Dr. M.G.R.
EDUCATIONAL AND RESEARCH INSTITUTE
DEEMED TO BE UNIVERSITY
University with Graded Autonomy Status
(An ISO 21001 : 2018 Certified Institution)
Periyar E.V.R. High Road, Maduravoyal, Chennai-95. Tamilnadu, India.

A+ NAAC
ACCREDITED WITH GRADE

CENTRE FOR ONLINE PROGRAMMES

PROGRAMME PROJECT REPORT (PPR) – M.Sc Statistics

(Approval of the Board of Studies and Academic Council)

Head of the Department   Dean – Centre for   Director – CIQA
                            Online Programs

Approved by

Addl. Registrar (P&D)   Registrar

Name of the Faculty: Faculty of Humanities and Sciences

Name of the Programme: M.Sc Statistics – PG Degree Program

INTRODUCTION:

Statistics is a Science which provides opportunities to individuals for enriching their knowledge and experience. It is important to note that Statistics with sophisticated and well established techniques has opened a new vista of knowledge for the human welfare. Statistical tools enable to study and analyze characteristics of the phenomena (problem). Statistical tools like average, ratios, coefficients, graphs, diagrams etc., will help for comparison of different phenomena. It also helps to establish the relationship between two or more phenomena.

Statistical methods have a long history of applications in Arts and Science but its recognition as a separate field has come in the 20th century. The application of Statistical methods spreads across many disciplines like Physical, Biological, Social, Economics, Industry, Engineering, Geographical, Graphical and Environmental Sciences and Information Technology. There exists interdisciplinary approach covering related scientific and humanities disciplines.

Statistical methods help in the formulation of policies by organizations (Business, Corporate, State and Central Governments). A detailed analysis of the data collected based on studies undertaken will be helpful for future planning purposes. The inferences based on the studies will be useful for effective planning in the future.

Modern Statistics is close to the discipline of Mathematics, Computer Science and Information Technology. Currently the modern Statistics i.e., Applied Statistics has expanded and diversified. Special attention must be given to Statistical education at Post – Graduate and Doctorate Level. This inturn brings substantial advantages for interpreting many disciplines and for their growth.

Programme Title	M.Sc Statistics
Specialization	Statistics
Eligibility	A candidate who has obtained his/her B.Sc. degree with either (i) Statistics as principal subject or (ii) Mathematics as principal subject and Statistics as subsidiary subject or (iii) both Mathematics and Statistics as optional subjects will be eligible for admission to this course.
Minimum Duration	2 Years

PROGRAMME EDUCATIONAL OBJECTIVES:

To create young persons of impeccable quality through a combination of high quality curricula, innovative pedagogy of higher education and cutting edge research to fearlessly face the challenges of the ever changing world scenario and to contribute towards creation of a benevolent and compassionate society.

The core objective of the program is to prepare the students to be capable of doing any kind and every kind of data analysis and to be helpful to the society and academia by providing an outstanding environment of teaching and research in the core and emerging areas of the discipline.

NATURE OF PROSPECTIVE TARGET GROUP OF LEARNERS:

The following target groups are identified with basic degree in Statistics, Mathematics, Computer Science and Economics.

1. Data Scientists working in IT field.

2. Graduate Statisticians working in IT related fields

3. Statistical Assistants working in Bureau of Economics and Statistics in State Government

Dr. M.G.R.
EDUCATIONAL AND RESEARCH INSTITUTE
DEEMED TO BE UNIVERSITY
University with Graded Autonomy Status
(An ISO 21001 : 2018 Certified Institution)
Periyar E.V.R. High Road, Maduravoyal, Chennai-95. Tamilnadu, India.

4. Statistical officers employed in different government departments(Both State and Central Governments)

5. Statisticians working in Private and Nationalized Banks

6. Statistical personnel employed in Reserve Bank of India

7. Statistical Assistants working in Planning Commission (Both State and Central Government)

8. Statisticians working in National Sample Survey Organization

9. Statisticians employed in Central Statistical Organization

10. Market Analyses in Corporation and Business Sector

11. Share Market Analysis

12. Weather Forecasting experts in Metrological Divisions

13. Researchers Working in Agricultural Research Institutes

14. Statisticians working in Multidisciplinary Hospitals

15. Statisticians in Public Health Center

16. Researchers working in Industrial Quality Central Divisions

17. Statisticians working in Product Development Centers

18. Statisticians attached with Geological Survey Organization

19. Young graduates in Statistics / Mathematics / Computer Science to take research careers in future.

20. Young graduates in Statistics / Mathematics/ Computer Science aspiring for faculty positions in colleges and universities

