JINDAL GLOBAL BUSINESS SCHOOL
INDIA'S FIRST MULTI-DISCIPLINARY GLOBAL BUSINESS SCHOOL

O.P. Jindal Global University
A Private University Promoting Public Service
NAAC Accreditation - 'A' Grade

Jindal Global Business School
Course Outline

Course Title	Climate Data Analytics for Business Decision Making
Core or Elective	Elective
Program and Batch	MBA-2, IBM-4
Semester & Academic Year	Spring 2026
Credits	1.5
Discipline/Area	IS & Analytics
Name of the Faculty Member/Course Instructor	Prof. Rajni
Contact Details of the Faculty Member	rajni@jgu.edu.in
Contact Details of Support Staff	jgbs-eo@jgu.edu.in
Faculty Member's Open Office Day/s & Time	TBD

Introduction to the Course

This course explores how climate data can be harnessed to inform business strategies, mitigate risks, and seize opportunities in an era of climate change. Participants will learn to interpret climate data, apply analytical tools, and integrate insights into decision-making processes across industries such as finance, supply chain, energy, and more using tools like excel and python.

Course Learning Objectives

At the end of the course, students should be able to

1. CLO1- Understand the fundamentals of climate data and its relevance to business.
2. CLO2- Develop skills to analyze and interpret climate-related datasets.
3. CLO3- Apply climate analytics to assess risks, optimize operations, and drive sustainability.
4. CLO4- Explore real-world case studies of businesses using climate data effectively.

Programme Competency Goals

MBA Programme Competency Goals (PCGs)		MBA Programme Learning Objectives (PLOs)
		Students will be able to
1	**Technological Agility:** Ability to adopt relevant technologies for better business decision making.	1. Understand relevant business technologies
		2. Understand future technologies in business domain
2	**Responsible Global Citizenship:** Ability to understand the interplay between local and global issues and to act with sensitivity towards ethical and social issues	3. Understand the interplay between local and global business issues
		4. Demonstrate sensitivity towards ethical issues
		5. Demonstrate sensitivity towards social issues
		6. Address societal issues
3	**Effective communication:** Ability to effectively exchange ideas and information	7. Present their ideas with clarity
		8. Prepare an organized and logical business document
		9. Use technology for effective communication
4	**Critical Thinking:** Ability to identify, analyze business problems and propose effective solutions	10. Identify main issues of business problems
		11. Examine information from different sources
		12. Draw inferences from analysis
		13. Evaluate alternatives
		14. Summarize and conclude
5	**Leadership:** Ability to take initiative, inspire and collaborate with others	15. Take initiative
		16. Contribute effectively in groups

PLO-PCG Assessments Mapping Matrix

Program Learning Objectives (PLOs)	Program Competency Goals (PCGs)	Course Assessment Item
This course helps you to develop the following Program Learning Outcomes:	This course helps you to develop the following Program Competency Goals:	This learning outcome will be assessed in the following items
PLO1, PLO11, PLO13, PLO14	PCG1, PCG4	A4, A5
PLO3, PLO4, PLO5	PCG2	A4
PLO7	PCG3	A1, A2, A3, A5

PLO8, PLO9	PCG3	A1, A2, A5
PLO10, PLO12	PCG4	A1, A2, A3, A4, A5

Evaluation Schema

The course grade will be determined based on:

Assessment Task	Weightage	Nature	Week of Assessment	PLOs to be Assessed
A1: Assignment 1	15%	Individual	2nd Week	PLO7, PLO8, PLO9, PLO10, PLO12
A2: Assignment 2	15%	Individual	4th Week	PLO7, PLO8, PLO9, PLO10, PLO12
A3: Quiz	30%	Individual	3rd and 5th Week	PLO7, PLO10, PLO12
A4: Class Participation	10%	Individual	Throughout	PLO1, PLO 3, PLO4, PLO5, PLO 10, PLO11, PLO12, PLO13, PLO14
A5: Project Report + Presentation	30%	Individual	6th Week	PLO1, PLO7, PLO8, PLO9, PLO10, PLO11, PLO12, PLO13, PLO14

Description of Assessments:

A1-Assignment (15 marks): The assignment shall be distributed to students in 1st week of the course, and they are required to submit it by 2nd Week. There will be 3 questions which needs to be done and submitted in a typed/handwritten document or pdf format.

