COMSATS University Islamabad
Registrar Secretariat, Academic Unit (PS)
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NOTIFICATION

Academic Council in its 34th meeting held on July 21, 2022, on the recommendations of 32nd meeting of Board of Faculty of Business Administration, approved the Scheme of Studies of Bachelor of Science in Business Data Analytics effective from Fall 2022 at CUI System.
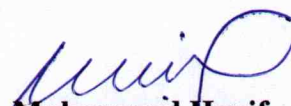
Nomenclature: <u>Bachelor of Science in Business Data Analytics</u>

1. **Minimum Duration:**
   i.   No. of Years: **04**
   ii. No. of Semesters: **08**

2. **Course Work**

	Minimum No. of Courses	Minimum No. of Credit Hours
Core Courses	36	111
Elective Courses		
A. University	01	03
B. Language	01	03
C. Specialization	08	24
Total number of Courses	46	
Total Credit Hours of the Program:		141

Note: Regulations relating to Undergraduate Degree programs approved by Competent Authority and amended from time to time, shall also be applicable to this program.

Muhammad Hanif
Deputy Registrar

Enclosed (Pages 33 including this page)
Distribution:

1. All Campus Directors, CUI
2. All Deans of Faculties, CUI
3. Controller of Examinations, CUI
4. In charge Academics, CUI, Islamabad Campus
5. Chairperson Department of Management Sciences, CUI
6. In charge QEC/CU Online, PS
7. All In charge of Academic and Examination of CUI Campuses
8. Internal Distribution, Registrar Office (Academic Unit), CUI

CC:
   1. SO to Rector
   2. PS to Registrar

List of Core Courses

Course Code	Course Title	Cr. Hrs	Pre-requisite(s)
ECO100	Microeconomics	3(3, 0)	
HUM100	English Comprehension and Composition	3(3, 0)	
HUM102	Report Writing Skills	3(3, 0)	HUM100
HUM110	Islamic Studies	3(3, 0)	
HUM111	Pakistan Studies	3(3, 0)	
HUM400	Business Communication	3(3, 0)	HUM100
LAW300	Corporate Law	3(3, 0)	
MGT100	Introduction to Business	3(3, 0)	
MGT101	Introduction to Management	3(3, 0)	
MGT132	Principles of Accounting	3(3, 0)	
MGT171	Computing Technologies for Business	3(2, 1)	
MGT172	Mathematics for Business Analytics	3(3, 0)	
MGT173	Programming Language for Business Analytics	3(2, 1)	
MGT174	Business Data Analysis	3(2, 1)	MGT173
MGT175	Business Logic	3(3, 0)	
MGT231	Cost Accounting	3(3, 0)	
MGT232	Business Finance	3(3, 0)	
MGT240	Statistics Inference for Business Analytics	3(3, 0)	
MGT241	Econometrics for Business Analytics	3(3, 0)	MGT240
MGT243	E-Business	3(2, 1)	
MGT244	Business Application using Machine Learning	3(2, 1)	MGT173
MGT272	Advanced Mathematics for Business Analytics	3(3, 0)	MGT172
MGT301	Research Tools and Techniques	3(3, 0)	MGT240
MGT310	Marketing Management	3(3, 0)	
MGT330	Financial Management	3(3, 0)	MGT232
MGT350	Human Resource Management	3(3, 0)	
MGT385	Data & Dashboards	3(2, 1)	MGT173
MGT388	Deep Learning for Business	3(2, 1)	MGT173
MGT387	Databases for Business	3(2, 1)	MGT171
MGT389	NLP for Business	3(2, 1)	MGT173
MGT403	Entrepreneurship	3(3, 0)	
MGT461	Project Management	3(3, 0)	
MGT488	Advanced Deep Learning for Business	3(2, 1)	MGT388

MGT500	Internship	3(3, 0)	
MGT501	Strategic Management	3(3, 0)	MGT310, MGT330
MGT579	Final Year Project	6	

Note:

i. Non-Muslim students can opt for HUM114 Ethics 3(3, 0) course in lieu of HUM110 Islamic Studies.
ii. For students with no math background a non-credit course of Business Mathematics I (MTH108) will be offered that will have to be cleared in the first semester.
iii. Final Year Project in each semester will be graded independently.

