I. **Rationale**

Formulating and assessing planning and public policy in economics and spatial analysis requires a relevant analytical framework. This course introduces such a framework by employing some methods.

II. **Course Description**

The course’s main goal is to familiarize students with Input-Output (IO) and Social Accounting Matrix (SAM) techniques to enable them to use a relevant analytical framework to formulate and assess public policy and planning in economics and spatial analysis. Unlike most other planning techniques, the IO and SAM analysis focuses on the interdependence and interactions between sectors, regions, and institutions. To understand their relevance for planning purposes, one needs first to recognize the nature and complexity of the problems faced by planners and policy makers. This is imperative before delving into the techniques, the required data/information, and the rationale why and how those techniques can be used to help resolve the problems. Hence, this is also the approach to be adopted in this course. Towards the end, the limitations of IO and SAM and the possible extensions are discussed.

III. **Format and Procedure**

The course is in lecture format added by a series of Lab sessions. Students are expected to be active in class and lab discussions, and to complete homework and other assignments promptly before taking the exams. Group learning is encouraged.

IV. **Course Requirements**

Understanding intermediate economics (micro and macro), and some quantitative techniques (elementary calculus, optimization and matrix operations or equivalent) would be ideal. Separate sessions to review them can be arranged. There will be lab sessions, homework assignments, and a final exam.
1. **Class attendance and participation policy:** Since the analytical framework and methods to be discussed are cumulative and sequential in nature, i.e., each topic is related to or built upon other topics discussed before, students are required to attend all class meetings and the lab sessions.

2. **Course readings:** To do well with the assignments and midterm & final exams, it is generally sufficient to follow the explanations during the class and the lab meetings. The references below are listed only in case students look for further clarifications.

(a) **Required texts:**

1. **MIRA:** Methods of Interregional and Regional Analysis, edited by Walter Isard, Iwan Azis, Matthew Drennan, Ronald Miller, Sidney Saltzman, and Erik Thorbecke; whichever edition (Ashgate)
2. **IOA:** Input-Output Analysis: Foundations and Extensions, by Ronald E. Miller & Peter D. Blair; whichever edition (Prentice Hall)

   https://www.researchgate.net/publication/4891939_Structural_Path_Analysis_and_Multiplier_Decomposition_within_a_Social_Accounting_Matrix_Framework

   https://muse.jhu.edu/article/387559/pdf

(b) **Background readings (some are downloadable, and useful for reviews of relevant subjects, listed without publication date):**

2. **PT:** Planning Techniques for a Better Future, by Pyatt, G and E. Thorbecke; whichever edition (ILO)

4. **OIP:** Oil Price Increase, by Iwan Azis, in “Crisis, Complexity and Conflict,” by Iwan Azis, Emerald 2009
5. **Basic microeconomics:** Microeconomic Theory: Basic Principles and Extensions; by Walter Nicholson & Christopher Snyder (Thompson)
6. **Regional impact analysis:** Urban and Regional Economics, by Phillip McCann (Oxford University Press)
7. **Public policy analysis in general:** A Primer for Policy Analysis, by Edith Stokey and Richard Zeckhauser (W.W Norton & Co); and Lectures
on Public Economics, by Anthony Atkinson and Joseph Stiglitz (McGraw-Hill)
8. Basic macroeconomics: Macroeconomics by Oliver Blanchard (Prentice Hall).

3. This is a 3-credit course

V. Grading Procedure
Evaluation will be based on a set of homework, mid-term exam, and final exam. Final grades will be based on the following: homework assignments (20%), in-class mid-term exam (40%), and in-class final exam (40%).

VI. Academic Integrity
Each student in this course is expected to abide by the Cornell University Code of Academic Integrity. http://cuinfo.cornell.edu/Academic/AIC.html
Any work submitted by a student in this course for academic credit will be the student's own work, except in the cases of projects that are specifically structured as group endeavors. [Optional: For this course, collaboration is allowed in the following instances: list instances.] You are encouraged to study together and to discuss information and concepts covered in lecture and the sections with other students. You can give "consulting" help to or receive "consulting" help from such students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an email, an email attachment file, a diskette, or a hard copy. Should copying occur, both the student who copied work from another student and the student who gave material to be copied will both automatically receive a zero for the assignment. Penalty for violation of this Code can also be extended to include failure of the course and University disciplinary action. During examinations, you must do your own work. Talking or discussion is not permitted during the examinations, nor may you compare papers, copy from others, or collaborate in any way. Any collaborative behavior during the examinations will result in failure of the exam, and may lead to failure of the course and University disciplinary action.

VII. Accommodations for students with disabilities
In compliance with the Cornell University policy and equal access laws, I am available to discuss appropriate academic accommodations that may be required for students with disabilities. Requests for academic accommodations are to be made during the first three weeks of the semester, except for unusual circumstances, so arrangements can be made. Students are encouraged to register with Student Disability Services to verify their eligibility for appropriate accommodations.

**VIII. Course Schedule**

**A. Introduction (week 1)**
- Policy & planning in economics and spatial issues: private vs public interest
- From partial to general equilibrium
- What is planning model and analysis

**B. Input-output (IO) (week 2-6): IOA, MIRA, IIOA**
- Essence of IO analysis (1/2 week)
  - Framework
  - Format
  - Direct & indirect effects
  - Impact multiplier: output, income, employment, energy, pollution, and others
  - Forward-backward linkages
- Data & information (1/2 week)
  - National income account
  - Interindustry (inter-spatial) flows
  - Aggregation: census & survey
- Coverage of applications (2 weeks)
  - National
  - Regional
  - Interregional & multiregional
  - Inter-country (global) IO
- Stability of IO coefficients (2 weeks)
  - Economic structure & technology
  - Forecasting vs impact analysis: from static to dynamic IO (role of capital stock)
  - Non-survey: marginal coefficients, best practice, RAS, AHP
  - Supply-side analysis

**C. Social Accounting Matrix (week 7-11): MIRA, PT, SPA, EMI, OIP**
- What is SAM (1 week)
  - Circular (triangular) flows of production process: the imperative of institutions
o Relations between SAM and IO and national income account
• SAM construction (1/2 week)
  o Top-down vs bottom-up approach
  o Stability of SAM coefficients
  o Economic structure & technology
• SAM multiplier (1/2 week)
  o SAM as a data system and analytical tool
  o SAM-based multiplier
  o Multiplier decomposition
• Applications (1 week)
  o Standard impact multiplier analysis
  o Growth and equity link (and poverty?)
  o Interregional: inter and intra regional multiplier
  o Economy-wide impacts of a shock
• Structural path analysis: SPA (1 week)
  o Why SPA: transmission mechanism & identifying bottlenecks
  o Direct influence, total influence, global influence
  o Applications
• Financial social accounting matrix: FSAM (1 week)
  o Why FSAM
  o Flow-of-fund (FOF)
  o Integrating FOF with real SAM
  o Emergence of “new” sources of income inequality
  o Applications

D. Limitations of IO and SAM, and Extension (week 12-13): PEM
  o Prices are exogenous, excess capacity, perfectly elastic supply, linearity, not taking account of supply and demand behavior and the mediating role of market institutions
  o Lack of uncertainties, asymmetric information, and dynamic elements
  o Endogenous price models
  o Alternative models: objective vs subjective evaluations

E. Summary (week 14)

IX. Additional Resource Readings
Additional materials particularly those related to the recent or important public policy and planning issues will be announced in class.
To be announced in class.