

**ENVIRONMENTAL CONSIDERATIONS IN HOUSE
AND HOUSING DESIGN (1591)**

*Supplementary Material
Spring, 2014*

**ALLAMA IQBAL OPEN UNIVERSITY, ISLAMABAD
Department of Home and Health Sciences**

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(Department of Home and Health Sciences)**

**Course: Environmental Consideration in House & Housing Design (1591)
Level: MS Semester: Spring, 2014**

CONTENT LIST

This study pack includes the following items:

1. Course Book
2. Course Outline
3. Student Guide
4. Assignments 1 & 2
5. Marking Guide
6. Assignment Forms
7. Schedule for Submitting the assignment and tentative workshop schedule

If any of the above mentioned material is missing from your pack, please contact at the following address:

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OR

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TUTOR GUIDE

Dear tutor,

Students enrolled in M.Sc./MS. Environmental Design, offered through the distance learning system, belong to a number of professions and have a variety of educational backgrounds and experience.

These students have very limited contact with their course mates and the part time tutors, it is therefore important to keep in mind that some of the distance-learning students have had no links with education during the past few years after completing their formal education; therefore, they might lack confidence. Secondly, distance-learning students are involved in studying during their spare time, probably after office hours. You are therefore requested to guide and help the students, while keeping these issues in mind. Some students may need help in developing professional attitudes as well as understanding the facts about creating child friendly care environmental sustainability.

Study Centre

The main purpose of establishing the study center for distance learning students is to provide help and guidance for the difficulties faced by the students, while studying at home. The study centers have been established in Regional Office Karachi, Lahore & Islamabad Main Campus. During the tutorials, it is required to provide guidance to the students to sort out their problems.

Assignments

In the distance learning system, studying the course units has its own importance but assignments and workshops are the major source of link between tutor and the student. Therefore, it is important to offer your comments through these assignments. Express your views in such a way that the student is not discouraged, hurt or feel depress after going through your comments.

You are also expected to guide on issues like methods of solving assignments, effective methods of studying, and methods to improve study habits and working hard.

It is anticipated that the student will submit their assignments in time according to the prescribed schedule.

You are, therefore, requested to mark the assignments with in 15 days and return these with detailed comments within the scheduled dates.

Marking Guides are provided to you. You are expected to follow the instructions and make full use of these guides while marking the assignments. The students are expected to avoid giving unnecessary details and try to be brief and comprehensive. While marking the assignments, the tutor has to assess, whether the students have followed the instructions provided to them or not.

Practical Assignment

The students are given another assignment which is research based and would involve the student in some research activity after which they will be representing their work report in the workshop by the end of the semester. The students are not required to submit this assignment to you before it is presented however, after the workshop the assignments will be submitted to the tutor and will be marked by you.

Workshop

A three days workshop will be arranged for the students for each course in their respective study centre. You will be intimated before time, as your presence in the workshop is necessary.

- During the workshop the experts will be delivering lectures to the students in the main areas of the subject.
- Secondly the students would be presenting their research-based assignment and you are required to mark the assignments after their presentation.

STUDENT GUIDE

**Dear Student,
Assalam-o-Alikum,**

We hope you have enjoyed and successfully completed the PGD leading to MS. Environmental Design Program. This course is a part of first semester of the program. In order to understand the course content it is vital to know its aims and objectives property. Let's go through its aims and objectives first.

Course objectives

The specific objective of this course is:

1. Introducing principles of sustainable housing.
2. Bringing a positive change in design practice by following the echo house design principles.
3. Promoting user involvement and participation in housing design for enhanced comfort and efficiency.

Details of the course

As for other building types, the professionals involved in Housing Design are addressing the environmental issues related to Housing Design. The course Environmental Considerations in Housing Design is specifically designed to familiarize students with all important aspects concerning sustainable Housing. It will further provide guidelines on how to promote the echo friendly building materials.

