

Curricula, Syllabi Design and Teaching Method for the Module of “Quantitative Economic Methods and Models”

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Abstract

In conditions of quick development of technologies for preparing the specialists in the field of economy an important role belongs to the discipline of "**Quantitative economic methods and economic models**", which include several disciplines and follows to provide several moments naturally corresponding to its **Curricula, Syllabi design and Teaching Methods**, as teaching of mathematics, methods of optimization, econometrics and econometrics software and their merging with using the information technology in Curricula and Syllabi.

It is very interesting to discuss using **Curricula, Syllabi design and Teaching Methods for “quantitative economic methods and economic models”** for high educational institutions of Europe and USA, considering high educational reforms in Georgia. We consider that reasons which must provision teaching process of this module are:

- ! Mission
- ! State's requirement
- ! Business development of the state
- ! Financial provision

Key Words: Quantitative Methods; Curricula; Syllabi Design.

The world economy, education and research process and shaping of society is in transition from industrial age to a new structure with a new set of rules provided by ICT (information and communication technology). Indeed, relevant information and communication ability are the key resources of the emerging digital age. Indeed, ICT and our ability are the keys to our future economic and social growth.

It is not self-evident that the knowledge society will become an inclusive and empowering society, but we know that education **is vital** for the economic and social progress and for guaranteeing equal opportunities in our society. **If we will consider research and innovation as an engine for change, we need to undertake much more specific research and promote education on a modern scale.** We need to use learning technologies, contents and services which should allow a wider access to shaping knowledge society

The rapid and positive change of appreciation of ICT mainly due to the development of the appreciation of advanced information technology and concept of the information society, has interestingly coincided with the development process of education reforms in Georgia. The implementation of new directions in educational process with using of ICT call for new structures of teaching methodology of social-economic research, for shaping of knowledge and information society.

And more, The process of Globalization of the world economy and new discussions Forum about Open Access to Scholarly Publications: A model for Enhanced Knowledge Management ” (Co-hosted with the Open Society Institute (OSI) provided from 20 September, 2004 to 4 October, 2004 [www. Gpgnet.net/topic08.php](http://www.Gpgnet.net/topic08.php)) are very important for developing co-operation and integration

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processes of internationalization of results of research important for shaping knowledge society. We are sure the main goal of these reforms is directed to forming such society!

The reforms of Georgia education system have begun!

Nowadays, the accreditation process of the most of State and private Universities are over! But the accreditation gave us the arithmetic between some of parameters as: number of students, number of teachers, amount of books and occupied area . Also possibilities of students' service using of internet, web pages ...

Nowadays teaching process is more significant!

What the problems are in Georgia in these directions?

Nowadays the most contemporary problem in Georgia is that we need more of professional educators in fields, which are the results of transition to market economy and of the development of

ICT. These are: economics, applied economics, econometrics, econometrics software, management, and informatics. The current social and economic problems make the most important part of population, especially junior aged, nihilistic and neutral to education as a whole. The glance of young generation **is directed to abroad!**

Many students choose to concentrate in economics because it provides an excellent background for professional work in business, banking, law, marketing and so on. Unfortunately, student survey responses indicate that undergraduates are significantly less satisfied with their academic experience.

Master's and PhD's courses are chosen by more prepared individuals and are oriented on strong components including practically oriented courses. Graduates are admitted to the program through a highly selective process and curricula provide an efficient introduction to the theoretical and practical skills.

But all these are light for universities with wide experience working in conditions of market economy! We have just begun this process.

Moreover, as we enter upon a global age, it becomes obvious that we simultaneously must make our deals considering that we are in the process from transition economy to market economy, and we are in a digital age which dictates its own rules to teaching process and society. The world education demand a new constructions for providing high qualify education for society with modern Information Technology, with modern market economy.

Why can we not use the experience of the top universities of the Europe or the USA? The answer is only one: we don't have such specialists in economics, in IT and the educators with these qualifications, the educators having these parameters. In addition, some of our educators (mostly in economics) can not analyze some of possibilities that they have and, in case when university has any technical and program software support. The interesting example for this is Gori State University where from 1998 Econometrics Study Center (ESC) was created with computer class, econometrics software and library on econometrics and Internet Center but Gori State University's educators can not use these possibilities for studying. Only we use it as we know what we had created in GSU. We are sorry, but it is true! Georgia High Education Reforms destroyed the old education system in Georgia, but we are far from creating of a new education system!

The information age, with its technological developments (internet, satellite systems, video conferencing, software) has strongly affected education in general.. These possibilities introduce the

concept of a new educational system, provide the strong understanding and managing complex issues in time and we, and step by step must go toward Global Learning Community.

