TECHNISCHE UNIVERSITÄT KAISERSLAUTERN

Module Handbook

TUK MODHB Homepage

Course WIW-RE-ERT-K-7

Economics of Renewable Energy Technologies (2V, 2.0 LP)

Course Type

SWS	Type	Course Form	CP (Effort)	Presence-Time / Self-Study	
2	V	Lecture	2.0 CP	30 h	15 h
(2V)			2.0 CP	30 h	15 h

Basedata

SWS	2V
CP, Effort	2.0 CP = 45 h
Position of the semester	1 Sem. in SuSe
Level	[7] Master (Advanced)
Language	[EN] English
Lecturers	Kandpal, Tara, Prof. Dr. (EXT | DEPT: WIW)
Livecycle-State	[NORM] Active

Contents

- Brief overview of important characteristics of renewable energy technologies and their implications for financial/economic viability
- Feasibility requirements for large scale dissemination of renewable energy technologies - resource availability, technological appropriateness, energetic feasibility, socio-cultural acceptability, environmental sustainability, institutional preparedness and financial viability
- Economic considerations in designing renewable energy technologies
- Identification and quantification of the ‘Costs’ and ‘Benefits’ of renewable energy projects
- Time value of money, discount rate and corresponding formulae
- Measures of financial/economic performance

- Approaches for considering uncertainty in appraisal/evaluation of renewable energy projects
- Development of techno-economic models for financial evaluation of renewable energy technologies
- Learning effect, experience curves, technology diffusion models and estimation of future cost of renewable energy technologies
- Incentives (Feed-in-Tariffs, Renewable Purchase Obligation, Tax credits, Carbon dioxide emissions mitigation benefits etc.) and financial viability of renewable energy technologies
- Economics of decentralized power generation based on renewable energy sources
- Effect of modalities of financing on the financial viability of renewable energy projects
- Software for techno-economic evaluation of renewable energy based power generation(such as RETScreen, HOMER, System Advisor Model)
- Tariff fixation of renewable energy based electricity
- Issues in social cost-benefit analysis of renewable energy projects
- Case studies

Literature

- Chan S. Park “Contemporary Engineering Economics”, Fifth Edition, Pearson Prentice Hall (2011)
- Gerald J. Thuesen and W. J. Fabrycky, Engineering Economy, Prentice Hall Inc. (2001)
- Harry Campbell and Richard Broron, Benefit – Cost Analysis, Cambridge University Press (2003)
- or any other standard text book on engineering economics
- T. C. Kandpal and H. P. Garg, “Financial Evaluation of Renewable Energy Technologies” Macmillan India Ltd. (2003) (soft scanned version of relevant portions can be made available to the students)
- Relevant literature from Research Journals, Reports etc (soft version shall be made available to the students)
- John Twidell and Tony Weir, Renewable Energy Resources, Taylor and Francis (2006).
- Godfrey Boyle, Renewable Energy: Power for a Sustainable Future, Oxford University Press (2004)

Requirements for attendance (informal)

None

Requirements for attendance (formal)

None

References to Course [WIW-RE-ERT-K-7]

Module	Name	Context	
[WIW-RE-ERT-M-7]	Economics and Financing of Renewable Energy	WP: Obligation to choose	2V, 2.0 LP