

## "Classical Value Theory from a Modern Viewpoint"

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### A. COURSE OVERVIEW

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Mathematical Prerequisites: Basic Linear Algebra (vectors, matrices, inverse matrix, systems of linear equations,..).

The presentation in class is essentially self-contained, but there are also Lecture Notes which are freely accessible (see link on my homepage). These Lecture Notes contain more material than can be covered in the course. They are intended as a reference to help students if something was not sufficiently clear in class, and of course as a source of further study. But students are not expected to know everything there is in these Notes.

The points below correspond roughly to the topics that will be discussed each week.

#### 1. Introduction

The problem of "Value": use value - value in exchange

The Classical Approach: A. Smith, D. Ricardo, K. Marx: Labor Theory of Value: cost-based, "objective"

The Modern (neoclassical) Approach: General Equilibrium (Walras, Debreu): prices determined by interplay of supply and demand: based also on "subjective" preferences

The modern approach to Classical Value theory: a rigorous mathematical model, viz. the Linear Model of Production (von Neumann, Morishima), in which Labor Values, Prices of Production, and other classical and Marxian concepts can be precisely defined.

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#### 2. A simple example of a Linear Production technology, price determination from the assumption "price = production cost" (zero profit)

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#### 3. The general Linear Model (Leontief): constant returns to scale, no joint production, only one primary factor (labor). Determination of prices for an arbitrary number of commodities (with zero profits). More examples

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#### 4. Same model with a positive profit rate. Determination of production prices for arbitrary profit rates

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#### 5. Input-Output Analysis: the Quantity System as dual to the Price system.

The Input-Output table and the Circular Flow Diagram (in a stationary state). The Planning Problem and its solution.

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#### 6. Mathematical Theory of the Linear Model: productive and profitable systems, representation of the technology by dated inputs, the Main Theorem on productive matrices.

Indecomposability, the Frobenius Theorem.

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7. Labor Values: three definitions (synchronous, historical, embodies) and their equivalence.  
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8. Dependence of prices on the profit rate. "Reswitching" and the consequent difficulties for Capital Theory (Sraffa)  
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9. The Quantity system again: Balanced Growth. Connection between the rate of growth and the rate of profit. Growth Equilibrium.  
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10. Marxian Economics: explanation of various Marxian concepts in the light of modern Economic Theory (i.e. the Linear production Model): rate of exploitation, constant and variable capital, organic composition, surplus, etc.  
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11. The Fundamental Marxian Theorem (Morishima): connection between growth, profits and exploitation.

Relation between production prices and labor values (the transformation problem)  
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12. The "Classical" Linear Model as a special case of (intertemporal) General Equilibrium  
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Time permitting, some further topics can be discussed:

Choice of technique, the Nonsubstitution Theorem, the von Neumann model (with joint production).  
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**B. EXAM**

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There will be three homeworks (roughly one each month - Oct, Nov, Dec), and an oral final exam in January next year.

The format of a typical homework is as follows: the student is required to invent a simple model of production himself (with a small number of goods), and explain and illustrate a certain part of the theory (which was discussed in class in the weeks before) with the help of this model. E.g. explain the principle of price formation, compute the commodity prices as functions of the profit rate, solve a simple planning problem, etc.

For a positive grade, ALL homeworks must be handed in on time.

Each homework is allocated a certain number of points, depending on the length and difficulty. For a positive grade, the total number of points achieved (in all three homeworks) must be at least half of the possible maximum (i.e. one can compensate between homeworks). The homeworks are necessary, but not sufficient for a positive grade (the final exam also counts).

In addition, at the end of the course, there is an oral exam. The examination topics are the content of the course, as presented in class. The student is also usually asked to explain parts of his homeworks

(especially those that were not correct). This gives students a chance to improve (but also to worsen) the grade based on the homeworks.