List of Elective Courses

Course Code	Course Title	Cr. Hrs	Pre-requisite(s)
University Electives			
HUM220	Introduction to Psychology	3(3, 0)	
HUM221	International Relations	3(3, 0)	
HUM320	Introduction to Sociology	3(3, 0)	
HUM430	French	3(3, 0)	
HUM431	German	3(3, 0)	
HUM432	Arabic	3(3, 0)	
HUM433	Persian	3(3, 0)	
HUM434	Chinese	3(3, 0)	
HUM435	Japanese	3(3, 0)	
Finance Specialization			
FIN550	Derivatives and Financial Risk Management	3(3, 0)	MGT330
FIN561	Advanced Financial Markets and Institutions	3(3, 0)	MGT330
MGT526	Marketing Financial Services	3(3, 0)	MGT330
MGT531	Investment and Portfolio Management	3(3, 0)	MGT330
MGT532	Advance Financial Management	3(3, 0)	MGT330
MGT534	Credit Management	3(3, 0)	MGT330
MGT535	Corporate Finance	3(3, 0)	MGT330
MGT588	Technology in Finance	3(3, 0)	MGT330
MGT589	Payment Technology	3(2, 1)	MGT244
MGT590	Artificial Intelligence for Banking	3(2, 1)	MGT244
MGT598	Technological Applications in Entrepreneurial Finance	3(2, 1)	MGT173
Marketing Specialization			
MGT510	Consumer Behavior	3(3, 0)	MGT310
MGT513	New Product Development	3(3, 0)	MGT310

MGT514	Integrated Marketing Communications	3(3, 0)	MGT310
MGT515	Brand Management	3(3, 0)	MGT310
MGT519	Strategic Marketing	3(3, 0)	MGT310
MGT523	Customer Relation Management	3(3, 0)	MGT310
Marketing Analytics Electives			
MGT591	Marketing Analytics	3(3, 0)	MGT310
MGT592	Social Media Analytics	3(2, 1)	MGT244
MGT593	Data Science for Product Managers	3(2, 1)	MGT244
MGT597	Customer Analytics	3(2, 1)	MGT244
Human Resource Electives			
MGT551	Human Resource Development	3(3, 0)	MGT350
MGT554	Organizational Development and Change Management	3(3, 0)	MGT350
MGT555	Performance and Career Management	3(3, 0)	MGT350
MGT557	Strategic Human Resource Management	3(3, 0)	MGT350
MGT558	Employee Relation Management	3(3, 0)	MGT350
Human Resource Analytics			
MGT594	Foundation for HR Analytics	3(3, 0)	MGT350
MGT595	HR Analytics I	3(2, 1)	MGT244
MGT596	HR Analytics II	3(2, 1)	MGT244
MGT599	Strategic Talent Analytics	3(2, 1)	MGT244

Course Code: MGT171
Course Title: Computing Technologies for Business
Credit Hours: 3(2, 1)

Course Objectives:

The overall purpose of this course is to prepare students to understand the importance of computing in relation to business.

Course Contents:

The course will discuss the evolution and development of modern information technology as well as disruption and emerging technologies. It will cover managing IS/IT, security, risk and ethical behavior, use of business analytics, managing data resources as well as designing effective business solution.

Recommended Books:

1. John Richardson, Pearson (2017), Computing for Business Success

2. Peter H. Diamandis, Steven Kotler (2020), The Future is Faster than you Think: How Converging Technologies are Transforming Business, Industries and our Lives

Course Code: MGT245
Course Title: Business Ethics for Modern Ages
Credit Hours: 3(3, 0)

Course Objectives:

Deepen understanding of the technological basis of AI. Explore key ethical issues related to the technology's production and implementation. Analyze machine bias and other ethical risks. Assess the individual and corporate responsibilities related to AI deployment. Understand the limits, risks, and broader policy and social implications of AI.