Let us to discuss one of the importance module of economic education. It is “Quantity Economic Methods and Models”. In generally, to be as a specialist in economics it means: to know in using macroeconomics, microeconomics and quantitative economic methods and models and after this to know concrete economic direction.

What disciplines are involved in this module. What is the glance of top world universities for curricula and design of this module and how we are ready for teaching of this module?

We have provide analysis of this module of Harvard University (USA), Paris 1 (France), some of Georgia Universities.

The research on this direction includes the organization and design of learning process, teaching methodology and methodological innovation, development of information and knowledge systems, development of new technologies, and evaluation and quality and socio-cultural studies.

The ICT can be argued from a number of very different perspectives as: to implement new approaches towards learning and research; to take account of differences in prior knowledge, prior education, learning intentions, professional application fields, to meet the demands of the public in a flexible way.

ICT offers a wider range of available material (texts, videos/animation, simulation/activities, examples, assessment tests) the content of the material covers the fields that have been demanded by the basic requirements of research methodology: information and its resources; research methodology; research tools and its use.

What is the mission of this module?

The course exposes students to a range of tools and techniques for addressing issues such as the design and evolution of economic models with using of new technologies and the work out of research projects that effectively connect with describing, development and estimation economic models. The course provides students with the tools they will need to participate effectively in decisions early in their careers.

Also, it enables students to develop and realize their potential. Helping them achieve that is a lifelong commitment and source of continual satisfaction. It's a privilege to interact with exceptionally bright students in a powerful and energizing process of mutual discovery and collective learning.

Teaching Methods

Class sessions combine lectures, seminars, discussions, small group exercises, individual and group analyses of different social cases (international and local examples. The major part of lectures will be lecturer's presentation. At the end of each lecture students will be encouraged to ask questions and express their opinion on certainly topic.

During the seminar students will present the results of their own theoretical or practical research, participate in the discussion or small group work etc.

Besides of the current lectures and seminars, for fulfillment of this mission help us the special seminars designed to introduce students to research in a particular area of economics and to prepare students to undertake their own research project. The seminars' prerequisites are microeconomic and macroeconomic theory, statistics, and introduction to econometrics... Other undergraduates with the appropriate prerequisites may enroll in seminars on a space-available basis.

Also, in addition, helping us to fulfill this mission is the use of case study with wide range of the project topics.

The econometric project is a case study in formulating an original econometric model, collecting data relevant to the model, using econometric techniques to estimate the model and interpreting the results obtained. It is strongly suggested that student's actually carry out case study.

More difficulties will be had in teaching of econometrics, because there will be construct econometric model according to the project and it is impossible without needing knowledge of Mathematics and Statistics. But using of the case method is a good way for such tasks. Today, although we also make use of lectures, simulations and other forms of teaching as appropriate, it will be best to build a fulfillment some of projects on the case method.

Any students' group (2-5) choose a project's topic and provide all need research activities for its fulfillment, as: aim, collection of statistical data, choosing model's parameters, choosing function, using econometrics software for solving. Considering and discussing of the project lasts during whole performing of the project.

Case teaching is a process of renewal and growth for both, for the teachers and for the students

Note: At this time a low level of students' preparation doesn't give such an effect but we hope the process of education reforms will regulate the need contingent of students more prepared for education!!

Curriculum of the module

This module must be considered for second and third year students. During the second year students must prepare the discipline "Statistics" ("Introduction to Quantitative Methods") for ability to interpret quantity data and to understand essence of economics. The statistical methods help economists to analyze data and empirical relationships, to test theories and make predictions. Besides it, statistics introduces students to statistical tools as: testing, parameters estimation and regression analysis.

According to chosen concrete profession the studying program must be changed. For example, if student choose specialty "Finance and Banking" it is need to introduce changes in study program of "Statistics" because the student must be prepared for the discipline "The Econometrics of Financial Markets".

As econometrics plays a central role for senior students and masters, so they who plan to write thesis must fulfill need requirements as understanding of econometric technique and ability to apply them using standard software packages and "Introduction to Probability" (the first semester) and "Introduction to Econometrics (second semester).

During the second year, students choose from an unparalleled range of elective courses to build on the basic concepts developed in the Required Curriculum. This portion of the program enables students to integrate the functional skills learned in the first year into an understanding of the firm as a total enterprise.

Students may take any combination of courses—up to five courses per semester—and also have the opportunity to cross-register for courses in other select graduate programs.

During the first year at Harvard Business School, all students pursue the same course of study: the Required Curriculum. By studying under a common curriculum, students build a solid, broad foundation of general management concepts and skills across all the key disciplines.

Let us to analyse the view of the top universities: Harvard University (HU) (USA) and Paris 1 (France). The goal is to choose the logic scheme for economic faculty. Of course, we are far from that the program of HU or Paris1 is not enough. We want compare the excellent variants these modules and then suggest our idea.

