M.A. (DLB)0704– Data Management and Analysis using STATA

MA/BA -Spring

Course Information

Course Duration: 45 hours
Credit Hours: 4
Meetings: 15
Location**:** Sonipat
Prerequisites: The course requires students to have a basic understanding of statistics. The student should have a keen interest in understanding the basics of STATA software, various statistical techniques, and their applications in STATA.
Equivalent Courses: NA
Exclusive Courses: NA
Course type: Elective
Course level: MA & BA

Instructor Information

Instructor: Dr. Madhur Bhatia
Biography: Dr. Madhur Bhatia is currently an Assistant Professor of Economics at the O.P. Jindal Global University. She received her Doctorate degree from the Indian Institute of Technology Roorkee, Roorkee, India. She qualified for the National Eligibility Test (NET-JRF) for Lectureship and Junior Research Fellowship conducted by UGC, New Delhi, India. She has published various articles in ABDC and Scopus-listed journals.
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1. Course Description

The goal of this course is to introduce STATA and its applications in various kinds of research. It would describe the requirements necessary to undertake the basics of data management and analysis. The course would first provide the hands-on experience on data management in STATA, followed by the basics of various statistical topics, and their applications in STATA. The topics covered during the course include Correlation, Linear Regression Models, Regression Diagnostics, Logistic Regression models, and Panel Data models.

Course Intended Learning Objectives(Aim)

Course Intended Learning Outcomes	Teaching and Learning Activities	Assessments/ Activities
Understand the structure and interface of STATA	Use of STATA in class	Practical application using STATA
Understand the process of applying statistical methods and techniques	Demonstrate in-depth knowledge of a range of statistical methods using data	Practical application using STATA
Interpretation of the outputs of various statistical methods	Read, analyze critically, compare, and evaluate various statistical methods and techniques for analyzing research hypotheses	Interpret the inferences from the analyzed data
Work effectively in a team or independently to achieve goals	Research presentation and mid-term assessment	Research presentation and mid-term assessment

2. Scheme of Evaluation and Grading

Evaluation breakup

Internal breakup- 70%

Components- Mid-term (30%), Research presentation (30%), and Class participation (10%)

External breakup- 30%

1. **Class participation:** Active participation and regular attendance are required for this class. The student is expected to actively engage in class discussions.
2. **Mid-term exam:** It will take place in the 7^{th} or 8^{th} week.
3. **Research Presentation**: Students will present in groups of 2 for 20 minutes in weeks 13^{th} & 14^{th}.
4. **End-term:** It consists of an end-term question paper.

Grade Definition

Grading and Comments			
Letter Grade	**Percentage of Marks**	**Grade Points**	**Comments**
O	80 and above	8	**Outstanding:** Exceptional knowledge of the subject matter, thorough understanding of issues; ability to

			synthesize ideas, rules and principles and extraordinary critical and analytical ability.
A+	75 - 79	7.5	**Excellent:** Sound knowledge of the subject matter, thorough understanding of issues; ability to synthesize ideas, rules and principles and critical and analytical ability.
A	70 - 74	7	**Very Good:** Sound knowledge of the subject matter, excellent organizational capacity, ability to synthesize ideas, rules and principles, critically analyse existing material and originality in thinking and presentation.
A-	65 -69	6	**Good:** Good understanding of the subject matter, ability to identify issues and provide balanced solutions to problems and good critical and analytical skills.
B+	60 - 64	5	**Fair:** Average understanding of the subject matter, limited ability to identify issues and provide solutions to problems and reasonable critical and analytical skills.
B	55 - 59	4	**Acceptable:** Adequate knowledge of the subject matter to go to the next level of the study and reasonable critical and analytical skills.
B-	50 - 54	3	**Marginal:** Limited knowledge of the subject matter and irrelevant use of materials, and poor critical and analytical skills.
P1	45 - 49	2	**Pass 1:** Pass with Basic understanding of the subject matter.
P2	40 - 44	1	**Pass 2:** Pass with Rudimentary understanding of the subject matter.
F	Below 40	0	**Fail:** Poor comprehension of the subject matter; poor critical and analytical skills and marginal use of the relevant materials. Will require repeating the course.

3. Academic Integrity

Academic Honesty, Cheating, and Plagiarism

Plagiarism is the use of someone else's words OR ideas without proper acknowledgment. Any idea, sentence, or paragraph you take from a web source or from printed material must be credited with the original source. If you paraphrase or directly quote in the exam or essays, the source must be explicitly mentioned. You should not plagiarize content, be it from scholarly sources (i.e., books and journal articles) or from the Internet.

Participation/Attendance Policy

Students should actively participate in class topics while also maintaining class decorum. Attendance of 75% is required to take the end-term exam.

Use of phone/ texting/ laptop

The use of phones is not permitted in the classroom. Students must, however, bring their own laptop computers for the class.