APPROPRIATENESS OF PROGRAMME:

The program caters to a heterogeneous group of learners. They are also employed and living in distant areas. Thus, the most apt education system to be adapted is online a modality wherein the teaching and learning processes are happening remotely. The physical presence should not be a deterrent in pursuing and pruning specific skills which they propose to enhance for application in their respective areas of work. The curriculum

Dr. M.G.R.
EDUCATIONAL AND RESEARCH INSTITUTE
DEEMED TO BE UNIVERSITY
University with Graded Autonomy Status
(An ISO 21001 : 2018 Certified Institution)
Periyar E.V.R. High Road, Maduravoyal, Chennai-95. Tamilnadu, India.

is framed in such a way that the learners are not only gain conceptual knowledge but also its application in the specific areas of their work and enhance it. The online interactive ICT tools employed to deliver the best ensures the learner gets a feel of offline classes and none of the advantages of offline teaching are compromised in the processes.

PROCEDURE FOR ADMISSION:

The Institution is highly reputed and accredited with 'A+' Grade by NAAC with Special Graded Autonomy and also certified with ISO 21001:2018 by TUV SUD South Asia Private Limited. The Institute is recognized as Deemed to be University offers undergraduate, postgraduate programmes and Research in various disciplines. Admission sought into this prestigious Institute is based on the norms prescribed by the statutory bodies. Foreign students can be admitted following the guidelines of MoE and UGC.

- All the information regarding eligibility norms and mandatory documents required and registration is available on this website (www.drmgronline.in)

- The candidate has to ensure that their education / qualifying degree has been issued from a recognized Institution / University only

- At the time of online registration the candidates have to scan and send all their relevant documents as mentioned in the registration process on this website (www.drmgronline.in)

- The admission would be processed as per the information provided by the candidate and if at any stage, it is found that a candidate has furnished wrong or misleading information, his/her candidature will be cancelled immediately

- The candidate should ensure that he/she satisfies the eligibility norms for the program he/she wishes to enroll

- Submission of documents and payments to University is subject to eligibility criteria as per the guidelines of the University

Dr. M.G.R.
EDUCATIONAL AND RESEARCH INSTITUTE
DEEMED TO BE UNIVERSITY
University with Graded Autonomy Status
(An ISO 21001 : 2018 Certified Institution)
Periyar E.V.R. High Road, Maduravoyal, Chennai-95. Tamilnadu, India.
A+
NAAC

- Upon receipt of complete set of mandatory documents and applicable fees, the University enrollment team would then verify all the documents.

- In standard conditions the candidate should receive the provisional number within 21 working days after submission of all mandatory documents & applicable fees. (Courier delivery timelines additional at actuals)

- The admission will be treated as enrolled only after Enrollment / Registration Number has been generated by University subject to provisional or confirmed enrolment

- University reserves the right to change the programme structure, Programme curriculum, eligibility norms and course conduction pattern and revise fees at any point of time

TEACHING LEARNING AND EVALUATION:

A student is normally expected to complete the M.Sc. Programme in 4 Semesters (two academic years) but in any case not more than 8 semesters. Each semester shall normally consist of 15 weeks. Director – Online Programs shall ensure that every teacher imparts instruction as per the number of periods specified in the syllabus and that the teacher teaches the full content of the prescribed syllabus for the course being taught, End-Semester Examination will ordinarily commence immediately after the last working day of the semester.

The e-learning material shall have four quadrant approach; as per UGC (Credit Framework for online learning courses through SWAYAM) Regulations, 2016 taking into consideration the following, namely

- Quadrant-I is e-Tutorial; which shall contain: Video and Audio Content in an organized form, Animation, Simulations, Video Demonstrations, Virtual Labs, etc, along with the transcription of the video.

- Quadrant-II is e-Content; which shall contain; self instructional material, e- Books, illustrations, case studies, presentations etc, and also contain Web Resources such as further references, Related Links, Open source Content on Internet, Video, Case

Dr. M.G.R.
EDUCATIONAL AND RESEARCH INSTITUTE
DEEMED TO BE UNIVERSITY
University with Graded Autonomy Status
(An ISO 21001 : 2018 Certified Institution)
Periyar E.V.R. High Road, Maduravoyal, Chennai-95. Tamilnadu, India.

Studies, books including e-books, research papers and journals, Anecdotal information, Historical development of the subject, Articles, etc.

- Quadrant-III is the Discussion forum for raising of doubts and clarifying them on a near real time basis by the Course Coordinator or his team.

