Major: Business Analytics

Plan hour: 33 hours

Plan Type: Comprehensive Exam

Qualification: Masters

Compulsory Requirements

Section Hours: 24 Hours

Course		Hours
No.	Title	3
33710	Computer and Information Systems	3
33721	Applied Statistical Modeling & Forecasting	3
33723	System Simulation and Decision Analysis	3
33724	Information Management & Assurance	3
33725	Business Intelligence	3
33726	Data Mining for Business Applications	3
33774	Research Methodology	3
33730	Analytics Experience Capstone (Practical project)	3
33741	Comprehensive Exam	0

Section: Elective Requirements

Section: 9 Hours

Course		Hours
No.	Title	3
33731	Big data and In-Memory Technology	3
33732	Process Mining	3
33733	Information Systems Quality	3
33734	Derivatives and Risk Management	3
33735	Corporate Valuation and Strategy	3
33736	Investment Process, Analysis and Management	3
33737	Customers behavior analytics	3
33738	Social media analytics in the global market	3
33739	Advanced Marketing Management	3
11753	Artificial Intelligence	3
14721	Data Engineering	3

Computer and Information Systems (33710)

This course focuses on the management concepts and information technology needed to create effective information systems. Topics include: a survey of information technology, information systems and organizations, strategic information systems, management support systems, and ethical and social issues in information systems.

Applied Statistical Modeling & Forecasting (33721)

This course explores statistical modeling and analysis techniques for aiding managerial decision making. Topics include: introduction to descriptive statistics, sampling methods and sampling distribution, confidence interval estimation, one sample hypothesis tests, one-way and two-way analysis of variance, simple and multiple linear and nonlinear regressions, and time series forecasting. Selected software packages are used in exercises, projects, and business case examples.

System Simulation & Decision Analysis (33723)

 In this course students will learn how to design, model, and implement discrete-event computer simulation models of real or conceptual systems. Simulation studies will be conducted using contemporary software such ProModel. Student will learn random number generation, applying distribution sampling, and conducting output analysis.

Information Management Assurance (33724)

 This course will provide the students with an exposure to the unique concerns and realities of assuring information and managing risks in the IT environment today. The course will cover principles of security from a managerial point of view, but will provide the students with enough of a technical focus to actively participate in the process of organizational security. Students will be exposed to the problems and dangers from insecure IS and the means, including physical, technical and administrative controls, to prevent security breaches, while also learning to respond to a breach when it does happen. Students will take this knowledge to learn to develop security plans and conduct security audits. Coursework will include extensive reading and seminar participation as well as time in the laboratory to explore and reinforce concepts.

Business Intelligence (33725)

This course will introduce students to the fundamentals of data warehouses (DW) and data mining (DM). Topics will focus on how to leverage big data to support business decisions. Going through major activities involved in a data warehousing project, students will study the principles of dimensional data models, data warehouse architecture and infrastructure, techniques

for data extraction, cleaning, transformation, and loading, online analytical processing (OLAP), and managerial issues of data warehouse implementation. Common data mining techniques and applications, such as decision trees association rules, text mining, rule based classification, cluster analysis, machine learning, will be introduced.

Data Mining for Business Applications (33726)

The purpose of this course is to provide students with both quantitative and qualitative exposure to the field of Data Mining, a topic of immense importance and relevant to the study of Business Analytics. Data Mining is the process of discovering meaningful correlations, patterns and trends in large data sets and employs statistical and mathematical techniques. Students will be exposed to theory, computation, tools & techniques to analyze repositories of data from a vast array of business applications with a view to implement successful business strategies aimed at improved decision-making. The course contents are representative of three primary areas of analytics-prescriptive, predictive, and descriptive that define the core of studies offered in our Masters of Science in Business Analytics program. Selected software packages are used in exercises to solve data mining problems.

Research Methodology (33774)

This course develops the students' skills in conducting scientific research through introducing them to scientific research methods and providing them with basic skills in writing scientific research which includes defining the problem of study and its its variables, the research significance and objectives, the research model and its variables based on literature review, how to define the population and sample of the study, data collection and hypotheses writing and testing methods in addition to their analysis and interpretation using statistical methods, writing the conclusions and recommendations and linking them to the literature review, and introducing the students to various documentation methods.

Analytics Experience Capstone (33730)

The purpose of this course is to provide students with an experience that allows them to demonstrate application of integrative knowledge aimed at addressing an industry relevant decision-making problem by drawing on the breadth and depth of the Business Analytics programmatic curriculum. The plan of studies requires that the student complete this course under the direction and guidance of the Instructor who may enroll the services of an industry expert for advice. Depending on the size and complexity of the problem, one or many students may be assigned to the project. The deliverables for the course are a detailed project report describing evaluation and analysis of the problem to be presented at a public setting.

