

INTERNATIONAL UNIVERSITY OF JAPAN  
Graduate School of International Relations

Academic Year: 2016/2017

Term: Spring

Course	Course code DCC5350	Course title Public Policy Modeling	
Name of Instructor	1		Credit Number: 2
Instructor's contact Information	Office# 311	Office Hours Monday / 13:00-14:30	E-mail kucc625@iuj.ac.jp
Class Schedule Day / Time	10:30-12:00 Monday and Wednesday		

Course Description: This policy analysis course introduces the cost benefit analysis (CBA) concept and then explores mathematical and statistical methods such as linear programming (LP), decision analysis, Markov model, queueing theory, and systems thinking. This course is required for PMPP students.

Learning Objectives: This course helps students improve their abilities to identify and analyze policy problems correctly; formulate policy problems properly; and interpret results professionally. Specifically, students will be able to (1) understand basics of policy analysis and cost benefit analysis (CBA), (2) understand ideas and natures of policy modeling, (3) express their ideas (mental models) using causal diagrams, (4) understand key concepts and techniques of individual modeling methods, (5) formulate policy problems properly given their specific situations, (6) solve policy problems using computer software packages like Excel and Stata, and (7) interpret and present the results correctly and professionally.

Career Relevance: This course puts more emphasis on "modeling" or a *scientific way of thinking* about policy and management problems rather than on specific methods, techniques, and skills. This ability helps students analyze various public issues logically and systematically and express their ideas to the general audience effectively.

Course Context or Rationalization: This course is a policy analysis course to provide scientific tools (methods) and skills that are commonly used in public policy and management. Accordingly, it is related to Cost Benefit Analysis (ADC 6765), Quantitative Methods for Decision Making (ADC6510) for linear programming, Data Analysis (DCC 5380) and Advanced Econometrics I (ADC 6516) for nonlinear programming and regression, and Public Finance and Budgeting (DCC 5370) for forecasting.

Delivery Methods: This course relies on lecture, homework assignment, and group projects.

Assessment: Midterm exam (20%), final exam (15%), homework assignment (30%), quiz (20%), group project (10%), and class attendance and participation (5%)

Prerequisite: Students are expected to have basic knowledge of college level statistics (statistical inferences and probability theory), (matrix) algebra, and some calculus, which are addressed in Mathematical Methods (DCC 5210), Statistical Methods (DCC 5220), and Data Analysis (DCC 5380).

Textbook(s)	<p>Required:</p> <p>Hillier, Frederick S., and Mark S. Hillier. 2014. <i>Introduction to management science: A modeling and case studies approach with spreadsheets</i>, 5<sup>th</sup> ed. McGraw-Hill. ISBN 978-1259010675.</p> <p>Reference books/Journal Articles:</p> <p>Albright, S. Christian, and Wayne L. Winston. 2005. <i>Spreadsheet modeling and applications: Essential of practical management science</i>. Belmont, CA: Thomson. ISBN 978-0534380328.</p> <p>Anderson, David R., Dennis J. Sweeney, Thomas A. Williams, Jeffrey D. Camm, and R. Kipp Martin. 2010. <i>An introduction to management science: Quantitative approaches to decision making</i>, 13<sup>th</sup> ed. South-Western. ISBN 978-1111532222.</p> <p>Anderson, Virginia, and Lauren Johnson. 1997. <i>Systems thinking basics: From concepts to causal loops</i>. Waltham, MA: Pegasus Communications. ISBN 978-1883823122.</p> <p>Boardman, Anthony E., David H. Greenberg, Aidan R. Vining, and David L. Weimer. 2011. <i>Cost-benefit analysis: Concepts and practice</i>. 4<sup>th</sup> ed. Boston: Prentice Hall. ISBN 978-0137002696.</p> <p>Dunn, William N. 2012. <i>Public policy analysis</i>, 5<sup>th</sup> ed. Upper Saddle River, NJ: Pearson Education. ISBN 978-0205-252572.</p> <p>Hillier, Frederick, and Gerald Lieberman. 2014. <i>Introduction to operations research</i>, 10<sup>th</sup> ed. McGraw-Hill. ISBN 978-9814577205.</p> <p>Ragsdale, Cliff. 2010. <i>Spreadsheet modeling &amp; decision analysis: A practical introduction to management science</i>, 6<sup>th</sup> ed. South-Western Cengage Learning. ISBN 978-0538746311.</p> <p>Sherwood, Dennis. 2002. <i>Seeing the forest for the trees: a manager</i>. London: Nicholas Brealey Pub. ISBN 978-1857883114.</p> <p>Stevenson, William J., and Ceyhun Ozgur. 2007. <i>Introduction to management science with spreadsheets</i>. McGraw-Hill. ISBN 978-0073252902.</p> <p>Weick, Karl E. 1979. <i>The social psychology of organizing</i>. 2d ed. Reading, MA: Addison-Wesley Pub. Co. ISBN 978-0075548089.</p> <p>Weimer, David L., and Aidan R. Vining. 2010. <i>Policy analysis: Concepts and practices</i>. 5<sup>th</sup> ed. Boston, MA: Longman. ISBN 978-0205781300.</p> <p>Winston, Wayne L. 2004. <i>Operations research: Applications and algorithm</i>, 4<sup>th</sup> ed. Duxbury Press. ISBN 978-0534380588.</p>
Class Outline	<ol style="list-style-type: none"> <li>1. Introduction to policy modeling</li> <li>2. Policy analysis: cost-benefit analysis</li> <li>3. Decision analysis 1</li> <li>4. Decision analysis 2</li> <li>5. Decision analysis 3</li> <li>6. Introduction to linear programming 1</li> </ol>

	<ul style="list-style-type: none"> <li>7. Introduction to linear programming 2</li> <li>8. Interpreting linear programming 1</li> <li>9. Interpreting linear programming 2</li> <li>10. Linear programming application 1</li> <li>11. Linear programming application 2</li> <li>12. Systems thinking 1</li> <li>13. Systems thinking 2</li> <li>14. Markov model 1</li> <li>15. Markov model 2</li> <li>16. Application of Markov model 1</li> <li>17. Application of Markov model 2</li> <li>18. Introduction to queueing theory 1</li> <li>19. Introduction to queueing theory 2</li> <li>20. Application of queueing theory</li> </ul>
Others (if any)	