- Quadrant-IV is Assessment, which shall contain; Problems and Solutions, which could be in the form of Multiple Choice Questions, Fill in the blanks, Matching Questions, Short Answer Questions, Long Answer Questions, Quizzes, Assignments and solutions, Discussion forum topics and setting up the FAQs, Clarifications on general misconceptions.

The University would provide student's access to Learning Management System for each student to access the online course ware.

Quadrant	Quadrant Type	Learning Resource Type	Type	Delivery Format
1.	E-Tutorial	Tutorials: Recorded Videos	Chapter Level	MP4 (Audio Video Content)
		Animation Gamified Module	Chapter Level	SCORM File
		Simulated Case Study	Subject Level	SCORM File
		Synchronous Interactive Sessions – Live Sessions	Chapter Level	Real Time Technology based Synchronous Activity
2.	E-Content	E-book	Chapter Level	PDF/Notes
		Study Guide	Chapter Level	PDF/ Bullet Notes
		Web Resources	Chapter Level	Articles and Reference Videos from

				Swayam, NPTEL and other open platforms
3	Discussion Forum	Discussion Forum	Chapter Level	Real Time Technology based Synchronous Activity
				Synchronous Activity
4	Assessment	FAQ	Chapter Level	System Upload for objective Questions with Answer keys and document upload for subjective questions in assessment in form of Assignments (Continuous Evaluation)
		Misconception	Chapter Level	
		Practice Assignment	Chapter Level	

LMS Link:https://virtualcampus.drmgronline.in/users/login

The students would get the following Learning Resources through LMS for every course /subject:

- E-Books (Self-Learning Material)
- Study Guide (PPT)
- Practice Test through LMS – Gamified Module

- Audio/Video Component in Learning Management System - Tutorials
- Reference Material – Web Resources for research purpose
- Simulated Case Study
- FAQ and Misconceptions for each course/subject
- Practice Self-Assessment Question (Essay Questions)
- Discussion Forums through LMS
- Live Interactive Synchronous Online Sessions would be conducted through the Learning Management System

EVALUATION CRITERIA:

Internal Marks (Max. 100)

(1) 3 Assignments – Each carries 20 marks = 60 Marks
(2) Multiple Choice Questions – 20 (Each Question carries 2 marks) – 40 Marks

External Marks (Max.100)

1) PART A- 5 questions each carries 4 Marks = 20 Marks
2) Part B – 5 Questions(Either or format) each carries 16 marks = 80 Marks

As per the Center of the Online Programs, the above shall be converted into the following weightage

a) Internal Marks Shall be converted into 25%
b) External Marks Shall be converted to 75%

QUESTION PAPER DESIGN:

Design of question paper takes into consideration all levels of knowledge domain e.g. Bloom's taxonomy of cognitive domain. Appropriate verbs are used for the questions at each level to assess higher levels of learning. Combination of various types of questions e.g. structured essays including Long Answer Questions (LAQ), Short Answer Questions (SAQ), and Brief Questions.

Dr. M.G.R.
EDUCATIONAL AND RESEARCH INSTITUTE
DEEMED TO BE UNIVERSITY
University with Graded Autonomy Status
(An ISO 21001 : 2018 Certified Institution)
Periyar E.V.R. High Road, Maduravoyal, Chennai-95. Tamilnadu, India.

GRADING PATTERN:

Grading System for Choice Based Credit System (CBCS) – University adopts a ten point grading system. Conversion of credit(s) into grade(s) Grades and Grade Points

GradePoints	Letter Grade	Range of Marks
10	H	90-100
09	S	80-89
08	A	70-79
07	B	60-69
06	C	50-59
-	F	< 50
-	AB	Absent
-	RA	Re-Appear
	F*	Fail due to External Mark

F*, F, AB, RA – No Grade Points

Passing Minimum: External 50% and Internal + External 50% of the MaximumMarks

RELEVANCE OF THE PROGRAM WITH HEI'S MISSION AND GOALS:

1. Promoting the Unique identity of Statistics.
2. Strengthening the Core Research Areas with multidisciplinary basis.
3. Adding Strength to multidisciplinary and Cross disciplinary research areas.
4. Developing New Models for Statistical Education with emphasis on Post Graduate and Doctoral Research.
5. Accelerating the requirement of next generation of Statisticians.
6. Developing Professional recognition.
7. Fragment of Core Research with Multiple applications.

Dr. M.G.R.
EDUCATIONAL AND RESEARCH INSTITUTE
DEEMED TO BE UNIVERSITY
University with Graded Autonomy Status
(An ISO 21001 : 2018 Certified Institution)
Periyar E.V.R. High Road, Maduravoyal, Chennai-95. Tamilnadu, India.

