Syllabus template

Semester: VI	
Course : ECONOMICS	
Paper Title: INPUT-OUTPUT ANALYSIS	
Paper code: C3EC230611T	**Credits: 4**
Hours/week : 4 CLASSESS/WEEK	
Category: Core/MDC/SEC/VAC : CORE	
Theory / Practical / Composite : THEORY	
No of Modules : 2	

Course Overview/ Course Objectives:

1. Familiarize students with the concept of inter-industry analysis,
2. Provide insights into national income accounts, price and quantity system equilibrium,
3. Undertake impact and multipliers analysis,
4. Introduce duality theory,
5. Decompose the sources of various changes in the economy,
6. Carry out policy analysis using mixed models,
7. Introduce students to applications of Input-Output Analysis on environment
8. Analyse sector-level productivity.
9. Students with exposure to this course will be trained in the basic skills of handling various economy-wide issues.

Course Outcome: Module 1

1. **CO1**: Construct and interpret the basic Leontief accounting framework **(Bloom's Level: Understand)**
2. **CO2**: Explain the relationship of Input-Output Model with National Income Accounts. **(Bloom's Level: Understand/Apply)**
3. **CO3**: Understand the concept of the closed model **(Bloom's Level: Understand)**
4. **CO4:** Compute and analyse the Leontief Inverse. **(Bloom's Level: Apply)**
5. **CO5:** use power series approximations to determine direct and indirect effects. (**Bloom's Level: Apply)**
6. **CO6: Evaluate** the economic impact of exogenous shocks using various multipliers (Output, Income, Employment, and Value-added). (Bloom's Level: **Analyse /Evaluate**)

Course Outcome: Module 2

1. **CO1**: Formulate the general equilibrium structure of the Input-Output Model **(Bloom's Level: Understand/Apply)**
2. **CO2**: Analyse the structure of relative prices in the Leontief system **(Bloom's Level: Analyse)**
3. **CO3:** Construct and interpret the basic Supply-side framework **(Bloom's Level: Understand)**
4. **CO4: Compare** demand-side (Leontief) and supply-side (Ghosh) models to assess inter-industry linkages and hypothetical extractions. (**Bloom's Level: Analyse**)
5. **CO5**: Perform Structural Decomposition Analysis (SDA) to identify the sources of change in an economy over time. (Bloom's Level: Apply/Analyse)
6. **CO6**: Apply I-O techniques to contemporary issues such as energy consumption, environmental impact, and sector-level Total Factor Productivity (TFP). **(Bloom's Level: Apply/Create)**

Prerequisites: ***Basic knowledge of linear algebra***				
SYLLABUS				
Module	**CONTENT**	**HOURS or NUMBER OF CLASSES**	**CO Mapping**	**COGNITIVE LEVEL**
Module I	**Introduction and overview:** Basic framework of Input-Output Analysis, Overview of various applications. **Fundamental concepts:** Relationships with National Income accounts and Production Functions, Leontief Inverse, Power series approximation of Leontief Inverse, Open and Closed Models, Price Model. **Multipliers:** Output Multipliers, Income and Employment Multipliers, Value-added Multipliers, Multipliers and Elasticities.	**2 Classes/ week**	**CO1, CO2, CO3, CO4. CO5, CO6**	**K1, K2, K3, K4, K5, K6**
Module II	**Supply-side Models and Linkages:** The Ghosh Model, Re-interpretation of Ghosh model as price model, Linkage analysis, Hypothetical Extraction analysis. **Structural Decomposition and Mixed Models:** Demand-side decomposition, Sources of change, Mixed Models, New-industry Impacts. **Applications**: Basic idea of Energy Input-Output Analysis, Environmental Input-Output Analysis, Regional Input-Output Analysis, Total Factor Productivity Analysis.	**2 Classes/ week**	**CO1, CO2, CO3, CO4. CO5, CO6**	**K1, K2, K3, K4, K5, K6**
Text Books				
1. Ronald E. Miller and Peter D. Blair, Input-Output Analysis – Foundations and Extensions, Second Edition, Cambridge University Press, 2009.				
2.				
3.				
Suggested readings				
1. Thijs ten Raa, The Economics of Input-Output Analysis, Cambridge University Press, 2005.				
2. "Economic Systems Research" – various issues.				
Evaluation: CIA: 30 (20 +5 + 5)+ End Semester:70				
Paper Structure for Theory Semester Exam Module: Module 1: 3(out of 4)×5+ 2(out of 3)×10 Module 2: : 3(out of 4)×5+ 2(out of 3)×10				

Course outcomes (COs) and Cognitive Level Mapping

COs	CO Description	Cognitive levels
Module 1		
CO1	**CO1**: Construct and interpret the basic Leontief accounting framework **(Bloom's Level: Understand, Remember)**	K1, K2
CO2	**CO2**: Explain the relationship of Input-Output Model with National Income Accounts. **(Bloom's Level: Understand/Apply)**	K1, K3
CO3	**CO3**: Understand the concept of the closed model **(Bloom's Level: Understand, Remember)**	K1, K2
CO4	**CO4:** Compute and analyse the Leontief Inverse. **(Bloom's Level: Apply)**	K3
CO5	**CO5:** use power series approximations to determine direct and indirect effects. (**Bloom's Level: Apply)**	K3
CO6	**CO6: Evaluate** the economic impact of exogenous shocks using various multipliers (Output, Income, Employment, and Value-added). (Bloom's Level: **Analyse /Evaluate/ Create**)	K4, K5, K6
Module 2	**Course Outcome: Module 2**	
CO1	**CO1**: Formulate the general equilibrium structure of the Input-Output Model **(Bloom's Level: Understand/Remember/Apply)**	K1,K2, K3
CO2	**CO2**: Analyse the structure of relative prices in the Leontief system **(Bloom's Level: Analyse)**	K3
CO3	**CO3:** Construct and interpret the basic Supply-side framework **(Bloom's Level: Understand, Remember, Apply)**	K1,K2, K3
CO4	**CO4: Compare** demand-side (Leontief) and supply-side (Ghosh) models to assess inter-industry linkages and hypothetical extractions. (**Bloom's Level: Analyse**)	K3
CO5	**CO5**: Perform Structural Decomposition Analysis (SDA) to identify the sources of change in an economy over time. **(Bloom's Level: Apply/Analyse)**	K3,K4
CO6	**CO6**: Apply I-O techniques to contemporary issues such as energy consumption, environmental impact, and sector-level Total Factor Productivity (TFP). **(Bloom's Level: Apply/Create)**	K3, K6