

UNIVERSITY OF CALCUTTA
Revised Syllabus & Admission Rules for Two-year M.Sc. Course
&
Regulations for the M.Sc. Examinations
in
STATISTICS
2013

A student will be eligible for admission to the course if he/she is an Honours graduate in Statistics from Calcutta University or has passed the B.Sc. (Honours) in Statistics /B.Stat examination securing 60% marks in the aggregate from any other University/Institution.

In general the regulations for the two year (four semester) M.Sc. degree course in Statistics applicable from the academic year 2013-14 will be same as the comprehensive and uniform regulations of Calcutta University (Notification CSR/ 55/ 09).

Some particular points in the regulations for the Examinations in each of the semesters are as follows:

1. Each semester will have a number of courses as detailed below. Each course will comprise of either a Theoretical component or a Practical component or both.
2. The end-semester examinations for the theoretical papers will be held after the completion of the classes of that semester. Twenty five percent of the marks in each theoretical paper will be awarded based on internal assessment, which will include a mid-semester test and/or any other form of assessment as decided by the concerned teacher. The Practical papers will be marked based on continuous assessment as well as a final Viva-Voce examination.
3. Twenty five percent credit points are allotted to each semester. One theory credit point is equivalent to one hour of class per week while one practical credit point is equivalent to one and a half hours of class per week.

4. The examinations for theoretical papers (excluding internal assessment marks) with 26-40 marks, 41-50 marks and 51-75 marks will be of 1½ hours, 2 hours and 3 hours duration, respectively.
5. Each credit point is equivalent to 20 marks in the examinations.
6. Students need to appear at the examination of each and every paper in each course. In order to be declared pass, the student must obtain at least 40% marks in each course. In case of courses containing both theoretical and practical parts, students must secure at least 35% of marks in theoretical papers and at least 35% of marks in practical papers separately and at least 40% marks in the aggregate to be deemed passed in that course.
7. Students failing to obtain pass marks in 1 or 2 courses can sit for a supplementary examination in the concerned course to be held usually within six months of the original examination. Students can however continue their studies in the higher semesters. Students failing in a supplementary examination can have a final chance of clearing the paper during the regular examination of the paper in the following session. However, students unable to clear the supplementary examination in any course in the 3rd or 4th semesters may be allowed to take a second supplementary examination within six months of the end of the 4th semester.
8. Students failing to obtain pass marks in more than 2 courses in a semester will be deemed to have failed in the semester as a whole and will need to clear that semester in subsequent sessions before moving on to the next semester.
9. Students will be required to select 3 elective papers in the 3rd semester and one module consisting of 3 special papers in the 4th semester. These are detailed in the syllabus of the respective semester.
10. Students will need to start their project work in the 3rd semester and continue the same in the 4th semester. They will be required to submit a written report and also make formal presentation(s) at the end of the 4th semester.

Syllabus for M.Sc. Examination in Statistics

(Credit points and marks on two right-hand columns are shown as Theoretical credits (marks) + Practical credits (marks))

Semester I : Total credits = 25 (Total Marks = 500)

Course No.	SUBJECT	CREDIT POINTS	MARKS
STAT 101 :	Analysis I	4 + 0	80 + 0
STAT 102 :	Probability I	4 + 0	80 + 0
STAT 103 :	Statistical Inference I	3 + 1	60 + 20
STAT 104 :	Linear Models	3 + 1	60 + 20
STAT 105 :	Optimization Techniques	2 + 1	40 + 20
STAT 106 :	C Programming	0 + 3	0 + 60
STAT 107 :	R Programming	0 + 3	0 + 60

Semester II : Total credits = 25 (Total Marks = 500)

Course No.	SUBJECT	CREDIT POINTS	MARKS
STAT 201 :	Probability II	3 + 0	60 + 0
STAT 202 :	Multivariate Analysis	3 + 1	60 + 20
STAT 203 :	Statistical Inference II	4 + 1	80 + 20
STAT 204 :	Regression Analysis I	3 + 1	60 + 20
STAT 205 :	Design of Experiments	4 + 1	80 + 20
STAT 206 :	Sample Surveys	3 + 1	60 + 20

