**Tribhuvan University**

**Institute of Engineering**

**Pulchowk Campus**

**Department of Architecture and Urban Planning**

**Master of Science (M.Sc.)**

**in**

**Energy for Sustainable Social Development (MSESSD)**

**Planning Lesson MSESSD**

**(Core Course 2)**

**Energy in Sustainable Urban and Rural Planning**

**(Credit 4)**

**Dr. Sushil B. Bajracharya and Dr. Sudha Shrestha**

Department of Architecture

Feb 16 - 18 March 2016

**Energy in Sustainable Urban and Rural Planning**

(CORE COURSE 2)

M. Sc. I Year/I Part

(4 CREDITS)

**Dr. Sushil B. Bajracharya and Dr Sudha Shrestha**

**Syllabus:**

1. **Introduction of Planning** - Dr. S. Shrestha

* Urban and Rural Planning
* Sustainable development

1. **Energy resources in Nepal and world** - Dr. S. B. Bajracharya

* Traditional, Commercial, Alternative

1. **Energy demand in Urban and Rural settlements** - Dr. S. B. Bajracharya
2. **Energy scenario in Nepal** - Dr. S.B. Bajracharya

* 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**
2. **International practices**  - S. Singh

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

1. **Energy and sustainability in Urban Planning** - Dr. S. Shrestha

* 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** - Dr. S.B. Bajracharya

* Integrated energy system – biogas

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

* Household level - Dr. S. Shrestha
* Community level
* City level
* National level

**Guest Lectures:**

* Ms. Sangita Singh – Associate Professor, IOE
* Dr, Santosh Shrestha – Expert Sustainable Housing, UN Habitat Nepal

**Day 1: 16 Feb 016, Tuesday**

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| --- | --- | --- | --- |
| Lecture | 1:00-2:00 | Introduction of Course CC II | Dr. S.B. Bajracharya |
|  | 2:00-2:10 | Break |  |
| Lecture | 2:10-3:00 | Introduction of Planning  – Urban & Rural planning & sustainable development | Dr. S. Shrestha |
|  | 3:00-3:40 | Tea Break |  |
| Tutorial | 3:40-4:30 | Energy and sustainability in Urban Planning  Integrated land use, transportation, improving town planning, infrastructure, urban services, etc. | Dr. S. Shrestha |
| Tutorial | 4:30-5:00 | Discussion on field work for seminar  Group division | Dr. S.B. Bajracharya & Dr. S. Shrestha |

**Day 2: 17 Feb 016, Wednesday**

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| --- | --- | --- | --- |
| Lecture | 1:00-2:00 | Energy resources in Nepal and world & Energy demand in Urban and Rural settlements | Dr. S.B. Bajracharya |
|  | 2:00-2:10 | Break |  |
| Lecture | 2:10-3:00 | Energy scenario in Nepal | Dr. S.B. Bajracharya |
|  | 3:00-3:40 | Tea Break |  |
| Tutorial | 3:40-4:30 | Interaction to  Identify literature/ article reviews/ assign literature study (HW-1) | Dr. S B Bajracharya |
| Tutorial | 4:30-5:00 | Discussion on field work for seminar | Dr. S B Bajracharya |

**Day 3: 18 Feb 016, Thursday**

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| --- | --- | --- | --- |
| Lecture | 1:00-2:00 | International Energy efficiency and sustainability practices in urban and rural planning   * International practices on Eco-city Concept, Urban village, Solar city concept | S. Singh |
|  | 2:00-2:10 | Break |  |
| Lecture | 2:10-3:00 | Traditional town planning with eco-city concept in Kathmandu valley | S. Singh |
|  | 3:00-3:40 | Tea Break |  |
| Tutorial | 3:40-5:00 | Interaction with students of KU LEUVEN University, Belgium on field study | S. Singh & Dr. S B Bajracharya |

**Day 4: 21 Feb 016, Sunday Joint Field visit with students of KU LEUVEN University, Belgium on field study**

**Day 5: 22 Feb 016, Monday Joint Field visit with students of KU LEUVEN University, Belgium on field study**

**Day 6: 23 Feb 015, Tuesday Desk study on Progress - Analysis, discussion and findings of the joint field work in classroom & Presentations by Annelies and Stefanie, Ku Leuven University, Belgium**

**Day 7: 24 Feb 015, Wednesday Field survey & data collection for seminar topic**

**Day 8: 25 Feb 015, Thursday Jointly Preparation for Presentation**

**Day 9: 26 Feb 016, Friday Jointly Preliminary Presentation on findings of Field study**

**Day 10: 28 Feb 016, Sunday**

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| --- | --- | --- | --- |
| Lecture | 1:00-2:00 | Review on joint field work, Discussion for Seminar on issues in traditional settlements | Dr. S B Bajracharya & S. Singh |
|  | 2:00-2:10 | Break |  |
| Tutorial | 2:10-3:00 | Discussion for International journal article review on energy, sustainability and planning issues | Dr. S B Bajracharya & S. Singh |
|  | 3:00-3:40 | Break |  |
| Tutorial | 3:40-4:30 | Energy and Sustainability situation and practices in Nepal and World | Dr. S B Bajracharya |
|  | 4:30-5:00 | Discussion | Dr. S B Bajracharya |

