digital businesses and markets. Also, some of the characteristics of digital businesses and markets that make them unique and understand how companies can best manage them will be examined.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith.

Credit Only Granted for: BUDT758G or BUDT722.

Formerly: BUDT758G.

BUDT723 Business Process Analysis for IS (2 Credits)

Helps students gain a solid foundation in the concepts, processes, tools, and techniques needed in analyzing business processes and conducting information systems projects.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith.

BUDT724 Project Management in Dynamic Environments (2 Credits)

Addresses project management skills that are required by successful managers in increasingly competitive and faster-moving environments.

Examines fundamental concepts of successful project management, and the technical and managerial issues, methods, and techniques.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith.

BUDT730 Data Models and Decisions (3 Credits)

Analytical modeling of business decisions; uncertainty, risk and expected utility; regression modeling to infer relationships among variables.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith.

Credit Only Granted for: BUSI758B, BUDT758Q or BUDT730.

Formerly: BUDT758Q.

BUDT731 Data, Models, and Decisions Using R (2 Credits)

Analytical modeling of business decisions; uncertainty, risk and expected utility; regression modeling to infer relationships among variables.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith School of Business.

BUDT732 Decision Analytics (3 Credits)

Analytical modeling for managerial decisions using a spreadsheet environment. Includes linear and nonlinear optimization models, decision making under uncertainty and simulation models.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith.

Credit Only Granted for: BMGT732, BUDT758P or BUDT732.

Formerly: BMGT732 and BUDT758P.

BUDT733 Data Mining and Predictive Analytics (2 Credits)

With vast quantities of data being generated, including new types of data such as web traffic, social network data, and reviews and comments on websites, "big data" and "analytics" are important topics. Data, when used correctly, can create a competitive edge for firms. Advances in computing hardware and algorithms have improved the quality of predictions and effectiveness of predictive business applications. Expertise in working with data, and deep knowledge of data mining/machine learning methods, is a sought-after skill. This course introduces key tools and techniques of data mining: classification, prediction, cluster analysis, and text mining. The methods covered are linear and logistic regression, k-nearest neighbors, naive Bayes, classification and regression trees, ensemble methods, neural networks, k-Means and hierarchical clustering, and association rules. The course will focus on business applications, with examples from Marketing, Finance, Healthcare, and Operations.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith School of Business.

BUDT734 Data Mining and Predictive Analytics (3 Credits)

Data-driven decision-making is a key competitive advantage in today's business landscape. This course provides a foundational introduction to machine learning techniques and algorithms, equipping students with analytical and software tools to extract insights and create value from data. The course mainly focuses on predictive analytics methods, including linear models, decision trees, nearest neighbor classifiers, boosting, random forests, neural networks, probabilistic models, text analysis, complexity control, regularization, and model evaluation.

Additionally, students will explore unsupervised learning techniques such as clustering, collaborative filtering, and dimensionality reduction, with applications in customer segmentation and recommender systems. Through real-world business examples, students will gain hands-on experience using Python in applying machine learning to marketing, forecasting and operations domain.

Restriction: Must be admitted to the appropriate graduate business program; or permission of the Masters Programs Office at the Robert H. Smith School of Business.

BUDT738 Industry Seminar (0 Credits)

This experiential course will be offered in the Fall and Spring Semester of the first year to provide students exposure to career paths, real-world technology challenges faced by business and how these challenges are overcome. UMD Smith alumni will host weekly interactive learning discussions.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith School of Business.

Repeatable to: 0 credit.

BUDT740 Management of Information Systems (3 Credits)

To work together effectively for an organization's success, both business managers and IS managers must understand how to both manage and utilize information systems. This course explores management issues and opportunities of the IS function within organizations. Topics include e-business, protection of intellectual property and personal information, software development, IS operations, systems availability and business continuity, IS for multinational organizations, shadow IS organizations, business partnerships and alliances, and mergers, acquisitions, and divestitures.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith.

Credit Only Granted for: BUDT758J or BUDT740.

Formerly: BUDT758J.

BUDT741 Digital Health (2 Credits)

Healthcare is perhaps the latest industry to use technology to innovate and automate its business processes. The focus of the course is to provide a deep understanding to the current and emerging technologies in the healthcare industry. The course will also discuss the vagaries of healthcare data and the analytics techniques that are specific to the healthcare industry.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith.

Credit Only Granted for: BUDT758M or BUDT741.

Formerly: BUDT758M.

BUDT742 Machine Learning & Blockchain for FinTech (2 Credits)

Machine Learning is rapidly changing the financial services industries and Blockchain is poised to make fundamental changes to how the financial sector is structured and organized. The focus of the course is to provide a deep understanding for the current machine learning and emerging Blockchain technologies in the financial services industry.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith.

Credit Only Granted for: BUDT758I or BUDT742.

Formerly: BUDT758I.

BUDT744 Operations Analytics (2 Credits)

A firm can create competitive advantage through the efficient management of its operations. To do so, the firm must recognize and establish the strategic role of its operations within the organization. At the more detailed operational level, the firm must execute effectively and efficiently using data, mathematical models, and other quantitative tools. This course offers analytical tools and techniques that the firm can use for execution. We cover key concepts and tools of operations and supply chain analytics, including process and bottleneck analysis, capacity and aggregate planning, waiting line management, inventory models, risk pooling, distribution planning, and facility location and network design. These concepts and tools will be applied to both manufacturing and service operations problems.

Restriction: Must be admitted to the appropriate graduate business program; or permission of the Masters Programs Office at the Robert H. Smith School of Business.