Course Contents:

The course will cover the 5 C's, Consent, Clarity, Consistency and Trust, Control and Transparency and Consequences with relation to AI deployment. It will also cover ethics and security training, developing guiding principles of AI deployment, building ethics into a data driven culture and regulation about AI.

Recommended Books:

1.   Micheal Kosta Loukides, Hilary Mason, DJ Patil (2018), Ethics and Data Science,

Course Code: MGT172
Course Title: Mathematics for Business Analytics
Credit Hours: 3(3, 0)

Course Objectives:

To build up familiarity with the topics listed under course description. Students should be able to fluently solve problems that involve these topics. Build intuition and practical experience with applying mathematical concepts

Course Contents:

Linear algebra, multivariate differential calculus, optimization, and likelihood functions, exponential and logarithmic functions, derivations with applications, integration with application, matrix algebra,

Recommended Books:

1.   Marc Peter Deisenroth, A. Aldo Faisal, Cheng Soon Ong,y Cambridge University Press (2020), Mathematics for Machine Learning,

Course Code: MGT272
Course Title: Advance Mathematics for Business Analytics
Credit Hours: 3(3, 0)

Course Objectives:

Understand linear algebra, calculus, gradient algorithms, and other concepts essential for training deep neural networks. Learn the mathematical concepts needed to understand how deep learning model's function. Use deep learning for solving problems related to vision, image, text, and sequence applications

Course Contents:

Linear algebra, vectors, and gradient algorithms, optimization, probability, conditional probability, likelihood (Bayes term), posterior probability, data and hypothesis in the application of Bayes' Theorem, probability density function

Recommended Books:

1.   Jay Dawani, Packt publishers (2020), Hands-On Mathematics for Deep Learning

Course Code: MGT387
Course Title: Databases for Business
Credit Hours: 3(2, 1)

Course Objectives:

The course aims to give students the background of, and a process for, database development. The course aims to develop students' conceptual and logical database design skills. The course aims to develop students' skills in using and managing databases. Introduce students to SQL

Course Contents:

Course is designed to teach database theory with a practical and business approach to database design and implementation. The course will cover introductory concepts of databases and then discuss databases planning and architecture and their use in business. The students will also cover and learn the different databases models and their use and application in business. The students will also learn the basics of SQL, which is the standard database query language, and in the big data era, the student will at least know how to make query and data structure of databases.

Recommended Books:

1. Sotirios Zygiaris, Emerald publishers (2018), Database Management Systems: A Business-Oriented Approach,

Course Code: MGT243
Course Title: E-Business
Credit Hours: 3(2, 1)

Course Objectives:

Differentiate the roles, activities, advantages and disadvantages of the Internet, World Wide Web and e-commerce/e-business models and strategies. Differentiate between the various methods of conducting online monetary transactions. Analyse the international, legal, ethical and tax issues confronted by businesses conducting e-commerce/e-business. Critically evaluate ways to promote and measure the success of an e-commerce site.

Course Contents:

This course emphasizes organizational issues related to electronic commerce, such as business models for B2B or B2C e-commerce, technology infrastructure, electronic payment mechanisms, information privacy, and competitive advantage.

Recommended Books:

1. Bernd W. Wirtz, Springer (2021), Digital Business and Electronic Commerce: Strategy, Business Models and Technology

Course Code: MGT579
Course Title: Final Year Project
Credit Hours: 3(2, 1)

Course Objectives:

Practical application of courses undertaken

Course Contents:

Final year project will enable students to provide solutions to the real-world business problems using AI and Data science. The student will be encouraged to collect data and apply AI and data science techniques for providing optimal solutions. The student will share the findings with the stakeholders and submit a written report of the findings.