**Day 11: 29 Feb 016, Monday**

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| Lecture | 1:00-2:00 | Desk study for field work in traditional settlements - Bungamati/Khokana/Kirtipur for Seminar | Dr. S B Bajracharya |
|  | 2:00-2:10 | Break |  |
| Tutorial | 2:10-3:00 | Discussion for International journal article review on energy, sustainability and planning issues | Dr. S B Bajracharya |
|  | 3:00-3:40 | Break |  |
| Tutorial | 3:40-4:30 | Desk study for International journal article review | Dr. S B Bajracharya |
|  | 4:30-5:00 | Library Visit for article | Dr. S B Bajracharya |

**Day 12: 1 March 016, Tuesday**

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| G. Lecture | 1:00-2:00 | Sustainable housing issues for Green and Sustainable homes and settlements | Dr. Santosh Shrestha |
|  | 2:00-2:10 | Break |  |
| G. Lecture | 2:10-3:00 | Green homes project: UN Habitat Nepal | Dr. Santosh Shrestha |
|  | 3:00-3:40 | Break |  |
| Tutorial | 3:40-4:30 | Interaction on Sustainable housing issues for Green homes and settlements | Dr. Santosh Shrestha & Dr. S B Bajracharya |
| Tutorial | 4:30-5:00 | Discussion |  |

**Day 13: 2 March 016, Wednesday Field survey & data collection in traditional settlements Bungamati/Khokana/Kirtipur for Seminar Day 14: 3 March 015, Thursday**

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| --- | --- | --- | --- |
| Lecture | 1:00-2:00 | Application of Energy and sustainability in Household, Community, City and National level | Dr. S. Shrestha |
|  | 2:00-2:10 | Break |  |
| Lecture | 2:10-3:00 | Energy and sustainability in Urban Planning  Life style & human behavior for energy efficiency | Dr. S. Shrestha |
|  | 3:00-3:40 | Tea Break |  |
| Tutorial | 3:40-4:30 | Interaction on  Energy and sustainability in Urban Planning | Dr. S. Shrestha |
| Tutorial | 4:30-5:00 | Discussion and on-desk for seminar | Dr. S. Shrestha |

**Day 15: 4 March 015, Friday**

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| --- | --- | --- | --- |
| Lecture | 1:00-2:00 | International Energy efficiency and sustainability practices in urban and rural planning   * International practices on Eco-city Concept, Urban village, Solar city concept | S. Singh |
|  | 2:00-2:10 | Break |  |
| Lecture | 2:10-3:00 | Traditional town planning with eco-city concept in Kathmandu valley | S. Singh |
|  | 3:00-3:40 | Tea Break |  |
| Tutorial | 3:40-5:00 | Interaction with students | S. Singh |

**Day 16: 6 March 016, Sunday – Seminar & Assessment Preparation**

**Day 17: 10 March 016, Thursday – Seminar & Assessment Preparation**

**Day 18: 11 March 016, Friday – Assessment Presentation**

**Day 19: 13 March 016, Sunday – Assessment Presentation**

**Day 20: 14 March 016, Monday – Seminar Preparation**

**Day 21: 15 March 016, Tuesday – Seminar Preparation**

**Day 22: 15 March 016, Wednesday – Seminar Preparation**

**Day 23: 17 March 016, Thursday – Seminar Preparation**

**Day 24: 18 March 016, Friday – Final Presentation & Jury & Student Feedback**

**Evaluation:**

Final Evaluation - 60 Marks

Internal Evaluation - 40 Marks

* Attendance: 10 Marks
* Assessment: 10 Marks
* Seminar Report and Presentation: 20 Marks

**Seminar works:**

* Topics selection on current sustainable housing and eco city issues in rural and urban area of Nepal
* Case study on different current issues on energy and sustainability housing issues and problems in urban and rural areas of Kathmandu valley
* Group work
* A group with 5-6 students
* Literature study, field study, observation, data collection, analysis, discussion, findings
* Presentation & report submission (Soft & Hard copies)

**FOR SEMINAR:**

**Case study topic/area:** Comparison of energy and sustainability issues in Modern Urban/Rural settlements in Bafal, Sainbu & Godawari with Traditional Urban settlements in Khokana, Bungamati and Kirtipur of Kathmandu valley

GROUP A: Kirtipur & Bafal

GROUP B: Bungamati & Sainbu

GROUP C: Khokana & Godawari

**FOR ASSESSMENT:**

Article reviews on topics related:

ISSUES RELATED TO ENERGY (Energy consumption patter, demand, energy systems etc) Individual presentation on articles

ISSUES RELATED TO URBAN PLANNING (Urban growth, expansion of settlements etc) Individual presentation on articles

ISSUES RELATED TO SUSTAINABILITY (Eco city elements, urban infrastructure and services) Individual presentation on articles