Harvard University provides teaching of this module named” Econometrics and Quantitive Methods”. This module includes the disciplines:

- ! Introduction Probability and Statistics for Economists;
Prerequisite disciplines: Calculus; Linear Algebra, Statistics;
- ! Introduction on Econometrics
Prerequisite disciplines: Statistics, Introduction to Quantitive Methods
- ! Time series analysis;
- ! Computational Economics (Computational technics, software using);
- ! Econometrics Workshop;
- ! Research in Econometrics;
- ! Introduction to Game Theories;

and elective disciplines according to specialization and research topics to masters degree students, also.

Paris 1 provides teaching of this module named” Econometrics and Quantitive Methods”. This module includes the disciplines:

- ! Probability;
- ! Optimization;
- ! Statistics
- ! Probability methods in Finance
- ! Statistics
- ! Econometrics
- ! Optimization & Dynamics
- ! Game and Information

Also, research topics to masters’ degree students

Tbilisi State University involved in studying program the disciplines (do not the module named” Econometrics and Quantitive Methods”):

- ! The Theory of Probability and Mathematical Statistics;
- ! Introduction to Econometrics

and video spectre of the elective subjects.

Gori State University provides teaching by module named” Economic and Mathematical Methods and Models”. This module includes the disciplines:

- ! Economic and Mathematical Methods and Models :
with disciplines:
 - ! Linear Programming;
 - ! Regression Analysis
 - ! Game Theory (Introduction)

Econometrics was taken away in 2001.

ECONOMETRICS and econometrics software
Econometrics at GSU

We want to note that in 1998 we decided to create the “Econometrics Study Center” (ESC) at GSU. Really, at GSU we begun reform for supporting of economic studying and In 2000, at

GSU we had created ESC with computer class, econometrics software and library with econometric literature. This was promoted by financial support of the “Open Society - Georgia foundation” which supported three projects consecutively, as: „Modern Methods of Econometrics teaching “HESP/06/98,, “Creation of econometrics Study center’ HESP/06/99, “ Course of Lectures on Econometrics” Supporter: HESP/06/00. In addition we had the Mobility Grant in 1998 (Host Institution: New Economic School, Moscow; Department: Econometrics; Economical and Mathematical Methods and models; Supporter: HESP&CRC)

At last, at GSU Econometrics Study Center was created, and was introduced the discipline “Introduction to Econometrics” for one group of economic faculty.

After four years, as we think, we have a need for a center for economic education definitively. But we were not right: the economic faculty did not understand what they had and in 2001 the “Econometrics” was cancelled for the reason that “.... this discipline is very difficult for students...”

Statistical computing recourses

Statistical computing recourses’ goal is to simultaneously help researchers solve their problems in statistical computing and help students to build economic and econometric models by concrete projects and help researchers enhance their skills for performing excellent research.

We want to turn your attention on Statistical Computing Recourses using in economics. These are many, as: STATA, SAS, SPSS, Mplus and Latent Variable Analysis, SUDAAN and so on.

Among of them Econometrics software – STATA is a powerful and yet easy to use statistical package that runs on Windows, Macintosh and UNIX platforms. The students will have handouts on experience using STATA for statistics, graphics, and data management. The handouts are the scripts for the class and are printed and given to the students in the class... The handouts are not meant to be a STATA textbook or a reference manual. However, it is possible for individuals to use the handouts to help in learning STATA even if they don't enroll in the classes.

We are sure our accredited universities have so much personal computers how much is necessary and for studying of STATA it is possible to use PC any generations.

Teaching method for STATA is a form of seminars. This is more acceptable form.

Complete List of Seminars for STATA

- Introduction to STATA a ;
- Regression with STATA ;
- Logistic Regression with ;
- Beyond Binary Logistic Regression with STATA ;
- Visualizing Main Effects and Interactions for Binary Logit Models in STATA ;
- Survey Data Analysis with STATA ;
- Survival Analysis Using STATA ;
- Graphics using STATA;
- Introduction to Programming in STATA ;
- What's New in STATA 8
- What's New in STATA 9

These 10 seminars are enough for undergraduates.

For graduate students will be useful different statistical analysis techniques using different statistical packages. This merely introduces the essence of the technique and the topics also:

STATA 9
 Data Management
 Graphics
 Regression
 Logistic (and Categorical) Regression
 Survey Data Analysis

In Result, in the module “Quantitative Economic Methods and Models” must be considered the complex of disciplines as: Statistics with its modification, Econometrics (Introductory, Intermediate, Advance courses on various levels of Education), Econometrics of Financial Markets, Game theory for Economists, Optimization Methods, and Risk Theory, Operation Research and Econometrics softwares.

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