The significance of user participation in housing design is also focused in this course to achieve harmony in housing design. Case studies are included for better understanding of sustainable housing principles and echo house strategies.

- Unit No. 1:** **Eco-house-Design Guidelines** it is the introductory unit from the text book “Eco-House Design” by Sue Rouf (page-15 and 38-62) by studying this unit you will be familiar with eco house design, structure of house and environmental impact of building material.
- Unit No. 2:** **Health and Well-being in the Homes,** This unit is also from the same book. A emphasizes on the health problems related in house designs and ensuring safety & privacy in homes. It will also reflect on materials in homes which may cause health related problems.
- Unit No.3:** **Eco-friendly Design Features.** This unit is also form the same book. It focuses on the environmental benefits in homes. Specially, with water conservation and solar hot water supply.
- Unit No.4:** **Sustainability and Housing: the Green Context** from the text book Sustainable Housing Principles of Practice by Brain Edwards & David Turrent, it related with principles of sustainable homing.
- Unit No.5:** **Housing Dilemmas** is from the Text book Housing without Houses by Nabeel Hamdi. It deals with worsening housing conditions in developed & developing countries.
- Unit No.6:** **Renewable Energy in Housing** is from the book Sustainable Housing by Brain Edward & David TuiTent. It is an over view of the renewable uses of energy in housing that include the natural (organic) energy uses.
- Unit No.7:** **Water Conservation and Housing** it directs the attention of the learners on the global impact of water conservation in third world cities.
- Unit No.8:** **Community Participation for Environmental up Gradation in the Housing Sector** it is also from the same book. It highlights the significance of community participation for environmental up gradation 7 promote the user involvement in community design.
- Unit No.9:** **Eco-Friendly Housing Design: Case Studies** is from the book “Eco-House Design” by Sue Roaf. It looks into the scenario of design friendly housing methodology in different countries.

Part Time Tutors

Students are allocated a part time tutor. The name and address of your tutor will be provided to you as earlier. The tutor is to help and guide you in studying the books and conducting activities related to study units. You are also responsible for marking your assignments.

Make all efforts to complete your written assignment according to the prescribed schedule and try your best to attend all the study sessions according to the timetable provided to you.

As in the previous semester the schedule for lecture sessions is arranged on fortnightly bases. The specific dates in the form of tutorial schedule are being provided separately. Attend these lectures regularly to get proper guidance from your tutor.

Assignments

The course is of 3(2+1) Credit Hours, therefore includes two assignments, which are compulsory for successful completion of the whole course. Each assignment is of 100 marks and out of these students obtaining 40 marks will be declared pass.

Assignment No. 1 is a theory based as you have experienced earlier and must reach your assigned tutor before the due date. The schedule of submitting the assignment is provided separately. The tutor will send the marked assignment back to the students within 15 days, if you do not receive the marked assignment after 15 days, please contact your tutor or regional office of the Allama Iqbal Open University.

Assignment No. 2 is a research based and do not need submission to the tutor before the workshop is held. For detailed instructions related to your research based assignment, please go through the detailed instructions enclosed with the **assignment**.

Note: Do not forget to dispatch the prescribed forms along with complete assignments.

Methods of Study:

Study period of 16 weeks has been allocated for studying this course through distance learning, whereas 17th and 18th are kept for general assignment and for final examination.

S. No.	Units	Assignments	Study Period
1.	1–2		4 weeks
2.	3–6		4 weeks
3.	7	Assignment 1	2 weeks
4.	8–9		2 weeks
5.	Revision	Assignment 2	4 weeks
6.	Preparation of examination		2 weeks

Workshop

Workshop will be arranged for three days. Schedule of the workshop and venue will be sent to you during the study period. Workshop will cover some of the lectures of the specialist on important topics. Attendance in workshop is compulsory for the students.

Final examination

At the end of the course, there will be a final examination. All the students will be expected to take this examination in the examination halls, specially established for this purpose.

