

**DEPARTMENT OF STATISTICS**  
**SAURASHTRA UNIVERSITY**  
**RAJKOT**

**SYLLABUS**

**M.Phil. (Statistics)**

(CBCS)

WITH EFFECT FROM JUNE - 2018



(Accredited "A" Grade by NAAC)

## **Ordinance, Regulations, Teaching and Examination Scheme for M.Phil. Statistics:**

### **Ordinance:**

**O.M.Phil.– (Stat.) 1:** Any Post graduate degree with at least one of the subject Statistics / Mathematics / Computer Science / Information Technology with at least 55% marks are eligible for admission.(UGC Regulations,2016 dated 5/5/2016)

**O.M.Phil.– (Stat.) 2:**The duration of the program will be of one full time academic year. The examination for the M.Phil program will be divided into two semesters. No candidate will be allowed to join any other course or service simultaneously.

**O.M.Phil.– (Stat.) 3:** Candidate who have passed an equivalent examination from any other university or examining body and is seeking admission to the M.Phil Program will be required to provide necessary eligibility certificate.

**O.M.Phil.– (Stat.) 4:** Candidate desirous of appearing at any semester examination of the M.Phil Program must forward their application in the prescribed form to the University through the head of the department on or before the date prescribed for the purpose under the relevant ordinances.

**O.M.Phil.– (Stat.) 5:** No candidate will be permitted to reappear at any semester examination, which he has already passed. The marks of successfully completed paper will be carrying forwarded for the award of class.

**O.M.Phil.– (Stat.) 6:** There shall be an examination at the end of each semesters to be known as first semester examination and second semester examination. At which a student shall appear in that portion of theory papers, practical and viva–voice if any, for which he/she has kept the semester in accordance with the regulations in this behalf.

A candidate whose term is not granted for whatsoever reason shall be required to keep attendance for that semester or term when the relevant papers are actually taken at the department.

**O. M.Phil. – (Stat.) 7:** Medium of instruction is English.

**O. M.Phil. – (Stat.) 8:** Any candidate can go up to take admission in next semester irrespective of failure in any number of subjects.

## **Regulations:**

### **R.S.M.Phil– (Stat.) 1. Standard Of Passing**

The standard of passing the M.Phil Program examination will be as under:

- (1) To pass any semester examination of the M.Phil Program, a candidate must obtain at least 50% marks in the university examination in each course.
- (2) Class will be awarded based on Earned Grade Point, SGPA and CGPA as per rules of University.

### **R.S.M.Phil. – (Stat.) 2. Marks and credit hours of each course**

Marks of university examination and credit hours will be asunder:

- (1) Total marks of theory course is 100.
- (2) Marks of each unit in the course are equal (i.e.20 Marks).Total marks of each course are  $20 \times 5 = 100$  for university examination.
- (3) Lectures for each unit in the course are equal (i.e.12 hours). Total lectures of each course are  $12 \times 5 = 60$ .
- (4) Total mark of practical course is 100 and dissertation-viva course is 200 (100 marks of evaluation and 100 marks of viva-voce). No internal examination.

### **R.S.M.Phil.– (Stat.) 3. Structure of Question Paper**

Question Paper contains 5 questions (each of 20 marks).

Question1: Attempt ten objective type questions (not MCQ) like definition, reason, answer in one line, answer in one word etc.,

Question– 2 to Question– 5: Attempt two out of three questions.

### **R.S.M.Phil. – (Stat.) 4. Following is the syllabus of each course of M.Phil Program.**

**Semester – 1**

<b>SubjectCo</b>	<b>Title of the course</b>	<b>Course Credits</b>
<b>SMT– 1001</b>	Applied Statistics and Statistical Computing with R	4
<b>SMT– 1002</b>	Practical: Data Analysis using SPSS and R-Programming (Practical based on SMT-1001)	8
<b>Total</b>		<b>12</b>

**Semester – 2**

<b>Subject Code</b>	<b>Title of the course</b>	<b>Course Credits</b>
<b>SMT – 2001</b>	Dissertation and Viva	12
<b>Total</b>		<b>12</b>

**SMT– 1001: APPLIED STATISTICS AND STATISTICAL COMPUTING WITH R**  
**(60 Hours)**

1. Linear programming problem: feasible, basic feasible and optimal solution. Example of LPP. Solution of LPP using graphical method, Simple method, revised simple solution, dual, dual simple method.
2. Transportation and assignment problem (both balanced and unbalanced case). Game theory: Two person games, pure and mixed strategies, finding solution in  $2 \times 2$ ,  $2 \times m$ , and  $m \times n$  games. (Equivalent of rectangle game and linear programming.)
3. Basic characteristics of queuing system, different performance measures, steady state solution of markov queuing models:  $M/M/1$ ,  $M/M/1$  with limited waiting space,  $M/M/c$ ,  $M/M/c$  with limited waiting space.
4. Inventory problems and analytical structure. Simple deterministic and stochastic models of inventory controls. Replacement problems: block and age replacement policies, dynamic programming approach for maintenance problems; replacement of terms with long life, PERT and CPM. Sequencing and scheduling problems.
5. R – Language. : Introduction to R, elementary programming, application to data analysis.

**Reference:**

1. Taha, H.A. (1982). Operational research: an introduction; Macmillan.
2. Kantiswaroop, Gupta, P.K. and Singh, M.M. (1985). Operations research, Sultan Chand and Sons.
3. J.K. Sharma (1990). Mathematical models in operation research. Tata McGrawhill.
4. Hadely, G. (1964). Non-linear and dynamic programming. Addison Wesley.
5. Maria L. Rizzo. Statistical Computing with R.

**SMT– 1002: PRACTICAL: DATA ANALYSIS USING SPSS AND R- PROGRAMMING**  
**(120 Hours)**  
**(Practical based on SMT-1001)**

**SEMESTER– 2**

**SMT – 2001 :Dissertation and Viva**

**Dissertation work can be developed in-house or in industry. Student must submit progress report to internal guide every 15 days. Dissertation report must be submitted in due time.**