Recommended Books:

Books will be recommended by the faculty member supervising the capstone project

Course Code: MGT240
Course Title: Statistics Inference for Business Analytics
Credit Hours: 3(3, 0)

Course Objectives:

Understand the fundamentals of statistics. Learn how to work with different types of data. How to plot different types of data. Calculate the measures of central tendency, asymmetry, and variability. Calculate correlation and covariance. Distinguish and work with different types of distributions. Estimate confidence intervals. Understand the mechanics of regression analysis. Carry out regression analysis. Use and understand dummy variables

Course Contents:

Recognize basic concepts of probability & statistical definitions, Sample and population data, descriptive statistics, central tendency, asymmetry, variability, distribution, estimators, estimates, confidence intervals, regression analysis, categorical data

Recommended Books:

1. Alexander Holmes, Barbara Illowsky, Susan Dean, Samurai Media Limited (2018), Introductory Business Statistics

Course Code: MGT241
Course Title: Econometrics for Business Analytics
Credit Hours: 3(3, 0)

Course Objectives:

The main objectives of the course are to enhance students" competency in application of statistics to solve business management problems and to improve their level of quantitative sophistication for further advanced business analysis. Apply a working knowledge of the statistical tools used in business. Gather, organize, present and interpret statistical data. Carry out statistical hypothesis tests for means and proportions. Make predictions using simple linear regression. Complete statistical significance tests regarding the linear equation, the slope coefficient, and the correlation coefficient. Make predictions using multiple regression techniques and carry out statistical tests on the equation and the parameters.

Course Contents:

Simple and multiple regression analysis, time series data modeling, autocorrelation, endogeneity, instrumental variable estimation and two stage least squares, Logit and Probit Models for Binary Response, Non Stationary Time Series

Recommended Books:

1.   J.M. Wooldridge, Introductory Econometrics: A Modern Approach, International Edition

Course Code: MGT173
Course Title: Programming Language for Business Analytics
Credit Hours: 3(2, 1)

Course Objectives:

Identify/characterize/define a problem. Design a program to solve the problem. Create executable code. Read most Python code

Course Contents:

This course will cover the python programing basics for business students with no prior programming experience. The topics will include variables, expressions, statements, boolean expressions, logical operators, conditional program execution. It will introduce functions, including both the built-in and user defined functions. The student will also learn to deal with iterations. The course will also cover data structures: lists, dictionaries, tuples, and sets. Additional topics will include regular expressions and object-oriented programming.

Recommended Books:

1.   Charles Severance, Charles Severance (2016), Python for Everybody: Exploring data in Python 3

Course Code: MGT174
Course Title: Business Data Analysis
Credit Hours: 3(2, 1)

Course Objectives:

Enable students to provide solutions to business problems. Tidying data that is ready for input into machine learning algorithms. Processing, cleaning, and transforming raw data.

Course Contents:

The students will use python libraries such as Pandas for creating and manipulating DataFrames, developing data analysis routines, sub-setting records, boolean indexing, and performing grouping, aggregation, filtration, and transformation operations. The students will also learn how to combine different data objects through appending, concatenating, joining, and merging operations, and by connecting to SQL databases. The course will include analysis of time series data, including visual representations of time series. Visualizations will also be created with Matplotlib and Seaborn libraries.

Recommended Books:

1. Theodore Petrou, Packt Publishing. Birmingham, UK (2017), Pandas Cookbook

Course Code: MGT244
Course Title: Business Application using Machine Learning
Credit Hours: 3(2, 1)

Course Objectives:

This course will introduce the students to the key concept in statistical learning and cover the classical machine learning methods and emphasize their application to problems in fields of business, finance, and human resources management.

Course Contents:

The students will learn about the bias-variance trade-off, as well as about the supervised and unsupervised machine learning methods and their application in business. They will be introduced to the theory behind classical machine learning methods, including logistic regression, ridge regression, lasso, support vector machines, decision trees, random forests and XGboost algorithm and focus will be on the application of these to various business issues and problems. The course will also cover the unsupervised machine learning methods such as principal components analysis, and K-means and hierarchical clustering and their application in business. The students will learn to implement these algorithms using python libraries such as scikit-learn. Through examples, assignments, and projects, they will be encouraged to explore the business use cases for these techniques and learn to apply them on datasets representing business problems.

