****

Course Title: Business Analytics & Strategy

Course Code: IS-670

Department: **Information Systems**

**HSM Vision**

HSM envisions its success in the sustainable contribution that it will make to the industry, academia and research in public and private sector. HSM will lead by providing professionally competent and ethically conscious human resources engaged in the global and local context to foster socio-economic growth and sustainability for the society. HSM envisages having faculty with high research potential and a deep desire for cutting edge research including collaboration with national and international partners.

**HSM Mission**

Being a research-oriented and student-centric business school, we emphasize research publications in impact journals as well as state-of -the-art learning methodologies.  We will prepare our students to become the future ethical business leaders and the guiding post for the society, while equipping them with the knowledge and skills required by world-class professionals.  We will be the leading choice for organizations seeking highly talented human resource. HSM will foster internationalization with key stakeholders and actively work to exchange best practices with business schools across Pakistan through collaborations, workshops, conferences and other means.

**Program Objectives**

The School of Business and Economics at UMT is foreseeing the challenges ahead both at national and international level and the utility of data science.  In Pakistan the multi-dimensional economy integrated with globalization needs a boost assisted by professionally trained and skilled Data Scientists, whom may incorporate and harmonize the unlimited bucket of resources, pouring in from springs of industry, agriculture, business, and human resources etc. in a manner to achieve efficiency to its apex.  
In the competitive economy the companies need to adapt data science to gain a competitive advantage in productivity, profitability and sustainable business processes to offer better products and services to their customers. To attain this goal trained and skilled workforce in this area is the need of the hour; who are equipped to manage, understand and model the data, interpret the outcome and communicate the results for business use. Professionals holding a degree in Data Science will be well positioned to help their organizations gain a competitive advantage in a data-driven world.

**Course Objectives**

The course emphasizes that business analytics is not a theoretical discipline: these techniques are only interesting and important to the extent that they can be used to provide real insights and improve the speed, reliability, and quality of decisions. The concepts learned in this class should help you identify opportunities in which business analytics can be used to improve performance and support important decisions. It should make you alert to the ways that analytics can be used — and misused — within an organization. Business analytics refers to the ways in which enterprises such as businesses, non-profits, and governments can use data to gain insights and make better decisions. Business analytics is applied in operations, marketing, finance, and strategic planning among other functions. The ability to use data effectively to drive rapid, precise and profitable decisions has been a critical strategic advantage for companies as diverse as WalMart, Google, Capital One, and Disney. For example, Capital One uses sophisticated analytic capabilities to match credit card offerings to customers more accurately than their competition. WalMart uses analytics to monitor and update its inventory in a way that allows it to serve its customers at an exceptionally low cost. In addition, many current and recent startups such as Planter and Splunk are based on the application of analytics to large databases. With the increasing availability of broad and deep sources of information — so-called “Big Data” — business analytics are becoming an even more critical capability for enterprises of all types and all sizes in order to create a sustainable environment.

**Learning Objectives**

In this course, you will learn

* To identify, evaluate, and capture business analytic opportunities that create value.
* Basic analytic methods and analyze case studies on organizations that successfully deployed these techniques.
* How to use data to develop insights and predictive capabilities using machine learning, data mining and forecasting techniques.
* use of optimization to support decision-making in the presence of a large number of alternatives and business constraints
* Explore the challenges that can arise in implementing analytical approaches within an organization.

**Learning Outcomes:**

We have three goals in this course.

* The first is to help you think critically about data and the analyses based on those data — whether conducted by you or someone else.
* The second is to enable you to identify opportunities for creating value using business analytics.
* The third is to help you estimate the value created using business analytics to address an opportunity. Business analytics is an integral part of modern management — this course should provide you with the foundation you need to understand and apply these methods to drive value.
* Able to design and execute Business Analytics & Strategy projects for Sustainable ecosystem including collecting data and considering ethical and legal implications, to perform systematic and informed analyses of business data for personal, commercial and scholarly use, and to critically review capstone projects conducted by others.

**Pre-requisites:**

It will be assumed that students are comfortable with basic concepts from linear algebra (e.g., matrix multiplication), probability theory (e.g., probability distributions, expected values, Bayes' rule), and statistics (e.g. Hypothesis testing), and calculus (e.g., differentiation and integration).

