Course Syllabus for M.Sc. Energy for Sustainable Social Development

 **Sustainable Energy Design for Social Development**

(CORE COURSE 1)

Lecture: 4 Year: I

Tutorial: 4 Part: A

Practical: 4

**Objective**:

The course has the objective to develop an understanding how engineering and architecture design can be employed to contribute to positive change in the renewable energy sector. Awareness of social and sustainable development challenges and opportunities in line with renewable energy issues are central this course. The candidate will learn to analyse social and sustainability challenges related to renewable energy issues with help of a systems design approach and real life examples. The candidate will understand the design process, develop a design brief and conjectural concepts/ solution for a given energy issue, based on own findings and discussions with relevant stakeholders. The candidate will understand his/her position and role as an expert and a mediator of new energy services and products that benefit society as a whole.

1. **Introduction to Sustainable Energy Design for Social Development [6]**
2. **Sustainable development, design and energy issues [8]**
	* Sustainable Development: An introduction
	* Principles, methodologies and models of Sustainable Design
	* Quadruple bottom line
	* Cases for energy design

A1\* Answer some questions

A2 Draft sustainability problems related to the case descriptions

A= assignment (1-2 pages written)

1. **The design process [10]**
* Problem and context identification (hypothetical starting point)
* Information gathering methods
* Social sustainability and stakeholder issues
* Idea generation
* Energy examples for idea generation

A3 Investigate the identified problems and context

A4 Gather information on settings and stakeholders

A5 Preliminary Draft for ideas to meet the problems

1. **Design brief and possible solutions [10]**
* Inclusive design (Energy cases)
* Participatory design (Energy cases)
* Design Brief development

A6 Interpret the problems from a participatory perspective

A7 Write a preliminary design brief

A8 Suggest preliminary solutions

1. **Solution, Testing and Refining [12]**
* SWOT Analysis for solution
* Rebound effects of renewable energy solutions
* Stakeholder dialogues
* Iteration of solutions
* Real life context

A8 Discuss SWAT and rebound effects of the solutions

A9 Discuss solutions with stakeholders

A10 Iterate and integrate in scenario

**Text Books, Reference materials and Journals:**

Cornwall, A. (2008), Unpacking ‘Particpation’: Models, Meanings and Practices, *Community Development Journal*, Vol 43, No 3, 269-283

Coyne, R., Wicked problems revisited, *Design Studies* 26 (2005)

Design for Sustainability: A step by step approach <http://www.d4s-sbs.org/>

DuPisani P.A. (2006), Sustainable Development, Historical roots of the concept, *Environmental Science* 3(2), 83-96

Ehrenfeld, J. (2008), *Sustainability by Design*, Yale University Press, New Have CT

Eikhaug, O., (Editor-in-chief) (2010), *Innovating With People - The Business of Inclusive Design*, The Norwegian Design Council, ISBN: 978-82-991852-2-6

Fuad-Luke, A. (2009) *Design activism*, Earth Scan, London

Keitsch, M. (2015), Sustainability in Industrial Design: Concepts, methods and practices, *Routledge International Handbook of Sustainable Development*, Chapter 10. Routledge, London

Nurse, K. (2006). Culture as the fourth pillar of sustainable development. *Small states: Economic review and basic statistics*, 11, 28-40.

Oppenheimer D. (et al) (2002). *Rural Studio: Samuel Mockbee and an Architecture of Decency*. New York: Princeton Architectural Press.

Schön, D. A. (1995). *The Reflective Practitioner: How professionals think in action*. London: Ashgate.

Cornwall, A. (2008), Unpacking ‘Participation’: Models, Meanings and Practices, *Community Development Journal*, Vol 43, No 3, 269-283

Waks, L., Donald Schön’s Philosophy of Design and Design Education, *International Journal of Technology and Design Education* 11, 37–51, 2001.