For any queries, you can write to the course coordinator. Suggestions for improvement will also be welcomed. We wish you all the best.

Dr. Nomana Anjum
Chairperson
Programme Coordinator

ENVIRONMENTAL CONSIDERATION IN HOUSING DESIGN

Reference Books

- **Eco House: A Design Guide**
- **Housing without Houses: Nabeel Hamdi**
- **Sustainable Housing: Principles and Practices by Brain Edwards and David Turrent**

Unit 1: Sustainability and Housing: The Green Context

- 1.1 Sustainable Housing: Introduction
- 1.2 Principles of Sustainable Housing Design
- 1.3 Integration of the Three E's (Energy, Ecology and Environment)

Unit 2: Housing Dilemmas

- 2.1 Worsening Conditions: Developing Countries
- 2.2 Worsening Conditions: Developed Countries
- 2.3 Addressing the Issues with Right Approach

Unit 3: Renewable Energy in Housing

- 3.1 Solar Energy
- 3.2 Wind Energy
- 3.3 Water Power
- 3.4 Geothermal Energy
- 3.5 Bio Fuels
- 3.6 Green Renewable Electricity Schemes

Unit 4: Water Conservation and Housing

- 4.1 Significance of Water Conservation
- 4.2 Water use and Demand Forecast
- 4.3 Water the Supply and Demand Balance
- 4.4 Impact of Global Warming on Third World Cities

Unit 5: Community Participation for Environment up Gradation in the Housing Sector

- 5.1 Participatory Housing Design
- 5.2 Involvement of Users and Community Clients in Design
- 5.3 Evolving Alternative Design Strategies
- 5.4 Judging Appropriate Design Intervention

Unit 6 Eco-house-Design Guidelines

- 6.1 Introduction to Eco-house.
- 6.2 Form of Structure of the House.
- 6.3 Environmental Impact of Materials Chosen/Used
(Calculating the Embodied Energy)

- 6.4 Selection of Materials with Low Environmental impact (case studies)
- 6.5 Thermal Performance of House Design

Unit 7: Health and Well-being in the Homes

- 7.1 Promoting Eco Features in House Design
- 7.2 Controlling the Allergens
- 7.3 Avoiding/Eliminating the Health Hazardous Materials
- 7.4 Ensuring Safety and Privacy
- 7.5 Controlling the Sound Levels for Peaceful Environment

Unit 8: Eco-friendly Design Features

- 8.1 Use of Photovoltaic: Meeting the Environmental Agenda
- 8.2 Solar Hot Water Systems: Environmental Benefits
- 8.3 Water Conservation Measures in Homes

Unit 9: Eco-friendly Housing Design: Case studies

- 9.1 Design Methodology for Urban Sustainability: Three Case Studies
- 9.2 Echo Homes in Australia, New Zealand, Malaysia, Indonesia, India, Japan, Scotland.

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WARNING

- 1. PLAGIARISM OR HIRING OF GHOST WRITER(S) FOR SOLVING THE ASSIGNMENT(S) WILL DEBAR THE STUDENT FROM AWARD OF DEGREE/CERTIFICATE, IF FOUND AT ANY STAGE.**
- 2. SUBMITTING ASSIGNMENTS BORROWED OR STOLEN FROM OTHER(S) AS ONE'S OWN WILL BE PENALIZED AS DEFINED IN "AIOU PLAGIARISM POLICY".**

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Level: MS. **Semester: Spring, 2014**
Total Marks: 100 **Pass Marks: 50**