Knowledge of SPSS is a must for this course. Beyond those concepts, the course will be self-contained.

**Teaching Methodology (List methodologies used –example are given below)**

* Lectures
* Research Papers & Case Studies
* In Class Exercises
* Computer Software

**STUDENTS ARE REQUIRED TO READ AND UNDERSTAND ALL ITEMS OUTLINED IN THE PARTICIPANT HANDBOOK**

**Class Policy:-**

* Be On Time

You need to be at class at the assigned time. After 10 minutes past the assigned time, you will be marked absent.

* Mobile Policy

**TURN OFF YOUR MOBILE PHONE!**It is unprofessional to be texting or otherwise.

* Email Policy

**READ YOUR EMAILS!** You are responsible if you miss a deadline because you did not read your email.

Participants should regularly check their university emails accounts regularly and respond accordingly.

* Class Attendance Policy

A minimum of 80% attendance is required for a participant to be eligible to sit in the final examination. Being sick and going to weddingsare absences and will not be counted as present. You have the opportunity to use 6 absences out of 30 classes. Participants with less than 80% of attendance in a course will be given grade ‘F’ (Fail) and will not be allowed to take end term exams. International students who will be leaving for visa during semester should not use any days off except for visa trip. Otherwise they could reach short attendance.

* Withdraw Policy

Students may withdraw from a course till the end of the 12th week of the semester. Consequently, grade W will be awarded to the student which shall have no impact on the calculation of the GPA of the student. A Student withdrawing after the 12th week shall be automatically awarded “F” grade which shall count in the GPA.

* Moodle

UMT –LMS (Moodle) is an Open Source Course Management System (CMS), also known as a learning Management System (LMS). Participants should regularly visit the course website on MOODLE Course Management system, and fully benefit from its capabilities. If you are facing any problem using moodle, visit <http://oit.umt.edu.pk/moodle>. For further query send your queries to [moodle@umt.edu.pk](mailto:moodle@umt.edu.pk)

* Harassment Policy

Sexual or any other harassment is prohibited and is constituted as punishable offence. Sexual or any other harassment of any participant will not be tolerated. All actions categorized as sexual or any other harassment when done physically or verbally would also be considered as sexual harassment when done using electronic media such as computers, mobiles, internet, emails etc.

* Use of Unfair Means/Honesty Policy

Any participant found using unfair means or assisting another participant during a class test/quiz, assignments or examination would be liable to disciplinary action.

* Plagiarism Policy  
    
  All students are required to attach a “Turnitin” report on every assignment, big or small. Any student who attempts to bypass “Turnitin” will receive “F” grade which will count towards the CGPA. The participants submit the plagiarism report to the resource person with every assignment, report, project, thesis etc. If student attempts to cheat “Turnitin”, he/she will receive a second “F” that will count towards the CGPA. There are special rules on plagiarism for final reports etc. all outlined in your handbook.
* Communication of Results

The results of quizzes, midterms and assignments are communicated to the participants during the semester and answer books are returned to them. It is the responsibility of the course instructor to keep the participants informed about his/her progress during the semester. The course instructor will inform a participant at least one week before the final examination related to his or her performance in the course.

**Course Outline**

|  |  |
| --- | --- |
| Program | MS Data Science |
| Credit Hours | 3 |
| Duration | 15 Weeks |
| Prerequisites (If any) | Participants must be familiar with R- Programming |
| Resource Person  Name and Email |
| Counseling Timing  ( ) |  |
| Contact no. |  |
| Web Links:- (Face book, Linked In, Google Groups, Other platforms) |  |

**Chairman/Director Program signature………………………………….Date……………………..**

**Dean’s signature………………………… ………………….Date…………………………………………**

**Grade Evaluation Criteria**

Following is the criteria for the distribution of marks to evaluate final grade in a semester.

**Marks Evaluation Marks in percentage**

Quizzes 10%

Assignments 10%

Mid Term 20%

Term Project 40%

Class Participation 20%

Total 100%

**Reference Books:**

There is no required textbook for the class. There will be cases, articles as well as slides that we will distribute in each class.