A2-Assignment (15 marks): The assignment shall be distributed to students in 2nd week of the course, and they are required to submit it by 4th Week. There will be 3 questions which needs to be done and submitted in a typed/handwritten document or pdf format.

A3-Quiz (30 marks): There shall be 2 in-class quiz. Please note that these quizzes will be closed book and will cover the concepts learned up to that point. One quiz will consist of multiple-choice questions which would be on UMS portal, while the other will be case based would be taken pen-paper based or on UMS portal.

A4- Class Participation (10 Marks): This shall be evaluated based on student participation in classroom discussions.

A5- Project Report +Presentation (20 + 10 marks): (Analyze a climate dataset and propose a business strategy) The project involves collection of climatic data by the individual, data visualization by plotting the data (5 marks). Analyze the climate data (5 marks) and provide a business strategy for it (based on the tools and techniques learnt in class) (10 marks). **The report needs to be submitted in a PDF format on UMS**.

A5: Project Presentation Rubrics (10 marks).

Criteria/Level	Poor (0)	Fair (1)	Good (1.5)	Excellent (2)
1) Identification of the right dataset.	The dataset identified has no relevance to the learning objectives or project guidelines.	The dataset identified has little relevance to the learning objectives or project guidelines.	The dataset identified is somewhat relevant and topical and but not fully aligns to the learning objectives and project guidelines.	The dataset identified is relevant and topical and aligns to the learning objectives and project guidelines.
2) Climate data visualization	The graphs/plots show no relevance to the project guidelines.	The plots show little relevance to the project guidelines.	The plots align to the project guidelines.	The plots are well presented and aligned to project guidelines.
3) Climate Data Analysis	Demonstrates no knowledge of climate data analysis.	Demonstrates little knowledge of climate data analytics.	Demonstrates good knowledge of climate data analytics.	Demonstrates clear understanding of climate data analytics.
4) Understanding of business strategy presented.	Demonstrates no business strategy.	Demonstrates limited understanding of the business strategy presented.	Demonstrates deep understanding of the business strategy presented.	Demonstrates a clear and deep understanding of the business strategy presented.
5) Conclusion drawn based on understanding and linking theory and concepts.	Incomplete links between the problems and the theory.	Limited links between the problems and the theory.	Good documented links between the problems and the theory.	Excellent documented links between problem and theory.

Teaching Method

The course will be a judicious mix of lectures, cases, and class discussions. Using short case studies and examples during the lecture will help the students understand the concepts and apply them to real business situations. Additional reading materials (research articles, news, blogs, white papers, etc.) will be used as supplements.

Textbook / Other Readings

- **Book-1: Introduction to Modern Climate Change by Andrew E. Dessler, 3rd Edition, Cambridge University Press (2021).**
- **Book-2: Statistics and Data Visualization in Climate Science with R and Python by Samuel S. P. Shen and Gerald R. North. Cambridge University Press (2023).**

- **Book-3: Hyndman, R.J., & Athanasopoulos, G. (2018) Forecasting: principles and practice, 3rd edition, OTexts: Melbourne, Australia. https://otexts.com/fpp3/**

