




Here is a structured course lesson plan for **Business Forecasting**:




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## **Course Lesson Plan: Business Forecasting**



### **Week 1: Foundations of Business Forecasting**

-  **Lecture 1:** Introduction to Business Forecasting
  -  **Lecture 2:** Data-Driven Decision Making and Essentials of Predictive Analytics
  -  **Lecture 3:** Types of Forecasting – **Qualitative Approaches** (Delphi Method, Market Research) & **Quantitative Approaches** (Time Series, Regression)
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### **Week 2: Understanding Time Series & Moving Averages**

-  **Lecture 4:** Components of a Time Series – **Trend, Seasonality, Cyclical, Irregular Components**
  -  **Lecture 5:** Measures of Forecast Accuracy – MAE, RMSE, MAPE, MSE
  -  **Lecture 6:** Moving Average Methods – **Simple, Weighted, and Exponential Moving Averages**
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### **Week 3: Advanced Smoothing Techniques**

-  **Lecture 7:** Exponential Smoothing – **Single, Double, and Triple Exponential Smoothing**
  -  **Lecture 8:** Trend Projections & Holt Model – **Adjusting for Trends in Forecasting**
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### **Week 4: Regression-Based Forecasting**

-  **Lecture 9:** Regression Analysis – **Linear & Non-Linear Models**
  -  **Lecture 10:** Measures of Goodness of Fit –  **$R^2$ , Adjusted  $R^2$ , Standard Error**
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### **Week 5: Seasonality & Decomposition**

-  **Lecture 11:** Seasonality – **Seasonal Index, Quarterly Average Method**
  -  **Lecture 12:** Seasonality & Trend – **Holt-Winters Method**
  -  **Lecture 13:** Decomposition Method – **Classical Decomposition & X-12-ARIMA**
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### **Week 6: Autocorrelation & ARIMA**

📌 **Lecture 14: Autocorrelation Function (ACF) & Partial Autocorrelation Function (PACF)**

📌 **Lecture 15: ARIMA Model (Auto-Regressive Integrated Moving Average) – Identification, Estimation, Validation**

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### **Week 7: Machine Learning in Forecasting & Human Judgment**

📌 **Lecture 16: Introduction to Machine Learning for Forecasting**

📌 **Lecture 17: Logistic Regression for Predictive Forecasting**

📌 **Lecture 18: Human Judgment in Time Series Analysis – Biases & Expert Forecasting**

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### **Week 8: Risk Analytics & Monte Carlo Simulation**

📌 **Lecture 19: Monte Carlo Simulation – Risk Modeling in Business Forecasting**

📌 **Lecture 20: Predictive Analytics using @Risk Software / Python**

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This **structured course layout** ensures a **progressive understanding** of business forecasting, blending **theoretical concepts, statistical models, and modern machine learning techniques** for **real-world application**. 🚀