**Climate and Energy Modelling)**

**General Equilibrium Modelling (CGE and Extended CGE Models by using GAMS coding)**

The writer needs to study all the lecture videos and materials one day in advance to solve the assignments within ten hours. There will be at least 4 to 5 questions for the assignment. The writer needs to study all the lecture video files to solve the assignments problem. Please check the reference materials and example exercise in advance to know the possible assignment questions which will be posted on Jun (17). Please check the uploaded pdf files and get some ideas before the lecture videos will be uploaded!

PLEASE check the three PDF reference materials for in advance before you get access to the lecture videos file and material.

The writer must have the basic knowledge of Basic concepts of production functions (Leontief, CES, Cobb-Douglas), profit maximization, utility functions, demand functions, elasticities. Basics of Computable General Equilibrium (CGE) ModelConcepts and mathematical formulation of General Equilibrium, GAMS coding of static single-region open-economy CGE.

*Course Description*

**Week 9-10: Environmentally Extended Input-Output Table and CGE analysisConstruction of Environmentally Extended Input-Output (EEIO) Table, CGE model using EEIO, Application of CGE model for policy simulation (carbon tax, emissions trading, etc)Week 11-12: Global Multiregional CGE ModelConstruction of Global multiregional CGE model, Policy simulation with Global multiregional CGE for carbon tariff and international emissions trading, modeling of trade theories under CGE frameworkWeek 13-14: Dynamic Global Multiregional CGE ModelRecursive dynamic global CGE model, Analysis of Paris Agreement and other mitigation scenarios using dynamic global multiregional CGE model.**

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After the you get access to the lecture video files...

*-PLEASE mainly focus on EXER5 and EXER6(models and equations) along with the video lecture files!*

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**The assignment questions need to be solved within ten hours. (You need to study all the lecture videos and files one day in advance so that you will be able to solve the assignment questions one day in advance!)**

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**What do you need to study in advance from lecture videos and materials?**

**STATE MODEL(EXER 5 and 6)**

**Try to understand more about carbon pricing/role of the production function of carbon tax.**

**REWRTING THE EQUATIONS AND REVISING THE GAMS CODE**

**And the generating of PEOPLE TABLE and revise the code.**

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**WHAT KIND OF ASSINGMENT QUESTIONS WILL APPEAR? (Actual assignments questions will be uploaded on June 17 9Am KST)**

*What kinds of questions will appear? Possible Questions which may appear for the assignment!*

(1) EXER5 or 6 of GAMS coding-The basic of gams code will provide some basic code and ask you to the c **REVISE the** codes. And then submit **the revised GAMS code** along with **the EXCEL file and Documentation for the interpretation of results.**

(2) Will provide you some simulations of the alternative scenario (specific case) to generate the models and equations for gams coding. For example (The professor will ask you to increase the carbon tax from the level to that level and then the interpretation of the result)

(3) What kinds of things do the simulation for the different values of **Elasticity Parameters** and Different kinds of **Productive Function** from this to that level. And then for the various levels of the **Elasticity Parameters Values** and then check the variation of the result and What is the application of that kind of variation for the different elasticity values.

(4) Using different **Mathematical Equations of Economic Models** instead of some specific **commodity market equilibrium,** and then activate that equation.

For example, the professor may ask you to -Dropp out all other equations instead for Walrus condition then you can try some different combination of the equations and check if the results/outcome still the same or not, even though we have the different equation. The professor may also ask you to try different price normalization condition and check if everything is still the same!

**Try to understand more about carbon pricing!**

(5) Modelling for climate policy like how much we should reduce carbon emissions for the future and how much level of carbon tax we should reduce in the future?

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**WHAT WRITER NEED TO SUBMIT?**

**-Write a documentation of GAMS code**

The writer needs to upload.

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| 2021-04-26 2021-05-02 | Construction of Environmentally Extended Input-Output (EEIO) Table, CGE model using EEIO, |

Video link- (will upload as soon as there is an expert found and agree to progress the assignment)

-due to security reason!

Lecture notes (will upload as soon as there is an expert found and agree to progress the assignment)

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| --- | --- |
| 2021-05-03 2021-05-09 | Application of CGE model for policy simulation (carbon tax, emissions trading, etc) |

Video link

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| 2021-05-10 2021-05-16 | Construction of Global multiregional CGE model - mathematical formulation and GAMS coding |

Video link

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| 2021-05-17 2021-05-23 | Policy simulation with Global multiregional CGE for carbon tariff and international emissions trading, modeling of trade theories under CGE framework |

Video link

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| 2021-05-24 2021-05-30 | Recursive dynamic global CGE model: mathematica formulation and GAMS coding |

Video link

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| 2021-05-31 2021-06-06 | Analysis of Paris Agreement and other mitigation scenarios using dynamic global multiregional CGE model |

Video link