ESE-831: Energy Policy Analysis and Planning

Course Code	Credit Hours (Th-Pr)		Contact Hrs/Week (Th-Pr)	Total Contact Hrs (Th-Pr)
ESE-831	3-0	**Energy Policy Analysis and Planning (Elective)**	3-0	45-0

Course Objectives

1. The primary objectives of this course are to familiarize students with the designing, implementation and evaluation processes of energy policy and planning in context to Pakistan. This course will also deliver knowledge on integrated energy planning (IEP) and the methods of IEP implemented in developed and developing countries.

Learning Outcome

2. At the end of the course, students should be able to: (i) grasp the processes involved in the design and implementation of energy policy; (ii) understand the need, role and frameworks of energy planning in different countries; (iii) comprehend the importance, role and implications regarding integrated energy planning; and last but not the least (iv) know and use different modeling options for integrated energy policy and planning

3. **Course Outline**

Energy policy design and formulation processes
Implementation processes of energy policy
Assessment of energy policy
Future impacts of different energy policy options
Frameworks for energy planning
Energy planning processes
Relationship between energy policy and planning
Integrated energy planning
Modelling options for energy planning in Pakistan

Input Obtained from Industry/Corporate Sector/Subject Specialists/Academia

4. The working paper has been sent to the following personals for their valuable feedback.

a. Imran Ahmad, Team Leader Energy at JICA
b. Dr. Faisal Mehmood Mirza, Associate Prof. and Chairman Economics Department, University of Gujrat
c. Dr. Liaqat Ali Shah, Policy Head (Trade and Industry Cooperation), CPEC Center of Excellency

5. **International Practices**

Course Title	**University**
Energy policy and planning	KTH Sweden
Energy policy analysis	Consortium for Energy Policy Research, Kennedy School, Harvard, US
Sustainable energy policy and planning	Aalborg University, Denmark
Energy policy and planning	University of Technology, Australia

Topics Covered

No.	Topics	Text Book	Contact Hours
1.	**Introduction** Overview of energy policy design, implementation framework and evaluation, integrated energy planning and different options for modeling of energy policy in developed and developing countries Need, drivers and stakeholders of energy policy What makes a good energy policy? Examples of energy policies from Pakistan and other countries	MM & PM	3

2.	**Energy policy design** Need, drivers and stakeholders of energy policy What makes a good energy policy? Examples of energy policies from Pakistan and other countries Factors responsible for the design of energy policy including (i) historical development of energy systems (ii) ideologies (iii) socio-economic changes (iv) different options in technology for short term and long term and (v) coherence with other national and international policies	AJ & JT And Howlett	4.5
3.	**Tools for energy policy formulation** (a) Policy Formulation, Policy Advice and Policy Appraisal (b) Participatory Assessment: Tools for Empowering, Learning and Legitimating? (c) Tools for Coping with Complexity and Future Uncertainty (d) Indicators: Tools for Informing, Monitoring or Controlling? (e) Multi-Criteria Analysis (f) Cost-Benefit Analysis (g) SWOT analysis (h) Policy Formulation Tool Use in Emerging Policy Scenarios	Howlett And research articles	9
4.	**Implementation and assessment of energy policy** Implementation frameworks Effectiveness of implementation frameworks Factors limiting the implementation of energy policy Evaluation of implementation of energy policy Evaluation of energy policy (ex-post evaluation)	VB And MM &	6

	Different methods of policy evaluation	PM	
5.	**Energy planning** Need for energy planning Institutional framework for energy planning Linkage between energy policy and planning Frameworks for energy planning Effectiveness of energy planning frameworks	MM and MK	4.5
6.	**Integrated energy planning** Energy economies and need for integrated planning Scope and constraints of IEP Developing energy master plan Institutional and economic framework Tools and methods for IEP Modeling energy planning Different options for integrated energy modeling	MM & PM, MK and VB	3
7.	**Integrated energy modeling options: LEAP** LEAP is a comprehensive integrated scenario-based energy-environment modeling tool. Its scenarios account for how energy is consumed, converted and produced in a given energy system under a range of alternative assumptions on population, economic development, technology, price and so on. It is notable for its flexibility, transparency and user-friendliness.	Natural Resources Canada	6
8.	**Integrated energy modeling options MARKAL/TIMES** MARKAL/Times is a technology-rich energy/economic/environmental model. It was developed in	IEA/ETSAP	9

	a collaborative effort under the auspices of the International Energy Agency-Energy Technology Systems Analysis Program (ETSAP). It is a generic model tailored by the input data to represent the evolution over a period of usually 20 to 50 years of a specific energy-environment system at the national, regional, state or province, or community level.		
	Total		45

Recommended Books

S. No.	Title	Author(s)	Assigned Code	Remarks
1.	Energy Policy Analysis and Modeling	Mohan Munasinghe and Peter Meier, 1993	MM & PM	Text
2.	Analysis of Energy Systems: Management, Planning and Policy	Vincenzo Bianco, 2017	VB	Reference
3.	Energy Policy Analysis	Mohan Munasinghe, 2002	MM	Reference
4.	Energy Planning and Policy	Maxime Kleinpeter, 1995	MK	Reference
5.	The Tools of Policy Formulation Actors, Capacities, Venues and Effects	Andrew J. Jordan And John R. Turnpenny, 2015	AJ& JT	Reference
6.	Energy Policy Planning	Bayraktar, B. A., 2012	BB	Reference

7.	Designing Public Policies: Principles and instruments	M. Howlett, 2010	Howlett	Reference