BUDT748 Industry Practicum (3 Credits)

This capstone course will provide students an opportunity to work on a real-world project where they will work with a company to use technology to solve a business problem.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith School of Business.

BUDT751 Harnessing AI for Business (2 Credits)

Artificial Intelligence (AI) is penetrating our daily routines deeply and is revolutionizing almost every aspect of business. Firms are increasingly using technologies such as natural language processing, neural networks, and deep learning to generate deep insights. At the same time, AI algorithms are challenged by issues of bias, ethics, and transparency. This course aims to equip students with the essential knowledge of the current wave of AI. It uses a hands-on, learning-by-doing approach to understanding the concepts behind AI, the strategic drivers of these technologies and the value propositions that they provide to industries. The focus is on creating awareness of the technologies, allowing some level of familiarity with them through assignments, and enabling some strategic thinking around the use of these in business.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith School of Business.

BUDT753 Blockchain Technologies and Business Applications (2 Credits)

Creates a strong business and technical foundation for Blockchain, starting with an in-depth discussion of the business inefficiencies that the Blockchain technology has the potential to address. This is followed by reviewing the computer science fundamentals related to cryptology, distributed computing, and peer-to-peer architectures that Blockchain systems rely on. The course then provides a comprehensive understanding of Bitcoin including its limitations, and the work that has been done to date to address these limitations. Alternate Blockchain implementations such as Ethereum and Hyperledger are discussed with a focus on smart contracts. The course will also cover potential business applications in Finance, Healthcare, Supply Chain, and Arts/Media/Entertainment. Students will be exposed to current research problems and research efforts in progress.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith School of Business.

BUDT754 IoT Applications for Business (2 Credits)

The IoT is enabling the digitization and internet connectivity of most physical things. The focus of this course is to provide students an in-depth understanding of the technology components of the IoT architecture, infrastructure, data and analytics so that they are equipped to develop business applications using IoT that deliver business outcomes.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith School of Business.

BUDT755 Applied Finance Information Systems (2 Credits)

There has been an explosion in the volume, velocity, and variety of financial data in the last decade. Most financial institutions have automated their processes and digitized their solutions. This has generated a healthy demand for professionals from a variety of fields who not only use cutting edge technologies but also understand financial terminology and concepts. The focus of the course is to introduce students to financial concepts, provide relevant background in the financial industry and teach them the basics of putting together multi-asset portfolios using stocks, bonds, commodities and options instruments. The course requires no background in finance; it uses a practical approach to understanding financial concepts using various open-source technologies such as Python. The IT know-how required for this course is prior experience with Python.

Restriction: Must be admitted to the appropriate graduate business program; or permission of the Masters Programs Office at the Robert H. Smith School of Business.

BUDT756 Causal Inference & A/B Testing (2 Credits)

Organizations and policymakers in government constantly grapple with such causal questions. For example, firms want to know how does a price change affect the sales of a product, or how to design websites and platforms that increase consumer engagement and lead generation; political parties want to know what on social media sites can boost their political influence, and governments want to know whether allowing parents to pay for private schools using publicly funded vouchers make the education system more effective. In particular, platforms such as Netflix, Airbnb, eBay, Groupon, Booking.com, Uber, Amazon, etc. make extensive and continuous use of A/B tests and have a dedicated team of data scientists and IT-personnel to implement, monitor and analyze such tests. Banks and Insurance companies constitute another important sector where the use of A/B testing is ubiquitous.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith School of Business.

BUDT757 Cybersecurity (2 Credits)

Distributed technologies and the ability of business to capture increasing amounts of sensitive data have increases the stakes and risks for information security. The focus of this course will be to help students understand cybersecurity frameworks, analytic techniques and enterprise risk management.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith School of Business.

BUDT758 Special Topics in Decision, Operations and Information Technologies (1-4 Credits)

Selected advanced topics in the various fields of graduate study in decision, operations and information technologies.

Restriction: Permission of BMGT-Robert H. Smith School of Business.

Repeatable to: 9 credits if content differs.

Formerly: BMGT798.

BUDT759 Independent Study in Decision and Information Technologies (1-6 Credits)

Independent study for masters students in decision and information technologies.

Repeatable to: 6 credits if content differs.

Formerly: BMGT708.

BUDT770 Capstone Project in Business Analytics (3 Credits)

The capstone course in the MSBA program provides students in the program with an opportunity to work with a company or an organization on a real-world business analytics challenge. The students will work in teams comprised of MSBA program colleagues to add value to the sponsoring organization. Students will enhance skills in analytics project management and related business issues and improve teamwork skills.

Restriction: Must be in Business and Management (Master's) program; or permission of BMGT-Robert H Smith School of Business.

Credit Only Granted for: BUDT758W or BUDT770.

Formerly: BUDT758W.

BUDT775 Pricing and Revenue Management (2 Credits)

Specialized course on pricing and revenue management (PRM) that provides students with tools and principles, drawn from several disciplines (Operations, Microeconomics, Decision Modeling, Statistics, Marketing, IS) to make effective pricing decisions. Topics covered include economics of pricing, strategy and tactics of PRM, pricing optimization, differentiated pricing, dynamic pricing, mark-down pricing, legal and ethical issues in models/methods used in making effective PRM decisions and managerial or organizational factors that hold the key to success in execution of PRM.

Prerequisite: BUSI630.

Restriction: Must be in a major in BMGT-Robert H. Smith School of Business; or permission of BMGT-Robert H. Smith School of Business.

Credit Only Granted for: BUDT758D or BUDT775.

Formerly: BUDT758D.