Big Data in-Memory Technology (33731)

The main learning objectives & acquired competencies in this course includes:

- Learn the most important big data technologies
- Understand the underlying theoretical principles
- Applying technological approaches to solve practical issues

Content should cover the following:

- Definition and classification of the research field Big Data
- Introduction to basic concepts of various Big Data technologies:
  - MapReduce
  - Hadoop
  - NoSQL
  - HBase
  - Lambda architecture
  - IoT
  - In-Memory & SAP HANA
  - Data warehouse offloading
  - Machine Learning (Regression & Classification)

Process Mining (33732)

The course explains the key analysis techniques in business process mining. This course starts with an overview of approaches and technologies that use event data to support decision making and business process (re)design. Then the course focuses on process mining as a bridge between data mining and business process modeling.

Information Systems Quality (33733)

This course examines two related areas of study: (1) the concepts of information systems analysis and design in business organizations and (2) the management of information quality in organizations. Students will learn to plan and manage information systems projects, determine information requirements, model information process requirements, model system logic requirements, design user interfaces, and implement and maintain information systems. Students will also gain an understanding of the dimensions of information quality, the assessment and improvement of information quality in organizational settings, cognitive and behavioral aspects of information quality, and the effect of information quality on organizational decision making. The implications of information quality for systems analysis and design and applications of systems analysis and design methodologies for the management of information quality will be examined.

Derivatives and Risk Management (33734)

The focus of this course is on understanding the derivative securities and their use in risk management. This course provides an in-depth introduction to options and option pricing as well as an extensive overview of forward, future and swap contracts. This course will draw upon the intuition and analytic tools developed to examine sophisticated financial products or strategies that firms and investors have used in their risk management.

Corporate Valuation and Strategy (33735)

This course examines a variety of financial management topics, such as project and enterprise valuation and risk analysis, corporate restructuring, dividend policy, corporate governance, and current asset management using case studies and readings.

Investment Process, Analysis and Management (33736)

This course provides an examination of the process of investment analysis and management. Topics include: analysis of fixed income securities, stock valuation, and introduction to derivative securities; discussion of portfolio theory and management; and an overview of investment environment. Wherever it is appropriate, the above topics will also be discussed in a global context.

Customer Behavior Analytics (33737)

This course introduces students to concepts and theories developed in the behavioral sciences (economics, marketing, psychology, sociology, and anthropology) in relation to their influence on consumer behavior. The course is designed to provide students with an in-depth understanding of consumer markets in order to develop effective marketing strategies.

Social Media Analytics in the Global Marketing (33738)

This course draws from key concepts in marketing, business economics, and operations management to provide a comprehensive account of global marketing issues and strategies. This course is designed to give students several opportunities to apply the theories and concepts they have learned in class, primarily through the use of Country Manager simulation and a series of case analyses.

Advanced Marketing Management (33739)

This course examines the current challenges facing the marketers, ranging from industry deregulation, Internet revolution to globalizing. Looked at closely are the emerging issues impinging on marketing decision, particularly in regard to focused marketing, relationship marketing, competitive advantage, positioning, and the marketing mix strategies. Term project and case analyses are important components of the course.

Artificial Intelligence (11753)

The course is divided into four parts, the first covering knowledge representation, the second introducing heuristic search and constraint satisfaction and the third is dedicated to advanced topics such as rule-based Expert Systems, case-based reasoning, modelbased reasoning. The fourth part is dedicated to machine learning techniques and theory. The following topics will be discussed in the course: introduction to AI and applications; exhaustive search methods; heuristic search methods; First order logic for knowledge representation; other knowledge representation schemes such as semantic networks, frames; production rule systems; principles of expert systems; Knowledge acquisition, planning and scheduling, machine learning techniques: decision trees, neural networks, Instance-Based-learning, Naïve Bayesian learning, Bayesian networks and learning theory

Data Engineering (14721)

The course starts by examining the modern data ecosystem and how it relates to running a smart and efficient data hub. Then, it shows the student how to perform the principle tasks involved in managing extracting, transforming and loading (ETL) data. This course will explain the data life cycle in a Data science project. In addition, it will cover types of data, such as structured, semi-structured and unstructured and the different formats of data and techniques used in the ETL process. The course also covers the elementary visualization aspects needed to understand the data. It also takes the student through staging, profiling, cleansing, and migrating data.