**Software**

This course will require the use of Windows Excel and IBM SPSS Modeler. 3-month license will be provided for IBM SPSS Modeler.

**Calendar of Course contents to be covered during semester**

**Course code……………………………...... Course title………………………………………**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No** | **Topics to be**  **covered in the course** | **Learning Objective**  **of this topic** | **Expected Outcomes from Students** | **Teaching Method** | **Assessment Criteria** | **Deadlines and Homework** |
| 1 | Introduction to Business Analytics & Strategy | Provide the basic introduction of Business Analytics & Strategy with examples of how to Measures it and what are the basic Properties | Students will be able to understand the basic terminology Business Analytics & Strategy with its impact. | Lecture | Assignment | Within a Week |
| 2 | Introduction to Data mining and predictive analytics | Understanding the concept of Data mining and how predictive analytics help in growing business. | Students will be able to learn the Empirical Background and technical key Definitions used in Data mining and predictive analytics | Case Discussion | Assignment | Within a Week |
| 3 | Data Science for Business | Understanding the basic logics of Data Science use for Business | They will be in position to understand Data Science for Business fundamentals | Case Discussion + Lecture | Class Activity | Within a Week |
| 4 | Data Mining for Business Intelligence | Understand the Data Mining for Business Intelligence | After this lecture, students will be able to get complete understanding of Data Mining for Business Intelligence. | Lecture + Lab work | Class Activity | Within a Week |
| 5 | Capstone Project Discussion 1 | Discussing the capstone project and its key parameters in details | Students will be assigned with Capstone project that must be completed till end of semester | Capstone Project Discussion | Quiz | Whole Semester |
| 6 | Introduction to Excel modeling and optimization | Provide the basic introduction of Excel modeling and optimization | Students will understand the basic level of excel modeling and optimization | Case Discussion + Lab Work | Assignment | Within two Weeks |
| 7 | Modeling in a problem-solving framework, spreadsheet engineering | Understanding of problem-solving framework, spreadsheet engineering | After this, students will learn the use problem-solving framework, spreadsheet engineering | Lecture | Class Activity | Within two Weeks |
| 8 | Analysis using spreadsheets, data exploration and preparation | Learning on how to perform Analysis using spreadsheets, data exploration and preparation of Data | Students will Analyze using spreadsheets, data exploration and preparation | Lecture | Class Activity | Within two Weeks |
| 9 | Optimization of non-smooth models, decision analysis, optimization in simulation | Understanding of Optimization by using different models and simulations in order to perform decision analysis | Students will Optimization by using different models and simulations in order to perform decision analysis | Lab Work + Case Discussion | Assignment |  |
| 10 | Mid-Term Exam | Mid Term | Mid Term | Mid Term | Mid Term | Mid Term |
| 11 | Capstone Project Discussion 2 | Queries will be resolved, feedback of capstone project has been taken and next level of capstone project will be discussed in detail | Students will discussed their issues and highlight the main areas and provide a timeline report of their projects | Lab Work + Capstone Project | Class Activity | Whole Semester |
| 12 | Big Data | Introduction to big data, its fundamental properties and key terminologies of Big Data | Student will get the foundation base of Big Data. | Lab Work + Case Discussion | Quiz | Within two Weeks |
| 13 | Ethics when handling Big-Data | Discussion on social, technical, legal, and ethical issues raised by the “big data” phenomenon. | Students will understand the ethical issues related to privacy, confidentiality, transparency and identity issues raised by Big Data revolution | Lecture | Assignment | Within two Weeks |
| 14 | The role that analytics may play in sustainability | What is the role of data analytics on sustainability related initiatives? | By collecting and analyzing data on a wide range of sustainability-related factors—including energy and resource use, greenhouse gas emissions, and supply chain performance—students will generate the deep insights they  to guide their sustainability-related initiatives and improve their overall resource efficiency. | Lab Work + Case Study | Class Activity | Within a Week |
| 15 | Guest Speaker and Capstone Project Presentation | Student will present and guest speaker will provide introductory session of How Business Analytics helping in making world better place. | Guest speaker Interaction and Student presentation | Presentation and QA session | Class Activity |  |