

Meeting of Board of Studies of
Mathematics and Statistics held on
September 29, 2018 at Conference Room, Sophia College.
at 10.30.

AGENDA

Introduction of the members of the Board of Studies.

1. To discuss, approve and pass the Syllabus for FYBA/BSc Statistics Paper 1 (Descriptive Statistics) Courses of studies, for the First and Second Semesters, which is being implemented for the Academic Year 2018-2019.
2. To discuss, approve and pass the Syllabus for SYBA/FYBSc Statistics Paper 2 (Statistical Methods) Courses of studies, for the First/Third and Second/Fourth Semesters, which is being implemented for the Academic Year 2018-2019.
3. To discuss, approve and pass the Syllabus for SYBA Statistics Paper 3 (Operations Research) Courses of studies, for the Third and Fourth Semesters, which is being implemented for the Academic Year 2018-2019.
4. To discuss the Syllabus for FYBSc Mathematics Paper 1 (Calculus) Courses of studies, for the First and Second Semesters, which is being implemented for the Academic Year 2018-2019.
5. To discuss, approve and pass the Syllabus for FYBSc Mathematics Paper 2 (Algebra & Discrete Mathematics) Courses of studies, for the First and Second Semesters, which is being implemented for the Academic Year 2018-2019.
6. To Approve and Pass the **75:25 Assessment Scheme** (Choice Based Credit System) for the Bachelor of Arts & Science Course of Mathematics & Statistics, for all the four Semesters, for implementation in the Academic Year 2018-2019.
7. To Suggest the **Panel of Names** (to the Academic Council) for the **Appointment of Paper-Setters, Assessors, Moderators and Re-Assessors** for the FYBSc Mathematics, FYBA, FYB.Sc and SYBA Statistics Semester-End-Examinations, for all four semesters; for implementation in the Academic Year 2018-2019.

Minutes of the Meeting

Attendees:

- i) Sandra Mendes
- ii) Vidya Kowar
- iii) Clitira Pranjpe
- iv) Myrtle Fernandes
- v) Reena Nagda
- vi) Crayati Manian Shah

Date: 29th September 2019.

- welcoming the board.

* Semester I

- Unit I: Descriptive Statistics. (15 lec)

Unit II: 15 lectures.

vi) Dichotomous classification and
graphical repreⁿ

v) Tabulation and univariate frequency
distribution

Unit II: Graphical representⁿ & measures of CT

i) Graphical repreⁿ of frequency (15 lec).
distribuⁿ

ii) Measures of central tendency

Unit III: Measures of Dispersion, Skewness &
- as is. Kurtosis (15 lec)

→ Practicals on Excel & R.

↳ chl on giving excel in Sem II in detail

* Semester II. - Descriptive Statistics.

Unit I:

(15 lec)

Unit II: Time Series

(15 lec)

i) definition of time series & its compo

Unit III: Index Numbers

(15 lec)

→ Practical Topics:

- current topics

- use of excel for time series

* PAPER - II - Statistical Methods - I
Sem: I/III

Unit I: Elementary of Probability Theory (15 lec)

Unit II: Concept of discrete random variables (15 lec) Pre-requisite
- set Theory
- Permutaⁿ
- combiⁿ

Unit III: standard Discrete Distrⁿ (15lec)

- i) Discrete Uniform distrⁿ
- ii) Bernoulli Distrⁿ (add) \equiv Binomial Distrⁿ
- definition and properties; derivation of their mean & variance
- iii) Poisson Distrⁿ
- definition & properties
- derivation of their mean & variance
- poisson appⁿ to binomial distrⁿ (statement only)
- iv) Hyper geometric distrⁿ
- deri of mean & variaⁿ
- Hyper^o geometric disⁿ (statement only)
- v) Listing of distribuⁿ

* PAPER II - statistics Paper II.
Semester II/IV.

Unit I: Continuous Random Variables (15lec)
i) - v) (as is)

Normal Distrⁿ and (15lec)

Unit II: Basic Concepts of Sampling & estimation theory
i) normal distrⁿ
ii) Concept of parameter } added from Unit I
iii) Sampling distrⁿ

Unit III: (15 lec)
i) - v) (as is)

ii) Application of Chi-square

- test of good fit
- contingency table
- test of independence in a contingency table & Yates' correction
- derivation.

→ Practicals: Excel & R.

* PAPER III

Semester III.

Unit I: LPP (15 lec)

Unit II: Transporaⁿ Problem (15 lec)

Unit III: Assignment Problem & sequencing (15 lec)

→ Practicals:

* PAPER III

Semester IV

Unit I: CPM & PERT (15 lec)

Unit II: Game Theory (15 lec)

Unit III: Decision Theory (15 lec)

Paper Pattern

- i) Semester work, docuⁿ, journal - 10 mks
" end practical examⁿ - 40 mks.

- Assigⁿ: Drawing up a questionnaire }
- Pilot Project. }
(2 students per proj) }
Viva based on this (40 mks) }
Google }
Wikipedia }

- maintain a log book
 - present to the teacher
- discussions
 time taken
 project details
 helps in WAAC.
- live project
- exam room

Date: 29th September 2018

MATHS

Paper I Semester I Calculus I

Unit I: Real Number Systems (15 lec)

(ii) ~~prove~~ prove Cauchy Schwarz (15 lec)
for a_1, a_2, b_1, b_2 and (15 lec)

give a generalized statement for n

iii) lub axiom, g.l.b axiom & its
consequences (statements with proof)
- remove maximum and minimum.