Recommended Books:

1.   Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani, Springer Science+Business Media   New York (2013), An Introduction to Statistical Learning: with Applications in R, Springer Texts in Statistics

2.   Rajendra Akerkar,Springer International Publishing AG (2019), Artificial Intelligence for Business

Course Code: MGT385
Course Title: Data & Dashboards
Credit Hours: 3(2, 1)

Course Objectives:

Design and create data visualizations. Conduct exploratory business data analysis using visualization. Craft visual presentations of business data for effective communication. Design and evaluate color palettes for visualization based on principles of perception. Apply data transformations such as aggregation and filtering for visualization. Identify opportunities for application of data visualization in various domains.

Course Contents:

The course will introduce students to data visualizations and dashboards. This course is designed to introduce data visualization as a business analytical tool, a medium of communication, and the basis for interactive information dashboards. Students will learn best practices in data visualization, sharpen analytical skills, and learn how to design dashboards for use by stakeholders. Students will use Tableau as their main tool to visualize data and develop dashboards but will develop transferrable skills which can apply to many of the most popular software packages in the current marketplace.

Recommended Books:

1.   Joshua N. Milligan, Packt Publishing Ltd. (2016), Learning Tableau 10

2.   Marleen Meier, David Baldwin,Packt Publishing Ltd (2021), Mastering Tableau 2021: Implement advanced business intelligence techniques,

Course Code: MGT388
Course Title: Deep Learning for Business
Credit Hours: 3(2, 1)

Course Objectives:

Have a good understanding of the basics of Deep Learning and its application to business problems and business data sets. Have the insight to become involved in more complex AI projects. Understand the pros and cons of different techniques and their preferred business application scenarios.

Course Contents:

This is the first in a sequence of two courses that aim to introduce deep learning to busines students and enable them to apply it to problems in various fields of business. This course will provide the necessary mathematical background for understanding the building blocks of artificial neural networks. The students will learn about forward and back propagation, overfitting, regularization, model validation including k-fold validation, and evaluation. They will be exposed to the frameworks such as TensorFlow and Keras API for implementing deep learning models. They will understand the deep learning workflow and implement the deep learning algorithms. These include regression and multiclass classification problems. A part of the course will focus convolutional neural networks and their applications in business.

Recommended Books:

1. François Chollet, Manning Publications (2021), Deep Learning with Python, Second Edition

2. Armando Vieira, and Bernardete Ribeiro, Apress (2018), Introduction to Deep Learning Business Applications for Developers

Course Code: MGT488
Course Title: Advance Deep Learning for Business
Credit Hours: 3(2, 1)

Course Objectives:

Learn and apply deep learning architectures to business

Course Contents:

The second course in this sequence will focus on specific deep learning architectures and their business applications. These include deep learning for timeseries, LSTMS, deep learning for text, recurrent neural networks, and Generative adversarial networks. The students will also learn to create and use virtual machines on cloud to train neural networks, and to deploy the on cloud. The students will learn about the business applications and use cases of various algorithms covered in this course.

Recommended Books:

1. François Chollet, Manning Publications (2021), Deep Learning with Python, Second Edition

2. Armando Vieira, and Bernardete Ribeiro, Apress (2018), Introduction to Deep Learning Business Applications for Developers

3. Antonio Guilli, Amita Kapoor, Sujit Pal,Packt Publishing (2019), Deep learning with TensorFlow 2 and Keras. Second Edition,

Course Code: MGT389
Course Title: NLP for Business
Credit Hours: 3(2, 1)

Course Objectives:

Students who complete this course will gain a foundational understanding in natural language processing methods and strategies. They will also learn how to evaluate the strengths and weaknesses of various NLP technologies and frameworks as they gain practical experience in the NLP toolkits available. Students will also learn how to employ NLP-based analytic techniques to business situation

Course Contents:

The course will cover natural language basics, processing and understanding of text, text classification, text clustering and similarity analysis, text summarization and semantic and sentiment analysis.

Recommended Books:

1. T Dipanian Sarkar, Apress (2019), Text Analytics with Python, A practical real-world approach to gaining actionable insight from your data

2. Pinarbasi, Fatih, Taskiran, M.Nurdan.IGI Global (2020), Natural Language Processing for Global Business and Local Business

Course Code: MGT175
Course Title: Business Logic
Credit Hours: 3(3, 0)

Course Objectives:

Encode information in the form of logical sentences. Reason with information. Represent the structure of statements and arguments using a formal logical framework. Assess formalized arguments for validity using truth tables and deductive methods. Apply these formal methods to clarify and assess real-world business arguments

Course Contents:

Propositional logic, relational logic, functional logic, logical properties and their relationships, arguments, evaluating arguments, validity and soundness, flowcharting.