Session Plan

Session Details	**Topics**	**PLOs Covered**
Session 1:	**Introduction to Climate Data**	**PLO3**
Objective of the session	At the end of this session you will learn • Introduction, course overview and course policies • Overview of climate change and its impact on businesses. • Types of climate data: weather patterns, emissions, sea level rise, etc.	
Subtopics to be covered	Course policies, climate change, Climate data meaning, use of climate data and its applications.	
Readings	Book-1: Chapter 1 and 2	
Case Title & Number	N/A	
Pedagogy	Class discussion and Q&A Session with the help of PPT presentation	
Session 2:	**Introduction to Climate Data and Business Relevance**	**PLO3, PLO4, PLO5**
Objective of the session	At the end of this session, you will learn • Why climate data matters: risk management, ESG goals, and market opportunities. • Discuss some articles on Decision Making based on Climate Data Analytics Challenges faced	
Subtopics to be covered	Discuss 2 research articles on business decision making for climate data: How a company adapted to climate risks using data.	
Readings	Book-1: Chapter 8	
Case Title & Number	N/A	
Pedagogy	Class discussion and Q&A Session with the help of PPT presentation	
Session 3	Data to Decisions	**PLO1**
Objective of the session	At the end of this session you will learn How can technology pave way to solve this climate data problem.	
Subtopics to be covered	Discuss research articles on Data to Decisions.	
Readings	1) Hallegatte, S., Ranger, N., Mestre, O. *et al.* Assessing climate change impacts, sea level rise and storm surge	

	risk in port cities: a case study on Copenhagen. *Climatic Change* **104**, 113–137 (2011). https://doi.org/10.1007/s10584-010-9978-3 2) Tiggeloven, T., et al, Global-scale benefit–cost analysis of coastal flood adaptation to different flood risk drivers using structural measures, Nat. Hazards Earth Syst. Sci., 20, 1025–1044, https://doi.org/10.5194/nhess-20-1025-2020, 2020.	
Case Title & Number	N/A	
Pedagogy	Class discussion and Q&A Session with the help of PPT presentation	
Session 4	Data Types, Sources and Classification	**PLO1**
Objective of the session	At the end of this session, you will learn • Public data sources (e.g., NOAA, IPCC, NASA). • Private data providers and industry-specific datasets. • Qualitative vs. quantitative climate data. • Data formats: time series, geospatial, and predictive models.	
Subtopics to be covered	Source of climate data, types of data and its formats.	
Readings	Book-2: Chapter 1	
Case Title & Number	N/A	
Pedagogy	Class discussion and Q&A Session with the help of PPT presentation	
Session 5	Models for Climate Data	**PLO1**
Objective of the session	At the end of this session, you will learn • Introduction to the different climate models • The difference between them.	
Subtopics to be covered	Climate models used by experts to analyze and give insights into the climate change	
Readings	https://www.climate.gov/maps-data/climate-data-primer/predicting-climate/climate-models	
Case Title & Number	N/A	
Pedagogy	Class discussion and Q&A Session with the help of PPT presentation	
Session 6	Process Climate Data	**PLO10, PLO11**
Objective of the session	At the end of this session, you will learn to • Process Climate data to the required form for your specific problem. • Quiz-1	
Subtopics to be covered	Examples of climate data processing	

Readings	Book-2: Chapter 1	
Case Title & Number	N/A	
Pedagogy	Class discussion and Q&A Session with the help of PPT presentation	
Session 7	Processing and Visualization of the Climate data	**PLO10, PLO11, PLO12**
Objective of the session	At the end of this session, you will learn to • Understand the importance of processing climate data and its visualization. • Introduction to data analytics tools (e.g., Python, R, Excel, Tableau). • Statistical methods for climate data (trends, correlations, forecasting).	
Subtopics to be covered	Example problem: Analyzing temperature trends with R/Python/Excel.	
Readings	Book-3: Chapter 2	
Case Title & Number	N/A	
Pedagogy	Class discussion and Q&A Session with the help of PPT presentation	
Session 8	Guest Lecture	**PLO1**
Objective of the session	Need of Climate Data Analytics and how it helps	
Subtopics to be covered	N/A	
Readings	N/A	
Case Title & Number	N/A	
Pedagogy	Class discussion and Q&A Session with the help of PPT presentation	
Session 9	Time Series Analysis of Climate Data	**PLO1**
Objective of the session	At the end of this session, you will learn • Time Series data visualization, decomposition. • Plotting Seasonal, seasonal-subseries, Lag plots. • Understand the concept of Stationarity and Differencing.	
Subtopics to be covered	Time Series data, Stationarity, Differencing, Lags, Decomposition.	
Readings	**Forecasting: principles and practice-Chapter 1, 2, 3, and 4**	
Case Title & Number	N/A	
Pedagogy	Class discussion and Q&A Session with the help of PPT presentation	
Session 10	ARIMA and SARIMA Analysis of Climate Data	**PLO12, PLO13**
Objective of the session	At the end of this session, you will • Understand ARIMA and SARIMA: The concept	

