MANGALORE UNIVERSITY

Scheme of Examination and Syllabus for

Master of Science in Statistics Degree Programme

Choice Based Credit System (CBCS)

(2016-17 onwards)

DEPARTMENT OF POST-GRADUATE STUDIES AND RESEARCH IN STATISTICS

MANGALAGANGOTHRI-574 199

JULY 2016

A. Preamble:

The University Grants Commission, New Delhi has directed all Universities in the Country to implement the Choice Based Credit System (CBCS Semester Scheme)in both the Undergraduate and Post-Graduate programmes. The Higher Education Council, Government of Karnataka also considered the implementation of CBCS. Mangalore University considered feasibility of CBCS at several levels and through meeting of its statutory bodies and finally directed all the P.G. Board of Studies to frame the new syllabus for the P.G. Programmes as per the new regulations governing the Choice Based Credit System for the Two Year (Four Semester) Post-Graduate Programmes. Accordingly the internal members of P.G. Board of Studies in Statistics discussed in length, on CBCS – PG Scheme and prepared a draft syllabus. The syllabus is placed before the P.G. Board of Studies. The P.G. Board of Studies in Statistics thoroughly discussed, modified and finalized the draft syllabus.

The present M.Sc. programme under CBCS-PG Scheme has total credits 90 (14 Hard Core Courses of 54 credits + 10 Soft Core Courses with 30 credits and two open elective with 6 credits). Apart from teaching core Statistics subjects, the students are also trained to handle real life problems through the practical classes. As a part of the course the students are taught programming in Excel and R-Software.

PROGRAMME OUTCOMES (POs)

The curriculum leading to M.Sc-Statistics degree prepares the students for the positions as Data scientists, Data Analyst, and Academicians in Business Intelligence, Information Technology, Software Industry and Government sectors. The curriculum's main objectives are to impart students with an understanding of the various techniques of data analysis, problem solving skills through algorithmic approaches and to prepare them for continued professional development.

Upon completion of M.Sc. Statistics degree, students will be able:

PO 1: To cultivate a statistical attitude and nurture interests in mathematical statistics.
PO 2: To provide theoretical foundations that will motivate and prepare the students to take up theoretical and applied research in statistics.
PO 3: To focus on algorithms, designs and advanced softwares to give statistical solutions to real life problems.
PO 4: To provide first hand practical experience in handling modern statistical software in data analysis
PO 5: To provide training for a career as a statisticians
PO 6: To train statisticians who can work on challenging problems in various industries.
PO 7: Communicate effectively, both orally and in writing
PO 8: Recognize the social and ethical responsibilities of a professional working in the discipline

PROGRAMME SPECIFIC OUTCOMES (PSO)

On completion of the M.Sc.-Statistics Degree programme the graduates of the M.Sc (Statistics) program will be expected to have to

PSO 1: Professionally inclined Statistics knowledge.
PSO 2: Deeper knowledge of statistical inference and be able to discuss and analyse its possibilities and limitations
PSO 3: Contributions as researchers in theoretical and applied fields of Statistics.
PSO 4: Evince an ability critically, independently, and creatively to identify and formulate problems of significance for statistical science
PSO 5: Have a deeper knowledge of the use of statistical methods in empirical applications, be able to interpret, analyse, and critically evaluate results on the basis of scientific and ethical considerations
PSO 6: Developed the capacity for independent study of statistics and problem-solving at a higher level

B. Course pattern for M.Sc.(Statistics) Programme from 2016-17.

Semester	Hard Core			Soft Core			Open Elective			Project	Total
	No. of Courses	Credits	Total Credits	No. of Courses	Credits	Total Credits	No. of Courses	Credits	Total Credits	Credits	Total Credits
I	4 Theory 1 Practical	4x4=16 1x3=3	19	1 Practical	1x3=3	3	-	-	-	-	22
II	3 Theory 1 Practical	3x4=12 1x3=3	15	1 Theory 1 Practical	1x3=3 1x3=3	6	1	3	3	-	24
III	2 Theory 1 Practical	2x4=8 1x3=3	11	2 theory 1 Practical	2x3=6 1x3=3	9	1	3	3	-	23
IV	1 theory	1x4=4	4	3 Theory 1 Practical	3x3=9 1x3=3	12	-	-	-	5	21
			49			30			6	5	90

C. <u>Scheme of Internal Assessment Evaluation:</u>

The scheme of evaluation for internal assessment marks shall be as follows:

(i) Two tests each of 2 hrs. duration: 10x2= 20 marks

(ii) Seminar/Assignment/Viva/ Multiple Choice Test etc. .: = 10 marks

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Total: 30 marks

D. Question Paper Pattern:

The pattern of question papers in theory examinations shall be as follows:

1. There shall be totally 8 questions of which the Q. No. 1 is compulsory.

   Students have to answer any 4 questions from the remaining 7 questions.

2. Q.No.1 will contain two parts. Part 1 and Part 2. Part 1 will contains 10 multiple choice questions of one mark each. Part 2 contains 6 sub questions of 3 marks each. Students will have to answer all questions from Part 1 and any four sub questions from Part 2.