Recommended Books:

1.   Barbara von Halle, Larry Goldberg, CRC Press (2009), The Decision Model: A Business Logic Framework Linking Business and Technology

Code: MGT588
Course Title: Technology in Finance
Credit Hours: 3(3, 0)

Course Objectives:

Explore and learn the ways in which new technologies are disrupting the financial services industry

Course Description:

Fundamentals of fintech; interface of digital world; rise of fintech; financial institutions; basic of crypto and encryption; understanding of AI and its capabilities in finance; application of AI in financial services. Future of the global financial industry.AI in insurance, application of AI in lending, risk management, investment and wealth management, legal, risk and regulation, AI and business ethics in financial markets; AI and financial law; challenges and risks for financial service sector; AI and future of financial firms.

Recommended Book/s

1. Paolo Giudici, Jochen Papenbrock, Peter Schwendner,Frontiers Media SA (2020), AI and Financial Technology
2. Ivana Bartoletti, Anne Leslie, Shân M. Millie, John Wiley & Sons 2020, The AI Book: The Artificial Intelligence Handbook for Investors
3. Henri Arslanian, Fabrice Fischer, Springer (2019), The Future of Finance

Course Code: MGT589
Course Title: Payment Technology
Credit Hours: 3(2, 1)

Course Objective:

Learn the key components of modern-day payment strategies which utilize fintech. Explore payment methodologies and how fintech is emerging as an entrepreneurial solution to both investments and payment systems. Different financial technologies and understand the dynamic between the innovations and regulations. Employ best practices in developing a fintech strategy for yourself or your business

Course Description:

In this course, students will learn new ways of making payments from consumer-to-business (C2B), from consumer-to-consumer (C2C), and from business-to-business (B2B). Students will explore current payment system technologies to examine their strengths and weaknesses and understand the ways technological innovation is changing these traditional systems. Students will learn about new front-end innovations like digital wallets and mobile payments and discover back-end innovations like tokenization, mobile money, and new payment infrastructure.

The lecture topics include Type of payments, payment systems infrastructures, money transfers technologies; payment regulation and compliances; anti money laundering directives; blockchain; blockchain regulations around the world; cryptocurrencies; future on blockchain and cryptocurrencies, regulations regarding usage of crypto; payments in practice.

Recommended Book/s

1. Susanne Chishti, Tony Craddock, Robert Courtneidge, John Wiley & Sons (2020), The PAYTECH Book: The Payment Technology Handbook for Investors, Entrepreneurs, and FinTech Visionaries

Course Code: MGT590
Course Title: Artificial Intelligence for Banking
Credit Hours: 3(2, 1)

Course Objectives:

Automate commercial bank pricing with reinforcement learning. Perform technical analysis using convolutional layers in Keras. Use natural language processing (NLP) for predicting market responses and visualizing them using graph databases. Sense market needs using sentiment analysis. Explore AI adoption in banking using practical examples. Understand how to obtain financial data from commercial, open, and internal sources

Course Description:

The course will include: The Importance of Artificial Intelligence in Finance Industry; Using Time Series Analysis to Automate Client Procurement; Using Features and Reinforcement Learning to Automate Bank Financing; Mechanizing Capital Market Decisions; Predicting the Future of Investment Bankers; Automated Portfolio Management Using Treynor Black Model and RestNet; Sensing Market Sentiment; Real World Considerations

Recommended Books:

1. Jeffrey Ng, Subhash Shah, Packt Publishing (2020), Hands-On Artificial Intelligence for Banking: A practical guide to building intelligent financial applications using machine learning techniques

Course Code: MGT598
Course Title: Technological Applications in Entrepreneurial Finance
Credit Hours: 3(2, 1)

Course Objective:

To introduce students to the financing lifecycle of high-growth new ventures (i.e. startups). To introduce the key technologies, business models, and companies of the startup fintech landscape.

