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

**Energy in Sustainable Urban and Rural Planning**

(CORE COURSE 2)

Lecture: 2 hrs Year: I

Tutorial: 2 hrs Part: I

**Objective**:

The objectives of the course are to:

* Introduce the role of energy and sustainability in planning both urban and rural context;
* Enable application of sustainable energy in designing and planning
* Analyze and plan urban and rural settlements with sustainable and energy efficiency aspect

After attending the course, the students will be able to bring basic knowledge of design and planning as a contribution to their project and thesis works on renewable energy solutions. The student should be able to solve future energy crisis by designing and planning with suitable and sustainable energy to solve the problem in energy demand in households in rural and urban context.

**Teaching and Examination Schedule:**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| S.N. | Teaching Schedule | | | | | | | Examination Scheme | | | Total | Remarks |
| Course Code | Course Title | Credit | L | T | P | Total | Theory | | |
| Assessment Marks  Fieldworks | Final | |
| Duration, hr | Marks |
| 2 | EG802ME | Energy in Sustainable Urban and Rural Planning | 4 | 2 | 2 | 0 | 4 | 40 | 3 | 60 | 100 |  |

The course will be delivered basically in a lecture mode supplemented by field based tutorial and practice sessions. The course will be delivered with two contact hours weekly for a total of 15 weeks. Field work may be scheduled for one to two weeks. The lectures, demonstration and discussions will be largely centered in the class and the course.

Evaluation: There will be assessments made of interactions, presentations and reports of assigned activities in tutorial classes. In addition, outcomes either as a written report or presentation of field works will form important basis for internal evaluation. Attendance requirements will be as per TU regulations i.e. minimum 75% of contact hours have to be attended for eligibility to sit for examination.

1. **Introduction of Planning**

* Urban and Rural Planning
* Sustainable development

1. **Energy resources in Nepal and world**

* Traditional, Commercial, Alternative

1. **Energy demand in Urban and Rural settlements**
2. **Energy scenario in Nepal**

* Energy consumption pattern
* Energy consumption in different Sector
* Energy consumption in Residential sector
* Energy consumption in Transportation sector
* Energy consumption in Commercial sector

1. **International Energy Efficiency and sustainability practices in Urban and Rural Planning**

* International practices
* Eco-city concept
* Urban Village concept
* Solar city concept

1. **Energy and sustainability in Urban Planning**

* Integrated land use
* Improving town planning
* Integrated transportation
* Improving Infrastructures
* Improving Urban services
* Life style and human behavior for Energy Efficiency
* Application of Eco-city concept

1. **Energy and sustainability in Rural Planning**

* Integrated energy system – biogas

1. **Application of Energy and sustainability in Urban and Rural Planning**

* Household level
* Community level
* City level
* National level

**References and Text books:**

* Sen, J. 2013, Sustainable Urban Planning, teri, New Delhi, India
* Chavannes, M., Revedin, J., Kugler, E., 2009, Sustainable Design: Towards a new Ethic in Architecture and Town Planning, Walter de Gruyter, Stuttgart, Germany
* Singh, R.B., 2006, Sustainable Urban Development, Concept Publishing Co., New Delhi, India
* Rydin, Y. 2011, The Purpose of Planning: Creating Sustainable Towns and Cities, University of Bristol, UK
* Graham, P., Booth, P. 2010, Guidelines on Education, Policy and Sustainable Built Environments, UNEP and UNSW, Sydney, Australia