

**EVALUATION OF BUILT ENVIRONMENT FOR
PHYSICAL SUSTAINABILITY (1579)**

Supplementary Material

ALLAMA IQBAL OPEN UNIVERSITY, ISLAMABAD
Department of Home and Health Sciences
Autumn: 2012

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

Course: Evaluation of Built Environment for Physical Sustainability (1579)
Semester: Autumn, 2012 **Level: Postgraduate**

CONTENT LIST

This study pack includes the following items:

1. Course Books
 - Evaluation of Built Environment for Sustainability
 - Ecology of Building Materials
2. Allied Material for Units 1 and 2
3. Tutor Guide
4. Student Guide
5. Assignments 1 & 2
6. Marking Guide
7. Assignment Forms
8. Schedule for Submitting the Assignment and Tutorial Meetings

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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Programme Coordinator / Chairperson
Environmental Design Programme
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Tutor Guide

Dear Tutor,

On behalf of AIOU and course team of “Environmental Design Programme” I welcome you as tutor to “Evaluation of Built Environment for Physical Sustainability” course. You might be aware, that the students enrolled in this programme have varied professional background and work experience. This course might be easier for some students than others. You should guide them on course contents according to the difficulty level for different students.

Sustainable planning is the major issue faced by the architects, planners and engineers to meet challenges of the 21st century. This course is designed to familiarize the professionals with basic concepts of Sustainable Planning and train them to adopt the environmental assessment methods and techniques. Further, it teaches them economic and social value of conservation of heritage. It also guides them on selection of appropriate sustainable building materials.

Objectives

The specific objectives of the course are to:

- Raise awareness on basic concepts related to Sustainable Development Planning
- Introduce the framework for the evaluation of built environment to bring change in the practice of professionals engaged in the building industry.
- Outline the criteria for the selection of environment friendly building materials.

As you might be aware 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 design and environmental aesthetics.

Course Structure

This is half credit course and comprises nine units (The course outline and chapter wise distribution is explained below for your reference).

Units 1-2 are based on the text book “Planning for Sustainability”

Units 3-6 are from your book “Evaluation of the Built Environment for Sustainability”

Units 7-9 are from your book “Ecology of Building Materials”

Study Center:

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 local institutions (Main campus of AIOU in Islamabad, Regional Campus of AIOU in Karachi and Lahore). 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 assignment in time according to the prescribed schedule. You are therefore requested to mark the assignments within 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 tutors have to assess whether the students have followed the instructions provided to them or not.

Student Guide

Dear student,

Assalam-o-Alaikum

We welcome you to the M.Sc Environmental Design Course entitled “Evaluation of Built Environment for Physical Sustainability”. This course is the part of the second semester of your M. Sc. program.

Details of the Course:

Unit no. 1 is the introductory unit that introduces the basic concepts related to Planning for Sustainable Development.

Unit No. 2 outlines the Pathways to Sustainability including Sustainable institutions and Social Practices and issues in Planning for Sustainability.

Unit No. 3 emphasizes the framework for evaluating the Built Environment.

Unit No. 4 looks into concepts related to the Environmental Evaluation and the Built Environment.

Unit No. 5 includes Environmental criteria in Building Design and Assessment.

Unit No. 6 is specific to Evaluation Methods for Built Environment

Unit No. 7 is focused on building Materials including Environmental Profiles and Criteria for Assessment of environment friendly Building Materials.

Units 8 and 9 are based on building materials covering Environmental profile of basic/raw materials, structural materials and surface materials.

This course would therefore serve to raise awareness on important aspects of sustainability planning, building evaluation methods and ecology of building materials.

Part Time Tutors

You are allocated a part time tutor. The name and address of your tutor will be provided to you. The tutor will help and guide you in studying the books and conducting activities related to study units. You are expected to take full advantage of the tutor knowledge and experience. These tutors 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.

Schedule for tutorial meetings is arranged on fortnightly bases. The specific dates in the form of tutorial schedule are being provided separately. Try to attend these meetings regularly to get proper guidance from your tutor.

Assignments

The course 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 theory based 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 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 the complete assignments.*

Methods of Study:

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

Units	Assignments	Study period
1-2		4 weeks
3-6		4 weeks
7	Assignment 1	2 weeks
8-9		2 weeks
Revision	Assignment 2	4 weeks
Preparation for examination		2 weeks

You are expected to spend four weeks on studying first two units, this will help to improve your reading speed and get familiar with the contents of the units. The next four units 3 to 6 will become easier for you and you will be able to study them in

comparatively less time. You can spend four weeks on studying these four units, during the ninth week you can study unit no. 7 and during the tenth week you complete your first assignment and dispatch to your tutor.