	• Perform SARIMA modeling.	
Subtopics to be covered	ACF and PACF, Learn the concept and theory of ARIMA and SARIMA, Steps involved in SARIMA analysis, Uses and limitations Apply theory learned earlier to examples and analyze the results and interpret them.	
Readings	**Forecasting: principles and practice-Chapter 9**	
Case Title & Number	N/A	
Pedagogy	Class discussion and Q&A Session with the help of PPT presentation	
Session 11	Assessing Climate Risks and Opportunities	**PLO12, PLO13**
Objective of the session	At the end of this session, you will learn • Physical risks: extreme weather, resource scarcity. • Transition risks: policy changes, carbon pricing, market shifts. • Opportunities: renewable energy, green products, resilience planning. • Scenario analysis and stress testing with climate data.	
Subtopics to be covered	Risks associated with Climate Change such as physical and transitional risks.	
Readings	https://doi.org/10.1016/j.gfj.2022.100805 https://doi.org/10.1016/j.mulfin.2024.100870 https://doi.org/10.1016/j.ijdrr.2024.104488	
Case Title & Number	N/A	
Pedagogy	Class discussion and Q&A Session with the help of PPT presentation	
Session 12	Integrating Climate Analytics into Business Strategy	**PLO12, PLO13, PLO14**
Objective of the session	At the end of this session, you will learn • Linking climate data to financial performance and KPIs. • Building climate-resilient supply chains and operations. • Reporting and compliance: TCFD, CDP, and ESG frameworks. • Stakeholder communication using data insights.	
Subtopics to be covered	Business Strategy for building climate-resilient supply chains and operations.	
Readings	https://link.springer.com/article/10.1007/s10584-024-03693-7 https://doi.org/10.1038/s41558-024-02082-3	

Case Title & Number	N/A	
Pedagogy	Class discussion and Q&A Session with the help of PPT presentation	
Session 13	Project Presentation	**PLO10, PLO12, PLO14**
Objective of the session	At the end of this session, you will learn • Project presentation. • Peer feedback	
Subtopics to be covered	Project work	
Readings	N/A	
Case Title & Number	N/A	
Pedagogy	Class discussion and Q&A Session with the help of PPT presentation	
Session 14	Reading and revision week	
Objective of the session	Course revision and doubt clearing	
Subtopics to be covered	N/A	
Readings	N/A	
Case Title & Number	N/A	
Pedagogy	N/A	
Session 15	Reading and Revision week	
Objective of the session	Course revision and doubt clearing	
Subtopics to be covered	N/A	
Readings	N/A	
Case Title & Number	N/A	
Pedagogy	N/A	

Disability Support

JGU endeavours to make all its courses accessible to students. The Disability Support Committee (DSC) has identified conditions that could hinder a student's overall wellbeing. These include physical and mobility-related difficulties, visual impairment, hearing impairment, mental health conditions, and intellectual/learning difficulties, e.g., dyslexia and dyscalculia. Students with any known disability needing academic and other support are required to register with the Disability Support Committee (DSC) by following the procedure specified at **https://jgu.edu.in/disability-support-committee/**

Students who need support may register any time during the semester up until a month before the end semester exam begins. Those students who wish to continue receiving support from the previous semester, must re-register within the first month of a semester. Last-minute registrations and support might not be possible as sufficient time is required to make the arrangements for support.

The DSC maintains strict confidentiality about the identity of the student and the nature of their disability and the same is requested from faculty members and staff as well. The DSC takes a strong stance against in-class

and out-of-class references made about a student's disability without their consent and disrespectful comments referring to a student's disability.

All general queries are to be addressed to **disabilitysupportcommittee@jgu.edu.in**

***Disclaimer: This course outline including assessments, sessions and/or readings may be revised during the semester if such need arises.**