UNIVERSITY OF DELHI  
DELHI SCHOOL OF ECONOMICS  
DEPARTMENT OF ECONOMICS  

Minutes of Meeting  

GE31 and HS31  

Date: 10th August, 2021  
Venue: Online on Zoom between 15:00 to 16:30 Hours  
Convener: Dr Vishruti Gupta  
Semester: Third Semester  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>HS31</th>
<th>GE31</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature</td>
<td>Skill-Enhancement Elective Courses (SEC)</td>
<td>Generic Elective</td>
</tr>
<tr>
<td>Lectures</td>
<td>2 Theory + 4 Practicals</td>
<td>5 Theory + 2 Practicals</td>
</tr>
</tbody>
</table>

Attended by:  
1. Dr. D Appala Naidu  
2. Shweta Nanda  
3. Dr. Deepika Goel  
4. N. Manichandra Singh  
5. Ashok Kumar  
6. Nitish Kashyap  
7. Rakesh Kumar  
8. Bhavna Seth  
9. Siddharth Rathore  
10. Sonam Aggarwal  
11. Nivedita Mullick  
12. Manvi Jain  
13. Dr. Prabhjot Kaur  
14. Alisha George  
15. Pummy  
16. Har Simrat Kaur  
17. Surabhi Gupta  
18. Dr. Hena Oak  
19. Deepika Kandpal  
20. Dr. Enakshi Sinha Ray Chaudhury  
21. Dr. Apoorva Gupta  

ARSD  
Aryabhata College  
Aryabhata College  
Daulat Ram College  
Daulat Ram College  
Dyal Singh College  
Dyal Singh College (M)  
Gargi College  
Hansraj College  
Hindu College  
Indraprastha College for Women  
Indraprastha College for Women  
Jesus and Mary College  
Kalindi College  
Lady Shri Ram College for Women  
Lady Shri Ram College for Women  
Miranda House  
PGDAV College (Morning)  
Rajdhani college  
Ramjas College
Course Objective

This is a skill enhancement course for data analysis. The students will be given hands on training on using statistical and computing software to better visualize and understand data concepts.

The course is designed to be delivered through 2 classroom lectures and 4 computer lab classes per week.

Course Learning Outcomes

The course will use data simulations and publicly available data sources to help students learn about data types, their organization and visual representation. They will learn how to compute summary statistics and do some basic statistical inference.

Unit 1

Introduction to the course: How can the representation and analysis of data help us study real-world problems. Publicly available data sets.

- Levine et. al pgs 25-35, Chapter 1 Sections 1.1-1.3
- Devore, Chapter 1, pgs 32-33 (trimmed mean)
- Data base of Indian Economy, RBI (www.dbie.rbi.org.in), world bank data set
- On data and its representation and a large data set
- https://www.ted.com/talks/hans_rosling_the_best_stats_you_ve_ever_seen (Gapminder.org)
- Tattar et. al. Chapter 1 (pg 6 -7)

Unit 2

Using Data: Available statistical software, steps in data storage, organization and Cleaning
• Levine *et. al.* Chapter 1, Section 1.4 onwards; Chapter 2, Sections 2.1-2.2
• Gardener Chapter 1(pg1-24), Chapter 2(till pg61), Chapter 9 (pg 312-313)
• Tattar *et. al.* Chapter2 (pg 15-18, 41-46)

Unit 3

Visualization and Representation: Alternative forms of presenting summarizing and presenting data.

• Levine *et. al.* Chapter2, Section 2.3 onwards; Chapter3.
• Levine *et. al.* Chapter4, page 169
• Tattar *et. al.* Chapter 5 (pg105-109)
• Gardener, Chapter 5 (pg 154-158), Chapter 7 (pg215-217)

Unit 4

Simple estimation techniques and tests for statistical inference. Hypothesis testing.

• Levine *et. al.* Chapter5 (pg 199,203-4 and relevant functions from the Excel Guide of Chapter 5)
• Levine *et. al.* Chapter6 ( pg 225, 228-229 and relevant functions from the Excel Guide of Chapter 6)
• Levine *et. al.* Chapter7; Chapter8, Sections 8.1-8.4 and pg 292-293; Chapter9; Chapter10, Sections 10.1,10.4, Pg361- Summary onwards, Relevant parts of Excel guide
• Gardener Chapter 6 (pg 181-183)

*For Levine et al. refer to the relevant sections on MS Excel at the end of the respective chapters.

