

### Proceedings of BoS

The meeting of Board of Studies was held in the Department of Studies and Research in Mathematics, Tumkur University, Tumakuru on 30/11/2022 at 3:00 pm to finalise open electives for II year UG courses as per the National Education Policy (NEP).

**Ref . No. TU. Academic: 2022-23/3877 dated: 14-11-2022.**

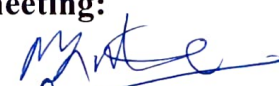

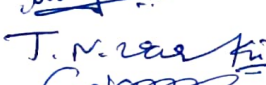


### Agenda


- (i) Finalisation of open elective papers for II year UG courses are:
  1. Business mathematics – II
  2. Mathematics for social science
  3. Quantitative mathematics – II
  4. Mathematical finance – II
- (ii) The students can write the semester end examination of open elective papers either in Kannada or English language.
- (iii) The BoE members have to set the open elective question papers both in English and Kannada language.
- (iv) Amendment to recommend curriculum for BA/BSc(Hons) Mathematics on pages 37-38 of the DSCT practical examination pattern. A total of three(3) programmes should be given to each student. He/She has to write any two(2) programmes out of three(3).

### Resolution

- (i) The members of the Board of Studies discussed and approved the following open elective papers for II year UG courses are:
  1. Business mathematics – II
  2. Mathematics for social science
  3. Quantitative mathematics – II
  4. Mathematical finance – II
- (ii) The members of the Board of Studies discussed and approved the students can write the semester end examination of open elective papers either in Kannada or English language.
- (iii) The members of the Board of Studies discussed and approved the BoE members have to set the open elective question papers both in English and Kannada language.
- (iv) The members of the Board of Studies discussed and approved the amendment to recommend curriculum for BA/BSc(Hons) Mathematics on pages 37-38 of the DSCT practical examination pattern. A total of three(3) programmes should be given to each student. He/She has to write any two(2) programmes out of three(3).

### **Members of the Board of Studies present in the meeting:**

- |                             |   |          |  |
|-----------------------------|---|----------|--|
| 1. Dr. Patil Mallikarjun B. | – | Chairman |  |
| 2. Dr. Jayaprakash P. C.    | – | Member   |  |
| 3. Dr. Vasanthakumari T. N. | – | Member   |  |
| 4. Nagendrappa G.           | – | Member   |  |
| 5. Dr. Siddaramu R.         | – | Member   |   |

  
Chairman 30-11-22

CHAIRMAN  
BoS (UG) in Mathemat  
Tumkur Universit.  
TUMKUR-572103

### Open Elective Course

MATOET: Business Mathematics-II	
Teaching Hours: 3 Hours/Week	Credits: 3
Total Teaching Hours: 42 Hours	Max Marks: 100 (S.A-60 + I.A- 40)

**Course Learning Outcomes:** This course will enable the students to:

- Translate the real word problems through appropriate mathematical modelling.
- Explain the concepts and use equations, formulae and mathematical expression and relationship in a variety of context.
- Finding the extreme values of functions.
- Analyze and demonstrate the mathematical skill require in mathematically intensive areas in economics and business.

**Unit-I: Matrices-** Definition of a matrix; types of matrices; algebra of matrices. Properties of determinants; calculations of values of determinants up to third order ; Adjoint of a matrix, elementary row and column operations; solution of a system of linear equations having unique solution and involving not more than three variables. **14 Hours**

**Unit-II: Algebra–** Set theory and simple applications of Venn Diagram, relations, functions, indices, logarithms, permutations and combinations. **14 Hours**

**Unit - III: Fundamentals of Commercial Mathematics-** Ratio and Proportion, Properties of Proportions , Percentage, Computations involving percentage, Applications of percentage, Simple and Compound interest, Statistical representation of data – Frequency distribution, Histogram, Frequency Polygon, PieChart, Bar Chart, Mean, Median and Mode, Deviation. **14 Hours**

#### **Reference Books:**

1. Basic Mathematics, Allel R.G.A, Macmillan, New Delhi.
2. Mathematics for Economics, Dowling, E.T. , Schaum’s Series, McGrawHill, London.
3. Quantitative Techniques in Management, Vohra, N.D., Tata McGrawHill, NewDelhi.
4. Business Mathematics, Soni R.S., Pitamber Publishing House, Delhi

### Open Elective Course

MATOET: Mathematics for Social Sciences	
Teaching Hours: 3 Hours/Week	Credits: 3
Total Teaching Hours: 42 Hours	Max Marks: 100 (S.A-60 + I.A- 40)

**Course Learning Outcomes:** This course will enable the students to

- Understand the mathematical concept of sets and counting problems.
- Understand the concept of limits and continuity of functions and its applications in business and social sciences.