Unit II: Limits of a real value function (15 lec)

i) Brief review ... (as is)

ii) add step functions over suitable
intervals of \mathbb{R} .

iii) - non-existence of limits - only examples
- definition of limits: ϵ - δ - ~~do~~

Unit III: Continuous functions. (15 lec)

i) add: examples of sequen^{at}
continuity

Ref Reading:

↳ Abhay's book. ii) as is

iii) add: continuity on closed and bounded
intervals

Paper I Semester II Calculus II

- Tutorial Batches = Practicals (re-work
on first
credit page)

Unit I: Differentiaⁿ of real valued
funcⁿ of one variable (15 lec)

i) add: relation b/w continuity & differentⁿ

Unit II: Application of differenⁿ (15 lec)

- i) ~~write~~ ^{delete} (necessary condition)
- add: first and second derivative test.
- graphs of functions
- i) re-write: increasing & decreasing funcⁿ.
- ii) remove monotonic theory.
- iii) L-hospital
- iv) Taylor theorem and its applications.

Unit III: Analytic Geometry in Euclidean spaces

- i) R^2 R^3 in script. (15 lec)
- ii) Quadric surfaces (refer to Thomas & Finney book)
 - lines and planes
 - add: identification & graph
- iii) remove polar co-ordinates
- add: Different co-ordinate systems in R^2 & R^3
- iv) remove entire point

Paper II Semester I
Algebra & Discrete Mathematics I

- Pre-requisite
- set theory
 - complex nos.

Unit I: Integers & divisibility (15 lec)

- i) as is
- ii) as is \Rightarrow change this statement \rightarrow
- i) euclidean algorithm, Euclid's lemma & euclidean algorithm
- ii) change statement: Results on prime nos. and fundamental theorem of arithmetic

Unit II: Equivalence Relations & Congruences (15 lec)

- i) as is
- ii) as is
- iii) 2 write in script.

iii) add: residue classes and its classes
remove: last line and Partition of \mathbb{Z}

Unit III Functions & Binary Operation (15 lec)

- i) remove last line - composite func
- ii) as is remove the entire point
- iii) as is

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Paper II Semester II
Algebra & Discrete Mathematics II

Unit I: Polynomials (15 lec)

- i) remove degree of polynomial
- ii) as is

Unit II: Counting Principles (15 lec)

- i) as is
- ii) Pigeonhole Principle (statement only) & its applications
- iii) Stirling numbers & its element properties
- iv) Permutations of ... remove "in a statement"

Unit III: Complex Numbers (15 lec)

- i) as is
- ii) ~~remove~~ ^{reword}: Geometric repreⁿ of complex modulus, amplitude of conjugate of a complex no.
- iii) as is

→ Paper Pattern

**Meeting of the Board of Studies of Mathematics and Statistics,
Sophia College - Autonomous**

Date: 29.09.18

Time: 10.30A.M

Venue: Conference Room

| Name | Designation | Signature |
|------------------------------------|--|-----------------------------------|
| Ms. Sandra Mendes | Chairperson Associate Prof. & Head, Department of Mathematics & Statistics, Sophia College, Mumbai. | <i>Sandra</i> 29/9/18 |
| Ms. Vidya Konar | Faculty Member Co-opted Ad-Hoc Prof. Department of Mathematics & Statistics, Sophia College, Mumbai. | <i>V. Konar</i> 29/9/18 |
| Mrs. Chitra Paranjpe | Vice Chancellor's Nominee Associate Professor and Head of the Department of Mathematics, Kirti M Doongursee College of Arts, Science & Commerce, Mumbai. | <i>Paranjpe</i> 29/9/18 |
| Mrs. Pradyna Kandeparkar | Subject Expert (from outside parent university): Senior Adjunct Professor, Dept of Statistics SVK's NMIMS University, Mumbai. | |
| Dr. Ananthnarayan Hariharan | Subject Expert (from outside parent university): Assistant Professor, Department of Mathematics, IIT Bombay | |
| Mrs. Myrtle C Fernandes | Subject Expert: Associate Professor and Head, Department of Statistics, St. Xavier's College – Autonomous, Mumbai | <i>M. Fernandes</i> 29/Sept/18 |
| Dr. Sushil Kulkarni | Subject Expert Associate Professor and Head, Department of Maths, Jai Hind College of Science and Commerce Autonomous, Mumbai | |
| Mrs. Reena Deepak Nagda | Subject Expert Assistant Professor and Coordinator, B.Sc (Comp. Sc.), Mulund College of Commerce, Mumbai. | <i>R. Shah</i> 29/09/18 |
| Mrs. Harshada Shringarpure | Representative from the Industry or the Corporate Sector / Allied Area. Chief Manager – Actuarial (Valuation team lead), Kotak Mahindra Life Insurance Company Ltd., Mumbai. | |
| Ms. Gayatri Maniar Shah | Post-Graduate Meritorious Alumnus: Member, Leadership & Professional Development Team, CREDIT SUISSE BUSINESS ANALYTICS INDIA PVT LTD, MUMBAI . | <i>Maniar</i> 29/09/18 |