3. Q.No.2 to Q.No.8 will be of long answer type, each carrying 12 marks.

   The distribution of marks will be as follows:

Q.1 -	Part 1 : 10 x 1 = 10	
	Part 2 : 4 x 3 = 12	
Any four questions out of remaining 7	12 x 4 = 48	
	Total:	**70**

Hard Core Courses (4 **Credit each**)

First Semester M.Sc., Statistics

Code	**Course**
STH401	Real Analyses
STH402	Matrix Theory and R Programming
STH403	Probability Theory
STH404	Theory of Sampling
STP405	Practical I - Based on STH404
STP406	Practical II-(R-Programming &Excel)

Second Semester M.Sc., Statistics

STH452	Distribution Theory
STH453	Theory of Point Estimation
STH454	Econometrics
STS455:	Actuarial Statistics
STP456:	Practical III: Based on STH454-Econometrics
STP 457:	Practical IV: Based on STH 452, STH453 &STS455

Third Semester M.Sc., Statistics

STE501:	Statistical Testing in Data Analysis
STH502:	Testing of Hypothesis
STH503:	Stochastic Processes
STS 504:	Soft Course
STS 505:	Soft Course
STP506:	Practical V (based on STH 502 & STS 505)
STP507:	Practical VI (based on STH 503 & STS504)

Fourth Semester M.Sc., Statistics

STH551:	Design and Analysis of Experiments
STS 552:	Soft Course
STS 553:	Soft Course
STS 554:	Soft Course

STP555: Practical VII (Based on all Theory Courses:STH551 and three soft core courses offered)

STP556: Project Work

Soft Core Courses (3 Credits each)

Code	Course
STP406	Practical II – Programming in R and Excel
STS455	Actuarial Statistics
STP457	Practical IV: Based on Theory Courses: (ST STH452, STH 453 & one soft course)
STS505	Multivariate Analysis
STS504	Time Series Analysis
STS507	Survival Analysis
STP 508	Practical VI: Based on Theory Courses (STH503 & one soft course offered)
STS552	Operations Research
STS553	Statistical Finance
STS554	Financial Time Series
STS557	Data mining Techniques
STS558	Nonparametric Regression
STS560	Financial Time series
STS563	Risk and Ruin Models in Insurance
STS564	Official Statistics
STS566	Bayesian Inference
STP555	Practical VII (Based on all Theory Courses :STH551 and three soft core courses offered)

Open Elective:

STE451	Statistical Methods
STE501	Statistical testing in Data Analysis

M.Sc. STATISTICS

(CBCS Semester Scheme)

Scheme of Teaching and Examination

(As per the University Guidelines)

I Semester

Course Code	Title of the Courses	Hard Core(HC)/ Soft Core(SC)	Credits	Examination Duration	Internal Assessment Marks	End Semester Examination Marks	Total Marks
STH401	REAL ANALYSIS	HC	4	3 hrs.	30	70	100
STH402	MATRIX THEORY AND R-PROGRAMME	HC	4	3 hrs.	30	70	100
STH403	PROBABILITY THEORY	HC	4	3 hrs.	30	70	100
STH404	THEORY OF SAMPLING	HC	4	3 hrs.	30	70	100
STP405	PRACTICAL- I (BASED ON STH404 THEORY OF SAMPLING)	HC	3	3 hrs.	30	70	100
STP406	PRACTICAL- II USING EXCEL AND R-PROGRAMMING	SC	3	3 hrs.	30	70	100

II Semester

STE451	STATISTICAL METHODS	OE	3	3 hrs.	30	70	100
STH452	DISTRIBUTION THEORY	HC	4	3 hrs.	30	70	100
STH453	THEORY OF POINT ESTIMATION	HC	4	3 hrs.	30	70	100
STH454	ECONOMETRICS	HC	4	3 hrs.	30	70	100
STS455	Soft Course	SC	3	3 hrs.	30	70	100
STP456	PRACTICAL -III BASED ON STH454 ECONOMETRICS	HC	3	3 hrs.	30	70	100
STP457	PRACTICALS-IV BASED ON STH452 STH453 & One soft course	SC	3	3 hrs.	30	70	100

III Semester

STE501	STATISTICAL TESTING IN DATA ANLYSIS	OE	3	3 hrs.	30	70	100
STH502	TESTING OF HYPOTHESIS	HC	4	3 hrs.	30	70	100
STH503	STOCHASTIC PROCESSES	HC	4	3 hrs.	30	70	100
STS 504	SOFT COURSE	SC	3	3 hrs.	30	70	100
STS 505	SOFT COURSE	SC	3	3 hrs.	30	70	100
STP506	PRACTICALS V (BASED ON STH 502 & One soft course)	HC	3	3 hrs.	30	70	100
STP507	PRACTICAL VI – (BASED ON STH 503 & one soft course)	SC	3	3 hrs.	30	70	100

IV Semester

STH551	DESIGN AND ANALYSIS OF EXPERIMENTS	HC	4	3 hrs.	30	70	100
STS 552	SOFT COURSE	SC	3	3 hrs.	30	70	100
STS 553	SOFT COURSE	SC	3	3 hrs.	30	70	100
STS 554	SOFT COURSE	SC	3	3 hrs.	30	70	100
STP555	PRACTICAL VII- Based on all Theory Courses:STH551, STS552, STS553 & STS554	SC	3	3 hrs.	30	70	100
STP556	PROJECT WORK	HC	5	-	30	70	100

(ISMAIL B.)
Chairman, P.G.B.O.S. in Statistics