Course Description:

This class is applied and intended for students who are potentially interested in working at, founding, or investing in early-stage startups in the fintech sector. Entrepreneurial finance is all about making decisions in situations of substantial uncertainty, requiring a careful balance of qualitative and quantitative approaches. The course will examine the key components of the evolving fintech sector, including new instruments for financing early stage enterprises, such as initial coin offerings and equity crowdfunding. In this course the following subsectors will be covered; Bitcoin/Ethereum (and ICOs); personal finance; equity crowdfunding; lending; payments; insurance; and remittances. Blockchain, peer-to-peer platforms, and artificial intelligence (e.g. machine learning) are key technologies underlying many of the new business models.

Recommended Book/s

1. James Haycock,Adaptive Lab (2015), Bye Bye Banks?: How Retail Banks are Being Displaced, Diminished and Disintermediated by Tech Startups and What They Can Do to Survive
2. Tapscott, Don, Portfolio (2016), Blockchain Revolution: How the Technology Behind Bitcoin Is Changing Money, Business, and the World
3. Mougayar, William, Wiley (2016), The Business Blockchain
4. Sironi, Paolo, Wiley (2016), FinTech Innovation: From Robo-Advisors to Goal Based Investing and Gamification

Course Code: MGT592
Course Title: Social Media Analytics
Credit Hours: 3(2, 1)

Course Objective:
Understand the use of analytics to make data based decisions, grow social channels and effectively compete. How to create value with data

Course Description:

What is digital marketing analytics; future advancements in modern data analytics; methods to build relationships with consumers; digital channels and key metrices; organizing consumer data into actionable insights; use of data to measure digital marketing effectiveness; elements of the Marketing Analytics Process (MAP).

Recommended Book/s

1. Amazon Digital Services LLC (2020), Digital Marketing Analytics: In Theory And In Practice
2. Alex Gonclaves (2017), Social Media Analytics Strategy, using data to optimize Business Performance

Course Code: MGT591
Course Title: Marketing Analytics
Credit Hours: 3(3, 0)

Course Objectives:

Introduces state of the art machine learning methods to help marketers extract consumers insights from big data including structured and unstructured data and make better informed business decisions.

Course Description:

This course will give students the foundational tools which they could apply to improve company's marketing strategy. Students will learn how to use different techniques to predict customer churn and interpret its drivers, measure, and forecast customer lifetime value, and finally, build customer segments based on their product purchase patterns. The course lecture includes: compute and visualize marketing KPIs in Python; what drives successful marketing campaigns with data science; application of machine learning to predict customer engagement and lifetime value; implement machine learning to understand different customer segments

Recommended Book/s

1. Yoon Hyup Hwang,Packt Publishing 2019, Hands-On Data Science for Marketing: Improve Your Marketing Strategies with Machine Learning Using Python and R
2. Mirza Rahim Baig, Gururajan Govindan, Vishwesh Ravi Shrimali, Packt Publishers (2021), Data Science for Marketing Analytics

Course Code: MGT593
Course Title: Data Science for Product Managers
Credit Hours: 3(2, 1)

Course Objectives:

Identify decision points during the product life cycle where data science techniques are applicable. Select from a broad set of metrics, product instrumentation, data sources, modeling and data visualization techniques for use in product management decision-making. Apply selected modeling (e.g. classification, clustering, and text analytics) and visualization techniques to product management.

Course Description:

The lectures of this course will contain; introductions; metrics for success, data for product management; machine learning and customer segmentation; natural language understanding for customer feedback; evolving products based on user feedback; price optimization and deep learning; data science scalability and managing data science products

Recommended Book/s

1. Joel Grus, O'Reilly Media, Inc (2019), Data Science from Scratch: First Principles with Python, (Second edition)
2. N. Joglekar and V. Nagaraj, Digital Product Management Thinking: Integrating Analytics, Business Model, Coordination and Design Thinking

Course Code: MGT597
Course Title: Customer Analytics
Credit Hours: 3(2, 1)

Course Objective:

Statistical modeling and coding techniques that help individuals manage the customer relationship from acquisition to development to retention. Special attention is directed to models that help firms appropriately value customers and target them with the right offer at the right time.