**Unit-I:** Sets, Relations and Types of Relations, Functions and Types of Functions, counting, permutations, combinations, counting problems, binomial theorem and problems thereon.

**14 Hours**

**Unit-II:** Limit and continuity, Derivative- interpretation, derivative formulas, general derivatives for differentiation, composite functions, higher order derivatives and problems thereon.

**14 Hours**

**Unit-III:** Applications of the derivative – Relative maxima and Relative minima, Absolute maximum and Absolute minimum, Applied problems, Concavity, Asymptotes, Marginal analysis, Models- Maximizing tax revenue, Optimal trade-in time, and minimizing inventory cost.

**14 Hours**

**Reference books:**

1. Mathematics for Business and Social Sciences and Applied Approach – Third Edition, Abe Mizrahi and Michael Sullivan, Wiley.
2. Mathematics for Economists, Carl P. Simon and Lawrence Blume, Viva Books Private Limited, New Delhi, 2015.
3. Maths for Social Sciences, , L. Peccati, M. D’Amico and M. Cigola, Springer.

## Open Elective Course

MATOET: Quantitative Mathematics-II	
Teaching Hours: 3 Hours/Week	Credits: 3
Total Teaching Hours: 42 Hours	Max Marks: 100 (S.A-60 + I.A- 40)

Course Outcomes: This course will enable the students to:

- Understand the Elementary Arithmetic.
- Understand the Elementary Algebra.
- Understand the Quantitative Aptitude.

**Unit 1:** Elementary Arithmetic: Number line, Types of numbers, Basic operations on numbers, properties of divisibility, division algorithm, GCD and LCM of two numbers, prime and composite numbers, prime factorization of positive integers. **14 Hours**

**Unit 2:** Elementary Algebra: Basic algebraic identities, Linear and quadratic equations – properties, finding roots by factorization, Formula method, Solution to a system of two equations in two variables.

**14 Hours**

**Unit 3:** Quantitative Aptitude: Ratio and proportions, Work related problems, Problems on speed, distance and time, Problems on age, Problems on average, Simple and compound interest.

**14 Hours**

### Reference Books:

1. Theory of Matrices by B.S Vatsa, New Age International Publishers.
2. Matrices- A.R Vasista, Krishna Prakashana Mandir.
3. The Elements of Set Theory, K. K Verma, Deepak Kumar, Aitbs Publishers.
4. Set Theory and related topics, Seymour Lipschutz, Schaum's Outlines.
5. A book of Set Theory by Charles C. Pinter, Dover Publications.
6. Discrete and combinatorial Mathematics, Ralph. P. Grimaldi, Pearson.

## Open Elective Course

MATOET: Mathematical Finance-II	
Teaching Hours: 3 Hours/Week	Credits: 3
Total Teaching Hours: 42 Hours	Max Marks: 100 (S.A-60 + I.A- 40)

**Course Learning Outcomes:** This course will enable the students to

- Understand how compute profit and loss, discount and Banker's discount.
- Understand the concept of Linear equations and inequalities and their use in the solving the Linear Programming Problems.
- Formulation of Transportation Problem and its application in routing problem.

**Unit-I: Commercial Arithmetic:** Bill of exchange, Bill of discounting procedure. Basic formula related to profit, loss, discount and brokerage, Successive discount, True discount, Banker's discount. **14 Hours**

**Unit-II: Linear Programming:** Linear equations and inequalities- Rectangular coordinates, straight line, parallel and intersecting lines and linear inequalities, Introduction to linear programming, Mathematical formulation of LPP, Solution of a LPP by graphical method, special cases in graphical method. **14 Hours**

**Unit-III: Transportation problem:** Introduction, Formulation of Transportation problem, Initial basic feasible solution, Steps in solving a transportation problem, optimality check, special cases in Transportation problem. The Traveling salesman Problem (Routing Problem). **14 Hours**

### Reference Books:

1. Objective Arithmetic, R S Aggarwal, S. Chand & Company Ltd.
2. Mathematics for Business and Social Sciences an Application approach, Mizrahi and Sullivan.
3. Business Mathematics- II Edition, Qazi Zameeruddin, Vijay K Khanna, S K Bhambri, Vikas Publishing House.
4. Operation Research, Fourth edition, S. Kalavathy, Vikas publication house Pvt. Ltd.
5. Operations Research 2nd edition, Sreenivasa Reddy M, Sanguine Technical publishers, Bangalore.