COURSE OUTLINE

Name of Course & Course Code
Managerial Decision Making

SECTION 1 – GENERAL INFORMATION

1.1 Course Faculty

Faculty	Dr. Supriyo Ghose, Dr. Tuhin Chattopadhyay, Prof. Madhuri Prabhala

1.2 Level

Tick applicable Level

Foundation	Core	Level 1	Level 2	Level 3
	✓			

1.3 Course Weight

Indicate the credit point weighting of this Course

Course credit points
3

1.4 Course workload

Using the table below, indicate the expected student workload for this course.

Contact Hours	Group Work	Directed Learning Hours	Total Hours
30	15	45	90

1.5 Delivery mode

Tick all applicable delivery modes for the subject:

☒ Face to face on site

☐ E-learning (online)

☐ Blended (provide details)

1.6 Pre-requisites required for the Course, if any

Yes ☐ No ☒

If YES, provide details of the prerequisite(s) below:

1.7 Other resource requirements

Do students require access to specialist facilities and/or equipment for this subject (for example, special computer access, and physical education equipment)?

Yes ☐ No ☒

If YES, provide details of specialist facilities and/or equipment below.

1.8. Linkage to Career Goals

Please fill the details

Decision making is omnipresent in the sense that it is part of every field, every industry to arrive at the business and managerial decisions. Understanding the concepts of decision making, Hypothesis, Sampling Techniques, Z Tests and Types of T Tests, Analytical Concepts of Regression and Correlation and application of the techniques in the business world to arrive at the most optimal decisions. Applicable for all Functional areas

1.9. Alignment with Learning Goals and Learning Objectives

Aligned to:

Aligned to GLG 4: Problem Solving LO 4.1 Problem Framing GLG 6: Functional Knowledge LO 6.1: Knowledge of Business Function

Where Assessed:

End Term

1.10. Linkage to Multiple Intelligences

Tick all applicable options

☐ Verbal-Linguistic

☒ Logical-Mathematical

☐ Spatial Visual

☐ Bodily-Kinesthetic

☐ Musical

☐ Interpersonal

☐ Intrapersonal

☐ Naturalist

1.11. Linkage to IDEAS Framework

Tick all applicable options

☐ Innovation

☐ Design Thinking

☐ Entrepreneurial Attitude

☒ Automation

☒ Solutioning

SECTION 2 – ACADEMIC DETAILS

2.1 Learning Outcomes for the Course

Learning outcomes for Course (Use Bloom's Taxonomy as applicable)
1. Apply basics of decision making to defining a decision problem and generating alternatives and choosing a viable alternative. 2. Use descriptive statistics and Normal distribution and its applications. 3. Use different tools for data visualization and generate viable decisions using statistical methods and data visualization. 4. Formulate problems from real-life using analytical approach. 5. Differentiate between different types of sampling and apply them using appropriate tools. 6. Use simple modelling and predictive analytics using appropriate automated tools. 7. Generate hypothesis, test and enable making appropriate decisions making through different types of non-parametric tests.

2.2 Assessment

(Add Rows as required)

Assessment task		
Type *	**When assessed - Session Week**	**Weight**
Group Assessment/ Quizzes	Continuous Assessment	40%
Midterm Exam	Mid-Course	20%
End Term Exam	End of Course	40%
Total		100%

Certification for Eligibility in End-Term Exam:

Coursera course on "Basic Data Descriptors, Statistical Distributions, and Application to Business Decisions"

Basic Data Descriptors, Statistical Distributions, and Application to Business Decisions | Coursera

Completion of the Coursera courses is mandatory for appearing in the end-term examination for the course in that term.

2.3 Session Wise Details

(Add Modules as Required)

Session	Topic	Pedagogy	Pre-session Readings / Application Exercises	ESG Content
Each Module has a structure that will be followed right through the course. For all sessions, it is mandatory to come prepared to class after going through the relevant topic. Pre-reads and cases specified for the relevant sessions should be read before each class. **For all sessions, it is mandatory to bring a fully charged laptop with Excel, Python and SPSS installed**				
Module 1: Decision Science Fundamentals **Learning Objectives** • Setting the Context of Decision Science				
1	Concept of Decision Making • What is a decision • Who makes decisions • Examples of managerial decisions • Dimensions of a decision • Qualitative and quantitative ways of decision making • **Ethical considerations in decision-making.** • **Role of governance in data use**		Simon, H. A. Or Bazerman and Moore	✓
2	• Optimal versus Satisficing Decisions • Concept of Bounded Rationality • Data-based Decision Science • Why do we need Decision Science? • Applications of Decision Science ➢ In functional areas like marketing, supply chain etc. across the sectors • Converting a business problem to a decision science problem	Class Discussion	Simon, H. A. Or Bazerman and Moore U. Dinesh Kumar, Chapter 1	

