Ph.D STATISTICS (COURSE WORK)-2018
STRUCTURE OF THE COURSE

SEMESTER – I (January-June)	Title of Paper	Credit Hours (Hrs Semester)
MPH 611	Probability Theory and Stochastic Processes	4 CH(40-48 Hrs)
MPH 612	(Theory Elective)	4 CH(40-48 Hrs)
MPH 613	Research Methodologies	4 CH(40-48 Hrs)
MPH 614	Field Studies	4 CH(40-48 Hrs)
MPH 615	Review of Research Paper published in referred Journals i) Review Report – 2CH ii) Seminar-2CH	4 CH
	Total	20 CH

The electives will be chosen from the schedule-A.

SCHEDULE-A

The Statistics students will choose any one elective from the following :

1. **STATISTICAL INFERENCE**
2. **ADVANCED THEORY OF SAMPLE SURVEYS**
3. **REGRESSION ANALYSIS AND BAYESIAN INFERENCE**
4. **STOCHASTIC INFERENCE.**

MPH 611

Probability Theory & Stochastic Processes :

I. Sigma field, Borel field, Measurable space, Product space, additive set function, Measure and Probability space, Induced measure and distribution function.

II. Independence of sequence of events and random variables, multiplication properties, random allocation of balls into cells, Borel-Cantelli theorem and characterization of independence, Tail sigma field, 0-1 law, Different types of convergence and its applications.

III. Random walk, Gambler's Ruin Problem,
Markov Chains :- Definition, Transition Problem, classification of states, Recurrence, Examples of Recurrence Markov Chain.

IV Birth and Death Process :
General birth and death process, Poisson Process, Differential equations of birth and death process
Martingales :- Definition and examples, upper Martingales,Super martingale and sub-Martingales, optimal sampling theorem, Martingale convergence theorem.

Books

1. Prob & Measure: P.Billingsley, Academic Press
2. A graduate course in prob : H.G.Tucker AP
3. Limit theorems for sums of independent random variable: B.V.Gnedenko & A.N.Kolmogorov, Addison Wesley.