4. **Keyword Syllabus:** STATA, Practical application, Linear Regression Models, Regression Diagnostics, Logistic Regression models, and Panel Data models

5. Course Material

Textbooks

A. Mandatory Textbooks

- Agresti, A. (2018). *Statistical methods for the social sciences*. Pearson.
- Cameron, A. C., & Trivedi, P. K. (2010). *Microeconometrics using stata* (Vol. 2). College Station, TX: Stata press.
- Gujarati, D. N. (2011). *Econometrics by example* (Vol. 1). New York: Palgrave Macmillan.

B. Suggested Textbooks

- McGovern, M. E. (2012). *A practical introduction to Stata* (No. WP12/01). UCD Centre for Economic Research Working Paper Series.
- Longest, K. C. (2019). *Using Stata for quantitative analysis*. SAGE Publications.
- Creswell, J. W., & Creswell, J. (2003). *Research design* (pp. 155-179). Thousand Oaks, CA: Sage publications.
- Kothari, C. R. (2014). *Research Methodology: Methods and Techniques* (2nd ed.). New Delhi: New Age International Publishers.

Reference books

- Hamilton, L. C. (2012). *Statistics with Stata: version 12*. Cengage Learning.

Web Sources

Stata examples and datasets | Stata

6. Session Plan

Session (with Date)	General Topic	Readings	Approach/Pedagogy
Session 1	Introduction to STATA Data Management and Preparation Data Entry/Importing	Hamilton, L. C. (2012). *Statistics with Stata: version 12*. Cengage Learning. Cameron, A. C., & Trivedi, P. K. (2010). *Microeconometrics using stata* (Vol. 2). College Station, TX: Stata press.	White board STATA software
Session 2	Data Management	Hamilton, L. C. (2012). *Statistics with Stata: version 12*. Cengage Learning. Cameron, A. C., & Trivedi, P. K. (2010). *Microeconometrics*	White board STATA software

		using stata (Vol. 2). College Station, TX: Stata press.	
Session 3	Graphical representation Summary statistics and Tables	Hamilton, L. C. (2012). *Statistics with Stata: version 12*. Cengage Learning. Cameron, A. C., & Trivedi, P. K. (2010). *Microeconometrics using stata* (Vol. 2). College Station, TX: Stata press.	White board STATA software
Session 4	Fundamentals of hypothesis testing	Agresti, A. (2018). *Statistical methods for the social sciences*. Pearson.	White board STATA software
Session 5	Correlation and Practical Application using STATA	Cameron, A. C., & Trivedi, P. K. (2010). *Microeconometrics using stata* (Vol. 2). College Station, TX: Stata press.	White board STATA software
Session 6	Analysis of Variance-Basics and Practical Application using STATA	Cameron, A. C., & Trivedi, P. K. (2010). *Microeconometrics using stata* (Vol. 2). College Station, TX: Stata press.	White board STATA software
Session 7	Midterm		
Session 8	Linear Regression Models- Basics and Practical Application using STATA	Agresti, A. (2018). *Statistical methods for the social sciences*. Pearson. Cameron, A. C., & Trivedi, P. K. (2010). *Microeconometrics using stata* (Vol. 2). College Station, TX: Stata press.	White board STATA software
Session 9	Qualitative Regression Explanatory Variables Models- Basics and Practical Application using STATA	Gujarati, D. N. (2011). *Econometrics by example* (Vol. 1). New York: Palgrave Macmillan. Cameron, A. C., & Trivedi, P. K. (2010). *Microeconometrics using stata* (Vol. 2). College Station, TX: Stata press.	White board STATA software
Session 10	Regression Diagnostics: Multicollinearity,	Gujarati, D. N. (2011). *Econometrics by*	White board STATA software

	Heteroscedasticity, and Autocorrelation	*example* (Vol. 1). New York: Palgrave Macmillan. Cameron, A. C., & Trivedi, P. K. (2010). *Microeconometrics using stata* (Vol. 2). College Station, TX: Stata press.	
Session 11	Logistic Regression- Basics and Practical Application using STATA	Agresti, A. (2018). *Statistical methods for the social sciences*. Pearson. Cameron, A. C., & Trivedi, P. K. (2010). *Microeconometrics using stata* (Vol. 2). College Station, TX: Stata press.	White board STATA software
Session 12	Linear Panel Data Models- Basics and Practical Application using STATA	Gujarati, D. N. (2011). *Econometrics by example* (Vol. 1). New York: Palgrave Macmillan. Cameron, A. C., & Trivedi, P. K. (2010). *Microeconometrics using stata* (Vol. 2). College Station, TX: Stata press.	White board STATA software
Session 13	Linear Panel Data Models- Basics and Practical Application using STATA	Gujarati, D. N. (2011). *Econometrics by example* (Vol. 1). New York: Palgrave Macmillan. Cameron, A. C., & Trivedi, P. K. (2010). *Microeconometrics using stata* (Vol. 2). College Station, TX: Stata press.	White board STATA software
Session 14	Research Presentation		
Session 15	Revision		