

CRP 371 PLANNING TECHNIQUES

Course Code:	1210371
METU Credit (Theoretical-Laboratory hours/week):	3(3-0)
ECTS Credit:	5.0
Department:	City and Regional Planning
Language of Instruction:	English
Level of Study:	Undergraduate
Course Coordinator:	Prof. Dr. Ayşe GEDİK, Assoc. Prof. Dr. Emine YETİŞKUL ŞENBİL
Offered Semester:	Fall Semesters

Course Objective

In this course, various quantitative methods and models used in urban and regional planning are introduced. The course develops a theoretical framework with numerical examples and covers a selection of mathematical and statistical techniques. This course aims to provide students an understanding of the role of these methods and models in urban policy analysis and decision making; their assumptions, technical properties, processing stages and extensions. Our main objective is to indicate how these methods and models are selected and applied; and how the results of these models are interpreted.

Course Content

This course includes the application of mathematical (such as linear and non-linear models) and statistical methods (such as regression analysis) to the subject of population projection; and the relations between demography and the regional and national planning and development. This first section of the course is followed by Input-Output Analysis and its use in economic impact analysis and economic development planning. Then, we include decision support tools with an introduction of Game Theory and Decision Tree. The final section of the course provides analyses of employment and its forecasting and gravity models and Lowry Model are presented.

Weekly Program

Part 1: Population Projection and Demographic Analysis

Week 1- Introduction to Population; Population Projection (aggregate)

Week 2- Population Projection (aggregate)

Week 3- Various indices of Demographic Characteristics

Week 4- Population Projection: Cohort-Survival

Part 2: Models in Planning I

Week 5- Measuring and Evaluating Regional Economic Performance: Input-Output Analysis; Uses of Input-Output Tables for Planning Purposes

Week 6- Algebra of Input-Output Tables; Deriving Input-Output Multipliers

Week 7- Decision-making Process; Game Theory, Normal Form Games and Pure Strategy Games

Week 8- Mixed Strategy Games and Extensive Form Games

Week 9- Decision Trees

Part 3: Models in Planning II

Week 10 - Gravity Models; Hansen's Gravity Potential Model

Week 11 - Single-constrained Gravity Model for Locating Retail Trade

Week 12- Lowry Model; Economic Base Mechanism and Location of Activities and Integration of the Economic Base and Allocation Mechanisms

Week 13- Review - Discussion

Grading

Students who did not participate less than 30 percent of the classes will be graded NA.

40 % *Mid-term Exam*

60 % *Final Exam*

Learning Outcomes

By the end of the course, the students will be able to understand key methods and models in substantive topics of city and regional planning and economic development. Demographic analysis and population projection, regional economic analysis, decision-making tools and employment with its allocation. They will manage to use quantitative tools and techniques in urban policy analysis and planning. They will build developing policy decisions within the mathematical and statistical methods and models.

Reference Material

Donald T. Rowland (2003) Demographic Methods and Techniques, Oxford University Press.

- a) Aggregate population projection (sf. 45-68)*
- b) Age-Sex composition: population pyramids, dependency ratios, etc.(sf. 76-91, 97-101)*
- c) Measures of fertility: ASFR, TFR, etc (sf. 230-47)*
- d) Components of population change (sf. 29-35)*
- e) Demographic transition (sf. 16-23; 98-101)*

f) *Second demographic transition (sf. 223-25)*

g) *Fertility measures (sf. 230-250)*

Xinhao Wang and Rainer vom Hofe (2007) *Research Methods in Urban and Regional Planning*, Tsinghua UNiversity Press, Beijing and Springer-verlag GmbH Berlin Heidelberg.

a) *Input- Output Analysis for Planning Purposes (pg: 218-242, 246-248)*

Robert J. Stimson, Roger R. Stough and Brian H. Roberts (2006) *Regional Economic Development, Analysis and Planning Strategy*, Springer- Verlag Berlin Heidelberg.

a) *Traditional Tools for Measuring and Evaluating Regional Economic Performance II: Input- Output Analysis (pg: 157-165)*

Walter Isard (1975) *Introduction to Regional Science*, Prentice-Hall, Inc. Englewood Cliffs, New Jersey.

a) *The Base, Economic Structure, and Development of a City or Region (119-151)*

Varian R. Hal, (2005) *Intermediate Microeconomics, A Modern Approach*, W.W. Norton & Company, New York, London.

a) *Game Theory (pg: 497-503)*

b) *Game Applications (pg: 512-524)*

Lee, Colin (1973) *Models in Planning, An Introduction to the Use of Quantitative Models in Planning*, Pergamon Press, Oxford.

a) *Gravity Models (pg: 71-82)*

b) *The Lowry Model (pg: 89-112)*