8. Basic studies for the Socio Economic aspects of regions.

9. Generation of research funding.

10. Identification of Funding Paths for theoretical and applied research.

11. The need for trained teachers in Statistics with Doctorate / Post Doctorate degrees.

12. The need for upgradation of Syllabus in respect of Minor and Major options.

13. Building training program for professionals in different fields.

14. Need for Post-Doctoral opportunities for faculties in Colleges / Universities.

15. Identification of departments for Special Assistance for UGC / CSIR / Other Agencies (Government / Quasi Government).

REQUIREMENT OF THE LABORATORY SUPPORT AND LIBRARY RESOURCES:

The University Library is enriched with KNIMBUS platform, wherein the E-Resources are exhibited for the usage of the Faculty, Research Scholars and the Student Community.

KNIMBUS is an data search and collaboration platform that connects the researchers of various field particularly for Scientific, Technical and Medical stream. It enables them to create and share information with like minded researchers. It serves for the student community to get introduced to the knowledge world.

Features:

Single Search Window: Single factor get entry to all subscribed content and open sources custom – made for your Library which ensures your search to be effective, quick and simple.

Top Results:

On the foremost page, it shows the famous articles. It additionally permits users to browse famous search results through superior search options.

Dr. M.G.R.
EDUCATIONAL AND RESEARCH INSTITUTE
DEEMED TO BE UNIVERSITY
University with Graded Autonomy Status
(An ISO 21001 : 2018 Certified Institution)
Periyar E.V.R. High Road, Maduravoyal, Chennai-95. Tamilnadu, India.

Bibliography:

All the search effects have whole bibliography including authors and booklet small print that can be exported as citations. This characteristic helps you store your precious time.

Research Profile:

Detailed profile facets work location, education, experience, know how domain, interests, etc., helps get your work identified in the community.

Personalized Workspace:

Knimbus provides you with on-line folders to shop your searchers and links to published content. It additionally permits you to retailer your own documents.

COST ESTIMATE OF THE PROGRAMME AND THE PROVISIONS:

Programme fee will be displayed on official website of the University from time to time.

QUALITY ASSURANCE MECHANISM AND EXPECTED PROGRAMME OUTCOME:

- The CIQA (Centre for Internal Quality Assurance) follows the Quality Assurance guidelines on learning materials in multimedia, curriculum and pedagogy, as specified by the commission and post its quality assurance mechanism in the website

- The CIQA also takes adequate measures for training and capacity building of its teaching and administrative staff and counsellors/co-ordinators/mentors at regular intervals

- It also ensures that the quality of programmes of study is maintained at par with

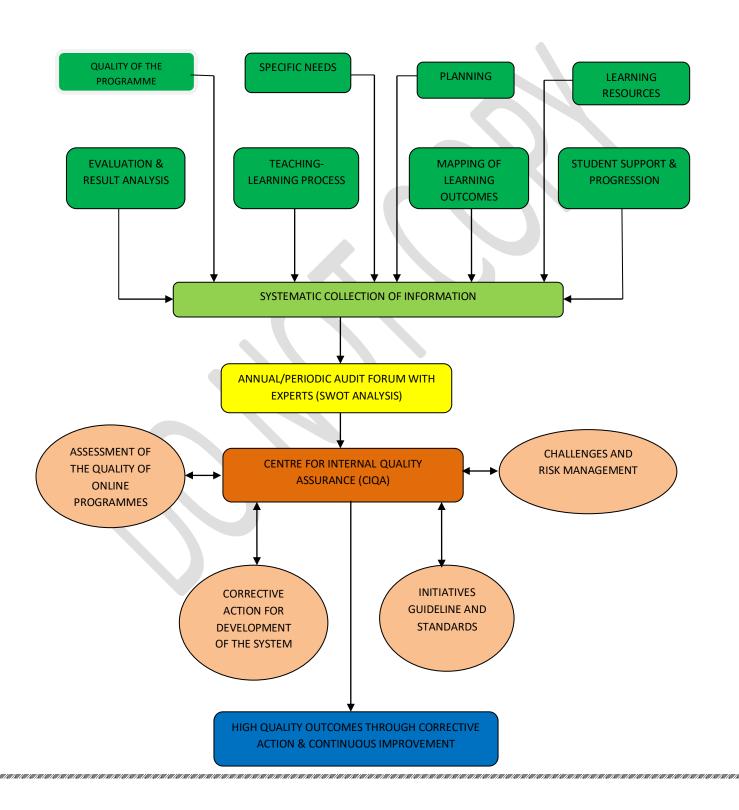the standards defined for the conventional mode of teaching