Semester III : Total credits = 25 (Total Marks = 500)

In this semester, students will be required to select one elective paper from each of three groups as listed below. Each of the groups contains 3 papers. However, all of these may not be offered in a particular year and it will be at the discretion of the Department to decide which papers to offer in the particular year. *Some of the elective papers are pre-requisites of certain special modules (as discussed in Semester IV) to be chosen in the 4th semester and hence are to be viewed accordingly.*

Course No.	SUBJECT	CREDIT POINTS	MARKS
STAT 301 :	Statistical Inference III	3 + 1	60 + 20
STAT 302 :	Regression Analysis II	3 + 1	60 + 20
STAT 303 :	Stochastic Processes I and Time Series Analysis	4 + 1	80 + 20
STAT 304-306 :	Elective 1	3 + 1 or 4 + 0	60 + 20 or 80 + 0
STAT 307-309 :	Elective 2	3 + 1 or 4 + 0	60 + 20 or 80 + 0
STAT 310-312 :	Elective 3	3 + 1 or 4 + 0	60 + 20 or 80 + 0

Choice of Elective papers :

Elective 1 :*Any one from the following*

STAT 304 : Analysis II

STAT 305 : Demography

STAT 306 : Survival Analysis *(pre-requisite for Module 4)*

Elective 2 :*Any one from the following*

STAT 307 : Bayesian Methods

STAT 308 : Operations Research *(pre-requisite for Module 5)*

STAT 309 : Development Statistics

Elective 3 :*Any one from the following*

STAT 310 : Probability III *(pre-requisite for Module 1)*

STAT 311 : Advanced Sample Surveys

STAT 312 : Econometrics *(pre-requisite for Module 7)*

Semester IV : Total credits = 25 (Total Marks = 500)

In this semester, students are to select one special module from out of the modules offered in the particular year. Each module consists of three courses and a student selecting a module will have to take all the three courses. However, certain modules may have pre-requisite elective papers which the student must have taken in the 3rd semester to be eligible for that module.

Course No.	SUBJECT	CREDIT POINTS	MARKS
STAT 401 :	Applied Multivariate Analysis	3 + 1	60 + 20
STAT 402 :	Advanced Data Analytic Techniques	3 + 1	60 + 20
STAT403 :	Project Work	0 + 5	0 + 100
STAT 404/ :	Special Paper 1	3 + 1 or 4 + 0	60 + 20 or 80 + 0
407/410/413/416/419/422			
STAT 405/ :	Special Paper 2	3 + 1 or 4 + 0	60 + 20 or 80 + 0
408/411/414/417/420/423			
STAT 406/ :	Special Paper 3	3 + 1 or 4 + 0	60 + 20 or 80 + 0
409/412/415/418/421/424			

Choice of Special Modules: *Any one module from the following*

Module – 1 : Applied Probability and Stochastic Processes

Prerequisite Elective : Probability III

STAT 404 : Probability IV

STAT 405 : Stochastic Processes II

STAT 406 : Inference in Stochastic Processes

Module – 2 : Advanced Statistical Inference

STAT 407 : Advanced Parametric Inference

STAT 408 : Sequential and Semiparametric Methods

STAT 409 : Nonparametric Methods

Module – 3 : Advanced Design of Experiments

STAT 410 : Experimental Designs

STAT 411 : Fractional Factorial and Response Surface Designs

STAT 412 : Regression Designs

Module – 4 : Biostatistics

Prerequisite Elective : Survival Analysis

STAT 413 : Statistical Genetics

STAT 414 : Clinical Trials and Bioassay

STAT 415 : Epidemiology

Module – 5 : Industrial Statistics

Prerequisite Elective : Operations Research

STAT 416 : Statistical Quality Management

STAT 417 : Advanced Operations Research

STAT 418 : Reliability Theory

Module – 6 : Astrostatistics

STAT 419 : Astrophysics and related data sources

STAT 420 : Directional and Spatial Statistics

STAT 421 : Large scale Data Analysis

Module – 7 : Economic Statistics

Prerequisite Elective : Econometrics

STAT 422 : Advanced Time Series Analysis

STAT 423 : Advanced Econometrics

STAT 424 : Financial Econometrics