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| <b>PROGRAM</b>         | <b>Master of Business Administration-Business Analytics</b> |
| <b>SEMESTER</b>        | <b>III</b>  |
| <b>COURSE TITLE</b>    | <b>Business Forecasting (using EViews)-II</b>               |
| <b>COURSE CODE</b>     | <b>04MB0369</b>   |
| <b>COURSE CREDITS</b>  | <b>02</b>   |
| <b>COURSE DURATION</b> | <b>28 Hours (28 sessions of 60 minutes each)</b>            |

**COURSE OUTCOMES:**

- ❖ Apply time-series analytical tools to model, estimate, draw inference, and forecast in the context of real-world business problems.
- ❖ Critically evaluate the appropriate model for stationary and non-stationary time-series data using EViews
- ❖ Develop the foundation and understanding for further study of advanced econometric techniques.

**COURSE CONTENTS:**

| <b>Module No.</b> | <b>Unit/ Sub Unit</b>   | <b>Sessions</b> |
|-------------------|---|-----------------|
| <b>I</b>          | <b>Introduction to Time-series analysis:</b> Concept and examples of time-series data, Components of a time-series (Trend, Cyclical Variations, Seasonal Effects, Random Fluctuations); Smoothing Techniques: Moving Averages, Exponential Smoothing; Trend projection (linear, exponential), Calculation of seasonal indexes, Deseasonalizing the time-series, Forecasting using deseasonalized time-series data.  | <b>8</b>        |
| <b>II</b>         | <b>Regression with Time-series Data (Stationary):</b> Concept of Stationarity in time-series data, Introduction to lag variables, Modelling dynamic relationships- Finite Distributed lag model (DL), Autoregressive Model (AR), Autoregressive Distributed Lag Model (ARDL), Infinite Distributed Lag Model (IDL), Autoregressive Error Model (AR error) Autocorrelation (Serial correlation), Tests for Autocorrelation (Correlogram, Lagrange-Multiplier (LM) Test, and Durbin Watson Test) Forecasting using AR(p) model and ARDL(p,q) model  | <b>10</b>       |
| <b>III</b>        | <b>Regression with Time-series Data (Non-Stationary):</b> Concept of non-stationarity, Spurious regression, Unit root test for non-stationarity, Dicky-Fuller Test for stationarity with intercept and no trend, Dicky-Fuller test for stationarity with intercept and trend, Dicky-Fuller test for stationarity with no intercept and no trend, Cointegration, Dicky-Fuller test for cointegration, Forecasting using Non-stationary time-series data  | <b>10</b>       |
|                   | <b>Practicals</b> <ol style="list-style-type: none"> <li>1. Trend projection (linear)</li> <li>2. Trend projection (exponential)</li> <li>3. Smoothing of time-series data using Moving Averages</li> <li>4. Smoothing of time-series data using exponential smoothing</li> <li>5. Calculation of seasonal indexes and deseasonalization of time-series data</li> <li>6. Forecasting using deseasonalized time-series data</li> <li>7. Test for autocorrelation using Correlogram plot for stationary time-series</li> <li>8. Test for autocorrelation using LM test for stationary time-series</li> <li>9. Test for autocorrelation using Durbin-Watson test for stationary time-series</li> <li>10. Forecasting using AR(1), AR(2), AR(3) model for stationary time-series</li> <li>11. Forecasting using DL(1), DL(2), DL(3) model for stationary time-series</li> </ol> |                 |

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|  | 12. Forecasting using ARDL(2,2), ARDL(2,3) model for stationary time-series<br>13. Correlogram plot for non-stationary variables<br>14. Illustration of spurious regression for non-stationary time-series data<br>15. Dicky-Fuller test for stationarity (with intercept and no trend)<br>16. Dicky-Fuller test for stationarity (with intercept and trend)<br>17. Dicky-Fuller test for stationarity (with no intercept and no trend)<br>18. Dicky-Fuller test for cointegration<br>19. Forecasting using non-stationary time-series data |  |
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#### EVALUATION:

The students will be evaluated on a continuous basis and broadly follow the scheme given below:

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|   |   | Weight-age                   |
| A | Continuous Evaluation Component (Assignments / Quizzes /Class Participation etc.) | 20% (C.E.C.)                 |
| B | Internal Assessment (MCQ)   | 30% (I.A.)                   |
| C | End-Semester Practical Examination  | 50%<br>(External Assessment) |

#### SUGGESTED READINGS:

##### TEXT BOOKS:

| Sr.No | Author/s  | Name of the book                            | Publisher           | Edition and Year       |
|-------|---|---|---------------------|------------------------|
| T-01  | R. Carter Hill, William E. Griffiths, Guay C. Lim | Principles of Econometrics                  | John Wiley and Sons | 5 <sup>th</sup> , 2018 |
| T-02  | William E. Griffiths, R. Carter Hill, Guay C. Lim | Using Eviews for Principles of Econometrics | John Wiley and Sons | 5 <sup>th</sup> , 2019 |

##### REFERENCE BOOKS:

| Sr.No | Author/s  | Name of the book                      | Publisher        | Edition and Year                 |
|-------|---|---------------------------------------|------------------|----------------------------------|
| R-01  | David R. Anderson, Dennis J. Sweeney, Thomas A. Williams, Jeffrey D. Camm, James J. Cochran | Statistics for Business and Economics | Cengage Learning | 13 <sup>th</sup> (revised), 2018 |