Course title: Application of Quantitative Data Analysis in Development Practice			
Course code: MPD 113	**No. of credits:** 2	**L-T-P:** 8-15-14	**Learning hours:** 30

Pre-requisite course code and title (if any):
• MPD106- Group Practicum: community needs assessment- from where students carry their own data sets collected from the field. • MPD111- Quantitative Analysis for Development Practice - from where students are already familiar with basic statistics

Department: Department of Policy Studies	
Course coordinator(s): Dr Chandan Kumar	**Course instructor(s):** Dr Chandan Kumar
Contact details: chandan.kumar@terisas.ac.in	
Course type: Elective	**Course offered in:** Semester 3

Course description

The basic premise of this course lies in developing a set of skills among students for quantitative data analysis for programme and policy design. MA-SDP students collect enormous amount of data during the course (MPD 102), which is designed for community needs assessment. While some of these data are analysed by the students using preliminary techniques, a hands-on experience in developing a dataset based on the information collected from the community and analysing them using advanced statistical techniques help students complete an entire process of an independent study. This training can also be useful in applying such techniques on large-scale datasets such as National Family Health Survey (NFHS), India Human Development Survey (IHDS), National Sample Survey (NSS) etc. that are already collected by different agencies and which is widely used in the area of development planning.

Learning objectives:

- To provide students training in relatively advanced statistical analysis of community level data collected from the primary survey, in addition to those covered in pre-requisite courses.
- To provide hands-on-training on statistical software and the application of relatively advanced statistical analysis on the large-scale secondary data

Course content

Module	Topic	L	T	P
1.	**Introduction to Data Structuring** Creating database structure, data maneuvering, transfer (importing and exporting) of data across formats, sorting, filtering and selection of data	2	5	4

2.	**Use of Statistical Analysis in Small Sample Surveys**
	Application of statistical tools and techniques for small sample size datasets: sample distribution, mean, standard deviations, standard error and confidence interval, tests for mean/proportion, correlation. The tutorial will cover aspects such as:
	    a) generating variable codes and labels
	    b) recoding and merging variables
	In the practical session, students will be required to apply the knowledge gained in this and previous modules to structure the data and address problems in the data set, if any. Students will be given exposure to common errors in data structuring and analysis. They will be required to undertake exercises related to both structuring and cleaning.
		2	5	4

3.	**Use of Large-Scale Survey in Development Practice** Students will explore and analyse the Large-scale survey data based on well-defined study objective(s) linked to sustainability issues including education, health, water and sanitation, gender, socioeconomic and regional differences etc. The tutorial session will focus on understanding salient aspects of large-scale surveys (NFHS, IHDS, NSS): sampling, stratifications, unit of analysis, concept of data hierarchy. This will also include analysis of large-scale survey: bi-variate and multi-variate associations, regression (simple and multiple regression) models During the practical session, students will carry out small exercises using these surveys. They will be required to carry out analysis of the data set complete in all respect using appropriate software. Different elements of analysis will be clearly delineated, and	4	5	6

	students will be informed well in advance.			
	Total	**8**	**15**	**14**

Evaluation criteria:

Course grades will be based on the following criteria:
- **Test-1:** Term paper 1: 40% (mid-semester/7 weeks from the beginning).
- **Test-2:** Term paper 2: 40% (at the end of semester/14 weeks from the beginning) Details: Two separate term papers will be submitted by the students. One will be based on small survey data (carried out by the students during field work for MPD 102); the other will be based on large-scale survey data analysis. Both will have a word limit of 3000-4000. The guideline on structure and content of the term paper is given below:
  (1) Introduction: literature review and existing gaps, need of the study;
  (2) Methodology: data, dependent and independent variables, methods used, ethical statement;
  (3) Results: sample distribution, bivariate and multivariate results;
  (4) Discussion: relevance of study findings in the context of existing knowledge, policy implications, strength and limitations of the study and future direction.
- **Test-3:** Term paper -1 based presentation: 10% (mid-semester)
- **Test-4:** Term paper -2 based presentation: 10% (end of semester)

Learning outcomes

Upon completion of this course, students would be able to:
1. create datasets using raw data collected during the primary survey in the community, and analyze them with a well-defined objective.
2. use appropriate statistical techniques/methods based on the nature of data: Application of appropriate statistical techniques will be assessed based on the term paper evaluation where students will be asked to apply suitable statistical techniques based on nature of variables and number of samples (Test 2 and 4).
3. use large scale survey in different development context ranging from problem identification to programme and policy design. The second term paper will be based on current development challenges and how large-scale nationally representative surveys can be used to generate evidence and evaluate policies (Test 2 and 4).

Pedagogical approach

Interactive pedagogical style to maximize the learning opportunity through hands on experience. Use of statistical package like Stata/SPSS for data processing and analysis.

Suggested readings
- IBM SPSS. *Statistics 22 Core System User's Guide*.
  http://www.sussex.ac.uk/its/pdfs/SPSS_Core_System_User_Guide_22.pdf

- International Institute for Population Sciences (IIPS) and ICF. 2017. *National Family Health Survey (NFHS-4), 2015-16: India*. Mumbai: IIPS.http://rchiips.org/nfhs/NFHS-4Reports/India.pdf

- Ministry of Statistics and Programme Implementation, Government of India. *National Sample Survey*. http://www.mospi.gov.in/national-sample-survey-office-nsso

- National Council of Applied Economic Research and University of Maryland. *India Human Development Survey (IHDS), 2005. 2017*. doi:10.3886/ICPSR22626.v11
  https://ihds.umd.edu/

- StataCorp. 2017. *Stata: Release 15*. Statistical Software. College Station, TX: StataCorp LLC.https://www.stata.com/manuals/r.pdf

Additional information:

Student responsibilities

Attendance: At-least 75% attendance will be required. Timely submission of assignment/project.

Course reviewers
1. Dr. Manoj Alagarajan, Department of Development Studies, International Institute for Population Sciences (IIPS), Mumbai.
2. Dr. Akhilesh Kr. Sharma, Institute for Human Development, New Delhi.