- The CIQA needs to exhibit the copies of the approval letters duly obtained or received from the concerned statutory or regulatory authority or council to offer programmes under its domain on the website as well as against the name of each programme in the brochure or bulletin of the Institution and inform the same to UGC from time to time

MECHANISM OF QUALITY ASSURANCE

```
QUALITY OF THE          SPECIFIC NEEDS          PLANNING          LEARNING
PROGRAMME                                                          RESOURCES


EVALUATION &            TEACHING-               MAPPING OF        STUDENT SUPPORT &
RESULT ANALYSIS         LEARNING PROCESS        LEARNING          PROGRESSION
                                                OUTCOMES
```

SYSTEMATIC COLLECTION OF INFORMATION

ANNUAL/PERIODIC AUDIT FORUM WITH EXPERTS (SWOT ANALYSIS)

ASSESSMENT OF THE QUALITY OF ONLINE PROGRAMMES ↔ **CENTRE FOR INTERNAL QUALITY ASSURANCE (CIQA)** ↔ CHALLENGES AND RISK MANAGEMENT

CORRECTIVE ACTION FOR DEVELOPMENT OF THE SYSTEM

INITIATIVES GUIDELINE AND STANDARDS

HIGH QUALITY OUTCOMES THROUGH CORRECTIVE ACTION & CONTINUOUS IMPROVEMENT

Dr. M.G.R.
EDUCATIONAL AND RESEARCH INSTITUTE
DEEMED TO BE UNIVERSITY
University with Graded Autonomy Status
(An ISO 21001 : 2018 Certified Institution)
Periyar E.V.R. High Road, Maduravoyal, Chennai-95. Tamilnadu, India.

EXPECTED OUTCOMES:

PO 1: Nurturing the curious minds towards translation and application of statistical knowledge to find solutions to real-world problems

PO 2: Help in preparing the next generation statisticians / Non Statisticians ready for scientific decision-making, aided with advanced statistical software translating into sharp and extensive analytics, pertinent to various domains.

PO 3: Empower students to investigate, solve questions for which answer lies beyond the boundaries of conventional thinking.

PO 4: Support critical thinking for data-driven solution with advanced methodologies.

PO 5: Recognize the need and have the preparation and ability to engage in independent and continuous learning inthe broadest context of technology

PO 6: The self-learning materials are developed by the experts of the areas. The course is continuously monitored by Internal Quality assurance center.

PROGRAMME CURRICULUM:

SEMESTER 1

COURSE CODE	COURSE TITLE	L	T	P	C
HMMS18001	Real Analysis & Linear Algebra	4	0	0	4
HMMS18002	Probability and Distributions	4	0	0	4
HMMS18003	Sampling Techniques	4	0	0	4
HMMS18004	Statistical Inference I	4	0	0	4
	Total	**16**	**0**	**0**	**16**

SEMESTER 2

COURSE CODE	COURSE TITLE	L	T	P	C
HMMS18005	Statistical Quality Control and Reliability	4	0	0	4
HMMS18006	Trend Analysis and Index numbers	4	0	0	4
HMMS18007	Numerical Methods	4	0	0	4
HMMS18008	Statistical Inference II	4	0	0	4
	Total	**16**	**0**	**0**	**16**

SEMESTER 3

COURSE CODE	COURSE TITLE	L	T	P	C
HMMS18009	Design of Experiments	4	0	0	4
HMMS18010	Advanced Optimization Techniques	4	0	0	4
HMMS18EXX	Elective I	4	0	0	4
HMMS18EXX	Elective II	4	0	0	4
	Total	**16**	**0**	**0**	**16**

Dr. M.G.R.
EDUCATIONAL AND RESEARCH INSTITUTE
DEEMED TO BE UNIVERSITY
University with Graded Autonomy Status
(An ISO 21001 : 2018 Certified Institution)
Periyar E.V.R. High Road, Maduravoyal, Chennai-95. Tamilnadu, India.

SEMESTER 4

COURSE CODE	COURSE TITLE	L	T	P	C
HMMS18011	Stochastic Processes and Applications	4	0	0	4
HMMS18012	Multivariate Analysis and Non parametric methods	4	0	0	4
HMMS18EXX	Elective III	4	0	0	4
HMMS18L01	Project	0	0	15	15
	Total	**12**	**0**	**15**	**27**

LIST OF ELECTIVES

COURSE CODE	COURSE TITLE	L	T	P	C
HMMS18E01	Data Mining	4	0	0	4
HMMS18E02	Applied Regression Analysis	4	0	0	4
HMMS18E03	Survival Analysis	4	0	0	4
HMMS18E04	Statistics and Econometrics	4	0	0	4
HMMS18E05	Vital Statistics	4	0	0	4

Total No. of credits: 75