Session	Topic	Pedagogy	Pre-session Readings / Application Exercises	ESG Content
3	• The Data Science Life Cycle & The Business Analytics Process: CRISP – DM • Descriptive, Predictive & Prescriptive Analytics • Tools & Techniques of Decision Science • Data pipeline architecture	Class Discussion		
4	Introduction to Measurement Scale: • Nominal, Ordinal, Interval and Ratio Scale • How Analytics Techniques change with the Change in the measurement scale	Do	Coursera course on "Basic Data Descriptors, Statistical Distributions, and Application to Business Decisions"- Week 1 U. Dinesh Kumar, Chapter 2 Albright and Winston, Chapter 2	
5	• Review of Normal Distributions Application of Statistical Distributions in Business	Do	U. Dinesh Kumar, Chapter 2	
6-7	Introduction to Python for data analysis	Hands-on exercises in class		
8	Sampling Methods & Sampling Theory: • Sampling Design • Concept of Hypothesis Testing: Inferring About Population from Sample	Do	U. Dinesh Kumar, Chapter 4	
9	Data Collection Design: • Questionnaire Design	Do	Coursera course on "Basic Data Descriptors, Statistical Distributions, and Application	

Session	Topic	Pedagogy	Pre-session Readings / Application Exercises	ESG Content
			to Business Decisions"- Week 2	
Module 2: Data Preparation for Analysis: Transformation, Cleaning and Sanitization • Create a categorical variable from a scale variable • Combine several response categories into a single category Create a new variable that is the computed difference between two existing variables				
10	Data Preparation: • Visual Binning • Creating a Categorical Variable from a Scale Variable • Data privacy and ethics	Discussion and problem solving through hands-on data analysis		✓
Module 3: Model Development **Learning Objectives:** a) Confidence Interval • For Mean • For Proportion Data interpretation for decision making through hypothesis testing – Single sample tests, two sample tests and multiple samples tests.				
11-12	Confidence Interval • For Mean • For Proportion	Concept discussion and applications.	Albright and Winston Chapter 8	
13-16	t-tests • One Sample • Independent Samples • Paired Samples	Discussion and problem solving through hands-on data analysis	Albright and Winston Chapter 9 Coursera course on "Basic Data Descriptors, Statistical Distributions, and Application to Business Decisions"- Week 3	

Session	Topic	Pedagogy	Pre-session Readings / Application Exercises	ESG Content
17	Cross Tabulation • Chi-square test for Independence		Albright and Winston Chapter 8	
18-19	ANOVA and the Design of Experiments • One Way • Factorial		U. Dinesh Kumar Chapter 7 Coursera course on "Basic Data Descriptors, Statistical Distributions, and Application to Business Decisions"- Week 4	
20-23	Correlation & Regression • Correlation and Covariance • Difference between Correlation and Causation • Simple Linear Regressio • Multiple Regression		Albright and Winston Chapters 10, 11	
Module 4: Model Comparison, Model Validation & Model Deployment				
24	Model Comparison, Validation and Deployment Techniques Importance of governance and accountability in model deployment.			✓

2.4 Prescribed and recommended readings

Provide below, in formal reference format, a list of the prescribed and recommended readings for the subject.

Reference Text:

Core Text

"Judgment in Managerial Decision Making" Authors: Max H. Bazerman and Don A. Moore

Business Analytics: The Science of Data - Driven Decision Making, U. Dinesh Kumar, Wiley, 2017

Business Analytics: Data Analysis and Decision Making, Albright and Winston, Cengage, 6th Edition.

Reference Text

Simon, H. A. (1997). "Administrative Behavior: A Study of Decision-Making Processes in Administrative Organizations."

Statistics for Management, Anderson, Sweeney, Williams et. al.

Business Statistics, Levin and Rubin

Applied Business Statistics, 7th edition, Ken Black