MKT 467 : Analytical Approach to Marketing Decisions
School of Business Studies, IBA Karachi

Program	BBA/BSAF/BSEM
Department Offering	Marketing
Class ERP Number	99814, 99813, 99446
Faculty	Hassaan Khalid

Class details	
Class Timing and Room	6 PM to 7:15 PM; Online
Session Days	Friday and Saturday
Credit Hours	3 Credit Hours
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Course Description
Data analytics is one of the fastest growing fields globally and it has permeated all major business functions. Increasingly managers are relying on data analytics to help make effective decisions. McKinsey estimates from 2016 estimated 1.5 million new jobs in the field. Pakistani businesses are also catching up with the trend and there is dire need for analytics skills in business graduates. This course aims to introduce the various domains on data analytics with a focus on the implementation of those domains in the business setting esp. in marketing. The content will cover multiple applications of analytics in marketing such as sales forecasting, market basket analysis, customer segmentation, media buying etc. Live business datasets will be used wherever feasible to give students a realistic idea of the impact and benefits of data analytics.

BSAF/BBA Program Learning Goals
1. Communication Skills Students will become effective speakers, listeners, writers and team members
2. Knowledge of All Business Disciplines Students will gain a broad-based understanding of a range of business disciplines
3. Critical Thinking Students will develop the ability to classify, analyze and evaluate the available data using appropriate techniques for effective decision making.
4. Ethics Students will have an awareness and understanding of ethical issues.
5. Glocal Mindset Students will develop a focus on global connections with local contexts through awareness of diversity across cultures and markets.

Course Learning Outcomes (CLOs)
1. Students will learn critical thinking skills with respect to identifying techniques for solving various business problems with data analytics **(mapped to PLO 302)** 2. Students will be able to adjust techniques and boilerplate machine learning models to organizational and cultural context **(mapped to PLO 501)** 3. Students will be able to comprehend the ethical implications and risks associated with biased algorithms for decision making and avoid making such errors **(mapped to PLO 401)** 4. Students will be able to bring information from multiple facets of business management to solve organizational problems using data analytics **(mapped to PLO 203 and PLO 204)** 5. Students will learn how to present results of complex machine learning models to non-technical users **(mapped to PLO 103)**

AOL Assessment Mapping
Not Applicable

Teaching and Learning Methodology
1. Students are required to read the topic prior to the lecture. 2. The course consists of three assignments, three quizzes with a n-1 policy, a course project, and 2 Rlabs. 3. The midterm and final exam will take place as per the IBA schedule. 4. For bonus marks, students are encouraged to participate actively. Extra credit assignments can also be requested from the instructor. 5. Students will have access to lecture recordings and instructor's notes after class.

Course Learning Outcomes mapped to Program Learning Outcomes						
Program Learning Goals		**Communication Skills**	**Knowledge of All Business Disciplines**	**Critical Thinking**	**Ethics**	**Glocal Mindset**
Course Learning Outcomes						
1				PLO 302		
2						PLO 501
3					PLO 401	

4			PLO 203, 204			
5		PLO 103				

Reading	Mapping to Course Learning Outcomes	Session Topic
Introduction		Discussion on popular probability problems e.g. Monty Hall. A refresher on using MS Excel.
Statistics Primer	CLO 01	Revision of statistical inference (PDF, CDF, normal and binomial distribution, central limit theorem, hypothesis testing and confidence intervals). An introduction to using simulations for understanding and explaining statistical concepts
Probability Models	CLO 01	Implementation of probability distributions to solve business problems. Using information of footfall, probability of purchase, and information of costs and profits to optimize production. This also introduces truncated distributions to students.
Supervised Machine Learning	CLO 01 02 03	Linear regression, logistic regression, and decision trees. The algorithms, their assumptions, KPIs and variants are discussed. Discussion goes into customization of loss functions for a given business problem. LASSO, ridge, stepwise and elastic net regression concepts are also introduced.
Bayesian Decision Analysis	CLO 01 04	Using Bayesian decision trees to identify an optimal path of decisions in the face of uncertainty.
Unsupervised Machine Learning	CLO 01 02 03	This is a more discussion only class rather than an implementation. Clustering, text analytics, social network analysis and market basket analysis are discussed to allow students to understand the scope of unsupervised learning in various domains.
Linear Optimization	CLO 01	One stage and two stage linear optimization is taught along with understanding sensitivity reports.
Communicating Results	CLO 04	The course is completed with a discussion on best practices of presenting results of analytics activities to non-technical users.

Text Book and Pre-Course Reading Material, Important Dates.
Recommended Text: Data, Models and Decision Making; The Fundamentals of Management Science by Bertsimas and Freund – ISBN-13: 978-0975914601 Relevant handouts from the book will be provided by the instructor

Secondary Texts:
Open Intro Statistics, and An Introduction to Statistical Learning with R are both open-source books that students may use in this course. Relevant handouts will also be provided.

Dates

- **Midterm and Final Exam: As per IBA schedule**

Prerequisite Skills and Knowledge to take this Course
MKT201 Principles of Marketing, MTS202 Statistical Inference

Assessments and Grading Scheme		
Assessment	**Due Date**	**Remarks**
Assignments	Ongoing	3 homework assignments spread throughout the course
Lab Assignments	Ongoing	2 lab assignment to introduce R
Quizzes	Ongoing	3 announced quizzes spread throughout the semester
Midterm Exam	Exam Weeks	Includes modules covered till midterm
Final Exam	Exam Weeks	Include complete syllabus
Project Report	Semester End	Expected to cover all relevant parts of course plus additional research
Bonuses (Extra Credit)	Ongoing	2 total. Can be secured through requesting for extra credit assignment. (1st by Nov 2025, 2nd by Dec 2025)
This course follows absolute grading.		

Marks Distribution				
Marks Head	**Total Frequency**	**Total Exempted**	**Marks /Frequency**	**Total Marks /Head**
Homework Assignments	3	0	8, 7, 5	20
Lab Assignment	2	0	5	10
Quizzes	3	1	5	10
Midterm Exam	1	0	10	10
Final Exam	1	0	20	20
Project	1	0	30	30
Bonus / Extra Credit	2	Extra credit is **optional** and may be pursued at the student's discretion.	1-5 marks depending on extra credit assignment	**Up to** 10 bonus marks

Total Marks	100

Comments and/or Suggestions
• Since subsequent topics are built on previously learned material, it is imperative that students keep up with the material. In addition, you should ensure that lectures are understood properly. • A student who misses a class is responsible for obtaining any handouts and information on course content, assignments, due dates, test dates, etc. • Unethical behavior (cheating, plagiarism, proxy attendance) will be strictly penalized.

Technology & Innovation
• All course materials will be posted on LMS and OneDrive and grades will be posted on ERP. Students are responsible for staying updated on these platforms. • Students should have access to a laptop with webcam for all classes. Students who do not have these facilities available should contact the instructor. • For discussions and course related queries, please join the course FB and WhatsApp group.

Experiential Learning Exposure(s)
Students will get a chance to work on multiple real-world datasets and understand the process of implementing data analytics based solutions in organizations.

Social Contribution / Impact
The course will emphasize on the importance of understanding algorithms prior to implementation to avoid ethical issues such as racial biases etc.

Academic Conduct
IBA policy
Attendance Policy
IBA policy
Plagiarism Policy
IBA policy
Withdrawal Policy
IBA policy