Course Description:

Students will learn how to use machine-learning technologies to improve customer acquisition and customer growth, and how to identify and re-engage at-risk or lapsed customers by implementing an easy, automated approach to predictive analytics. Customer Analytics will include demand forecasting and estimation, targeting the right customers, estimating time of purchase, increasing customer lifetime value, designing effective loyalty programs, tools for successful segmentation.

Recommended Book/s:

1. Artun, Omer, Levin, Dominique,John Wiley & Sons (2015), Predictive marketing: Easy ways every marketer can use customer analytics and big data
2. Andrew Smith, Taylor and Francis (2019), Consumer Behavior and Analytics

Course Code: MGT594
Course Title: Foundation for HR Analytics
Credit Hours: 3(3, 0)

Course Objective:

Understand the importance of using AI in HR. Apply the concepts learning of machine learning and deep learning to HR practices

Course Description:

The topic of lecture will address; The basics of artificial intelligence in HR; General AI applications being used in HR; Challenges of adopting AI technology in HR; HR skills of the future, applications of AI for virtual work, understanding the ability of AI to transform HR, role of HR in an AI environment.

Recommended Book/s:

1. Ben Eubanks, Kogan Page (2018), Artificial Intelligence for HR: Use AI to Support and Develop a Successful Workforce
2. Stefan Strohmeier, Edward Elgar Publishing, Incorporated (2022), Handbook of Research on Artificial Intelligence in Human Resource Management

Course Code: MGT595
Course Title: HR Analytics I
Credit Hours: 3(2, 1)

Course Objective:

Gain an understanding of the different analytical approaches used by HR Professionals to solve real business problems. Learn how to make impact with data by using effective storytelling techniques.

Course Description:
Analysis to manage people, uses of analysis, analytics in HR planning, recruitment, selection, performance analytics, different techniques for tracking employee engagement.

Recommended Book/s:

1. Tobias M. Scholz, Peter Lang (2017), Big Data in Organizations and the Role of Human Resource Management: A Complex Systems Theory-based Conceptualization,

Course Code: MGT596
Course Title: HR Analytics II
Credit Hours: 3(2, 1)

Course Objective:

Gain an understanding of the different analytical approaches used by HR Professionals to solve real business problems. Examine actual business cases and apply problem solving and critical thinking skills through group case studies. Learn how to make impact with data by using effective storytelling techniques. Build on presentation skills and demonstrate the ability to work effectively in teams

Course Description:

Models for quality analytics with workforce data; scientific method of people analytics, network analysis used within organizations, covering the of data that can be used to track collaboration within the organization; advances in theory and machine learning to measure culture; different approaches to measuring diversity; legal and ethical issues related to people analytics.

Recommended Book/s:

1. Christopher M. Rosett, Austin Hagerty, Springer International Publishing (2021), Introducing HR Analytics with Machine Learning.: Empowering Practitioners, Psychologists and Organizations

Course Code: MGT599
Course Title: Strategic Talent Analytics
Credit Hours: 3(2, 1)

Course Objective:

Align HR analytics to support larger organizational needs, including linkage of HR data to business outcomes. Assess and enhance organization's maturity around HR analytics. Evaluate findings and determine the most critical workforce implications. Prepare and deliver persuasive data-based stories

Course Description:

The major topic cover in this course will be: strategic view of talent analytics; outcomes and drivers throughout an organization to assess strategic needs; critical thinking coupled with analytical best practices; HR analytics capabilities; how to derive meaning from metrics; analyze future hiring demand; assess what skills will be required in the future; prioritize investments like training and development; supply of talent around the world; identification of the business drivers that impact workforce demand; impact of artificial intelligence (AI), automation and machine learning on the global workforce.

Recommended Books:

1. Ross Sparkman, KOGAN PAGE (2021), Strategic Workforce Planning: Developing Optimized Talent Strategies for Future Growth

2. Gerardus Blokdyk, Emereo Pty Limited (2020), Talent Analytics Strategy a Complete Guide