



UNIVERSITY OF JAMMU

Subject: Syllabi and Courses of study in M.A. Economics, Semester 1st, Course No.PSECTC-103 (Mathematical Methods in Economics)

Ref: Adoption No.15/July/Adp/64 issued vide Notification No. No.F.Acd/II/15/7796-7815; dated 08-08-2015.

CORRIGENDUM

Please read:

Course code: PSECTC-103 (Mathematical methods in Economics) as per Annexure-A & B.

Instead of:

Course code:PSECT103 (Mathematical methods in Economics) already notified.


DEAN ACADEMIC AFFAIRS

No. F.Acd./II/15/14134-158
Dated: 23-10-2015

Copy for information and necessary action to:

1. Special Secretary to Vice-Chancellor
2. Sr. P.A. to Dean Academic Affairs
3. Sr. P.A. to Registrar/Controller of Examinations
4. Dean, Faculty of Arts/ HOD Economics
5. Convener, Board of Studies concerned
6. All members of the Board of Studies
7. Director, DIQA
8. Principals of all Affiliated/Constituent Colleges
9. C.A. to Controller of Examinations.
10. Asst. Registrar (Conf./Exams. P.G./Inf./Pub.)
- ~~11.~~ Incharge, University Website for necessary action
12. S.O (Confidential)

Course Code : PSECTC- 103

Title : Mathematical Methods in Economics

Credits : 4

Syllabus for the examination to be held in January 2014 to January 2016

Preamble – The aim of this course is to train students in the use of mathematical tools to understand concepts in economics presented in the form of mathematical models and express economic ideas in the same form. The course is intended to enable the students to utilize these tools in subsequent courses in the II, III and IV semesters especially those courses where the use of mathematics has become a norm.

UNIT – I

Numbers-natural, Integers, rational, irrational, complex. Linear equations.. Mathematical operations with Matrices, solution of simultaneous equations: Rank of the matrix, matrix inversion. Quadratic Equations. Eigen roots and Eigen Vectors. Functions : Linear and non-linear, convex and concave, concept of sequence, limit of sequence, concepts of limit and continuity Economic examples and applications. Principles of differentiation, rules of differentiation, differentiation of implicit function, parametric function.

UNIT – II – CALCULUS

Partial and total differentiation, Expansion by Taylor Series. Allied economic applications. Maxima and minima-constrained and unconstrained, economic application. Principles of integration: Indefinite and definite. Economic application- Derivation of consumers surplus, Producer's Surplus, Profit and utility maximization with one good, product and input; Derivation and demand curves for inputs, goods etc.

Comparative statics and allied economic applications: combining calculus-Derivation of Slutsky Equation, IS-IM model, Cobb Douglas and CES production functions, elasticity of demand, supply substitution.

UNIT – III DIFFERENCE AND DIFFERENTIAL EQUATIONS

Differential Equations : Definitions and concepts; Solution of first order and second order difference equations

Difference equations : definitions and concepts; solution of first order and second order difference equations

Simultaneous Differential equations and Phase diagrams

Application of difference and differential equations in Economics – Cobweb model.

Foreign trade multiplier model, Capital Stock Adjustment theory of Investment, Market model with stocks – National Income Model

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UNIT – IV LINEAR PROGRAMMING : OPERATIONS AND APPLICATIONS

Linear Programming-Basic concepts;Formulation of a LP problem; Nature of feasible, basic and optimal solutions; Solution of a LP problem through graphical and simplex methods; Formulation of Dual and its interpretation;
Input-Output Analysis: Introduction, Input-Output transaction table, the technological Coefficient matrix, solution of open model, The Hawkins-Simons Conditions, Solution for 2 and 3 industries, determination of equilibrium prices

for journal

Basic Reading List

1. Allen,R.G.D.(1976). Mathematical Analysis for Economists. Macmillan.
2. Chiang,A.C.(1974). Fundamental Methods of Mathematical Economics, McGraw Hill and Kogakusha, New Delhi.
3. Hendry, A.T.(1999). Operational Research, Prentice Hall of India, New Delhi.
4. Taha, H.A. (1997) Operation Research: An introduction (6th edn.). Prentice Hall of India Pvt. Ltd., New Delhi.
5. Yamane,T. (1973). Mathematics for Economists, Prentice Hall, New Delhi.

Additional Reading List

1. Baumol, W.J. (1997). Economic Theory and Operations Analysis, Prentice Hall.
2. Baumol, W.J. (1990). Economic Dynamics, Macmillan. London
3. Hardy,G.(1973). Linear Algebra, Addison-Wesley Pub. Co., Tokyo.
4. Hadly. G.(1962). Linear Programming, Addison-Wesley Pub. Co., Massachusetts.
5. Henderson & Quandt, Microeconomics: A Mathematical Approach, Tata McGraw Hill.
6. Leonard & Von Long (1978). Introduction to Maths for students of Economics,Cambridge.
7. Mathur,P.N. and Bhardwaj(eds.) (1967). Economic Analysis in Input-Output Research . Input-Output Research Association of India, Pune.
8. Mehta & Madnani (1992). Mathematics for Economists, S. Chand, New Delhi.
9. Monga, G.S.(1972). Mathematics and Statistics for Economists. Vikas Publishing House, New Delhi.
10. Samuelson, P.A.(1967). Foundations of Economic Analysis. McGraw Hill, Tokyo.