ASSIGNMENT No. 1

- Q. 1 What is sustainable housing? Explain the difference between sustainable housing and sustainable communities. **(20)**
- Q. 2 Build-ability is a key aspect of sustainable housing, why the housing design needs to be Simple? Explain with examples. **(10)**
- Q. 3 Various international agreements on the environment and climate change mean building design has three distinct perspectives. Explain with examples in the local context. **(20)**
- Q. 4 Discuss how effectively renewable energy technologies can be used in houses designed by architects and engineers of our country. **(20)**
- Q. 5 a) Define eco-house, eco-village and eco-anarchism. **(3)**
b) What are the principles behind eco-housing? Describe in detail. **(7)**
- Q. 6 What is third skin? What design strategies may be used to make the building more Environment friendly?
- Q. 7 a) Explain which energy sources are the principal reason for environmental degradation. **(4)**
b) How to measure the environmental impact of building materials. **(6)**
- Q. 8 Which materials should be selected for walls, windows and floor according to our climatic conditions? Give reasoning. **(10)**

ASSIGNMENT No. 2

Marks: 100

General Instructions

1. This assignment is of practical nature, you have to prepare a research report and present it in the workshop prior to the final examination (you do not need to send this to your tutor before the workshop).
2. The workshop component is mandatory for all the students. You cannot sit in the final examination without completing this project and presenting it in the workshop.
3. This assignment requires thorough review of literature to develop the conceptual framework before conducting the field research for this project, which also needs to be incorporated in the report systematically.
 - (i) You can select any of the given topics for your project; the field visits should preferably be based close to your home address.
 - (ii) Include the following section in your report:
 - a) Introduction and objectives of the study project.
 - b) Methodology for research
 - c) Review of literature
 - d) Data analysis with statistics and graphical/visual representations
 - e) Conclusions/suggestions
 - f) Appendices and bibliography
4. Prepare three copies of this assignment, one for yourself, one for the tutor and the third one for the Department of Home & Health Sciences (AIOU) for record. Attach three assignment forms with this assignment.
5. You are supposed to do a presentation in the workshop to the resource person and course mates, you should prepare PowerPoint Presentation.
6. You are advised to consult source material frequently. If you need any guidance you may contact your tutor or write to the Department of Home & Health Sciences (AIOU).

TOPICS FOR REPORT WRITING

Select any one of the following

1. Eco-Friendly Design Features

- A. Assess at least ten houses for their environmental conditions focusing on:
 - a) Thermal comfort/performance, heating and cooling arrangements in structural feature
 - b) Use of environmental friendly material
 - c) Sound control features
 - d) Safety and privacy
- B. Plan and develop a design layout accommodating eco-friendly design feature for a family of six. The plot size should be 250sq 300 sq. yards.

2. **Water Conservation Measures in House Design**
 - a) Take examples of any two houses and suggest modifications for water conservation strategies.
 - b) Either redesign the house for the same family or suggest modification that can be accommodated in the existing structure of selected house
 - c) Make use of photographs and detailed drawings.

3. **Environmentally Sustainable Neighborhood**
 Conduct a study of a recently developed housing scheme in your region to assess sustainability features

 Focus on:
 - a) Recreational facilities
 - b) Transport access and provision within and outside
 - c) Water supply
 - d) Sanitation/waste ,management
 - e) Landscape features
 - f) Energy conservation provision
 - g) Suggest improvements.

4. **Participatory Housing Design**
 Plan and design a small housing scheme of about 50 houses for lower middle class population in suitable locality in your town/city on the principles of community participation
 Concentrate on:
 - a. User involvement strategies at plan and design stage
 - b. Low cost alternate building techniques and use of indigenous materials
 - c. Promoting the healthy living environment by use of involvement
 - d. Economizing recreational activities at community level.

MARKING GUIDE

It is anticipated that the tutors mark the assignments carefully and follow the similar marking standards for all the students.

For theory based assignment tutors are required to follow the arks division as indicated on the assignment that is eight questions, making a total of hundred. For the research based assignment the allocation of marks is indicated as under:

Research Activity	50 Marks
Report Writing	25 Marks
Presentation in the Workshop.....	25 Marks

You are requested to stick to the guidelines provided to maintain the standardization and uniformity.