References


5. Rstudio should also be downloaded for the treatment of data through the following link https://rstudio.com/, and for this book by Wickham will be helpful https://rstudio.com/resources/books/

Reference for Teachers
Teaching Learning Process

Lectures and tutorials

Assessment Methods

Internal assessment and final examination as per CBCS rules

**Internal Assessment** will be worth 25 marks of which 5 marks will be for attendance and 20 marks for a hands-on project for the project the students are expected to use secondary sources of data available in public domain (eg. Indian economy data, World Bank data etc.) and analyse it using at least one of the software taught (Excel and R) preferably both(though for different parts of the project).

**External Assessment** will be 65 theory and 10 practical.

Points to be noted:

1. This course has been assigned 2 lectures and 4 practicals.
2. The college should provide 4 lab hours per week to conduct these practicals.
3. The University end of semester exam will be worth 75 marks which will be conducted in the lab. It will be a combination of theory and practical questions with greater weightage to the latter.

Minutes of the Meeting

A virtual meeting of the faculty members teaching the paper was held on Tuesday, August 10, 2021. The faculty members present in the meeting agreed on the following points:

1. The first 4 - 5 classes to be dedicate to introducing basics of R/ R-Studio/R-Cloud and Microsoft Excel. Certain commands could be taught in these classes to help the students get started. These may not necessarily be application of the statistical concepts.
2. This year following topics will be covered in the current syllabus
   a. Basic concepts of probability, Simple Probability, Joint Probability, and the General Addition Rule in Unit 3 (Levine et. al. Chapter4) Page 169
3. The coverage of R would be extended beyond basic this year. Application of the concepts to be taught both in Excel and R.
4. There would be suggested list of packages/commands (preferably compatible with R- Cloud) which would be taught in the course.
5. It was decided in the meeting that the teacher would prepare a list of suggested commands/packages, so that teaching is uniform across colleges.

6. The evaluation criteria remains the same (as discussed in meeting on 11 November 2020). (Document attached).

7. With reference to point 4, if a student uses a different approach/package/command in the examination and it is correct then the student would not be penalised. In other words, no penalty for using a correct method which is not taught in the class.

8. The end-of-semester exam should not rely on students having access to computers since this will not be uniformly true.

9. The evaluation and question paper should be balanced and test skills both in Excel and R.

10. Emphasis on interpretation of the results obtained both while teaching and evaluation.

11. GE31 and HS31 would have the same course outline and evaluation criteria.

12. Suggested Resources for the teachers for learning like:
   a. Datacamp
   b. Coursera
   c. FDP courses

13. Teaching is not restricted to the references above since there are a number of online resources available and these keep changing. The readings are to indicate topics covered. These could be supplemented and substituted with other material.

14. The faculty should keep soft copies of practical exam question paper and answer scripts for each student in records as evidence for the university.

15. PHSTAT – this is a paid add on (with the book). This would not be used in the course.

16. Versions in Excel and Google Sheets. Excel 2007 Kindly ensure that the command gives desired result in various versions of Excel.

---

Data Analysis (SEC)
Minutes of the meeting
Wednesday 11.11.20 at 4 p.m

A virtual meeting of the faculty members teaching the paper was held on Wednesday, 11.11.20 to discuss the composition of theory and practical exams, the breakup for which has already been officially communicated as 65(Theory) and 10 (Practical).

The faculty members present in the meeting agreed on the following points:

1. The practical exam of 10 marks will be internally taken by the concerned faculty teaching the paper through online mode.

2. The practical component should test students’ for ‘hands on using Excel and R’.

3. The faculty should keep soft copies of practical exam question paper and answer scripts for each student in records as evidence for the university.
4. The house unanimously agreed to include theory questions including numerical for 25 marks and the remaining 40 marks for checking students’ analytical skills and ability to interpret results probably through a small caselet or screenshot of excel workbook.

5. The members further discussed the nature of questions falling under the two categories as discussed above.

6. The question paper should be set incorporating the fact that students need not have a laptop facility to appear in the theory exam.

7. The members suggested to have an internal choice in the paper.

8. The weightage of marks for each unit remained undecided.

9. The members emphasized on sharing some of the sample questions in the interest of students.