Unit 8 to 9 can be studied during 11th and 12th week respectively and you can complete your second assignment alongwith the revision of your book during the weeks 13th & 14th. The last two weeks can be kept for examination and its preparation.

Practical workshop

Practical workshop will be arranged for three days. Schedule of the workshop and venue will be sent to the students during the study period. Workshop will cover some of the lectures of the specialist on important topics. The tutor will provide guidance for the workshop. 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 especially established for this purpose.

For any queries you can write to the course coordinator suggestions for improvement are welcomed. We wish you all the best.

Good Luck,

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COURSE OUTLINE

Evaluation of Built Environment for Physical Sustainability

Recommended Books

- Books:
- a) Planning Sustainability by Michael Kenny and James Meadowcroft
 - b) Evaluation of the Built Environment for Sustainability by P.S. Brandon
 - c) Ecology of Building Materials by Bjorn Berge translated by Filip Henley

Unit-1. Planning for Sustainable Development

- 1.1 Sustainable Development as a Planning Objective
- 1.2 Potentialities of Planning
- 1.3 Key Developments in Twentieth Century
- 1.4 Fundamental Alternatives in Planning

Unit-2. Pathways to Sustainability

- 2.1 Living within Ecological Limits
- 2.2 Sustainable Institutions and Social Practices
- 2.3 Sustainability Planning and Policy Choices
- 2.4 Issues in Planning for Sustainability

Unit-3. Framework for Evaluating the Built Environment Quality In Sustainability Planning

- 3.1 Problems in Evaluating “Built Environment Quality”
- 3.2 Limitations in Environmental Evaluation

Unit-4. Environmental Evaluation and Urban Development

- 4.1 An Energy and Environmental Model for Cities
- 4.2 Self Sustainable Urban Development
- 4.3 Green Development Corporations: a Proposed Framework for an Economically Attractive and Environmentally Sustainable form of Urban Development

Unit-5. Evaluation in Planning and Construction: Processes and Problems

- 5.1 Prioritising Environmental Criteria in Building Design and Assessment
- 5.2 Environmental Cost Internalisation for Sustainable Construction
- 5.3 The Economic and Social Value of the Conservation of Historic Buildings: Economics of Conservation
- 5.4 Environmental Regeneration as a Motor for Development: the Evaluation Problem

Unit-6. Environmental and Economic Evaluation-Methods and Application

- 6.1 Evaluation Methods for the Built Environment
- 6.2 Valuing Public Goods with Contingent Valuation Methods: User Purposes and Values
- 6.3 The Economic Valuation of Cultural Heritage
- 6.4 Methodologies and Application of Sustainable Environmental Concepts for the Built Environment

Unit-7. Ecology and Sustainability of Building Materials

- 7.1 Environmental Profiles and Criteria for Assessment
- 7.2 Resources- Material Resources and Energy Resources
- 7.3 Pollution –Types
 - a) Reduction of Pollution in the Production Stage
 - b) Reduction of Pollution during Building Use
- 7.4 The Chemical and Physical Properties of Building Materials

Unit-8. Use of Substitute Raw Materials and Basic Materials

- 8.1 Water and Air
- 8.2 Minerals
- 8.3 Stone
- 8.4 Loose Materials – Sand and Gravel, Earth
- 8.5 Plants- Living Plants, Timber, Groves etc.
- 8.6 Building Chemical from Plants
- 8.7 Materials of Animal Origin
- 8.8 Industrial by-products

Unit-9. Ecological Building Materials

- 9.1 Structural Materials – Metal, Concrete, Stone, Brick
- 9.2 Surface Materials – Metal and Non Metal Surface Materials, Stone Surface Materials, Earth Surface Materials etc.
- 9.3 Climatic Materials – Thermal Insulation Materials, Moisture Regulating Materials, Air Regulating Materials
- 9.4 Building Components – Windows, Doors, Stairs etc.
- 9.5 Fixings, Connections and Finishing Material

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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: Postgraduate **Semester: Autumn, 2012**
Total Marks: 100 **Pass Marks: 40**

ASSIGNMENT No. 1
(Units 1–7)

Answer the following questions.

- Q.1 What do you mean by built environment and how sustainability can be achieved without compromising the pace of development? Discuss past, current and future planning strategies of Pakistan and identify gaps in each one of them. (20)
- Q.2 What can we achieve by evaluating Building Environmental Quality, discuss in detail, a commercial building, a residential building and recreational building with particular reference to Pakistan. (15)
- Q.3 Discuss the role of Green Development Corporations for proposing an economically attractive and environmentally sustainable form of urban development? (15)
- Q.4 What criteria should be used to assess the sustainability of "Building materials"? How Pollution caused by the building materials can be controlled at construction stage?
Or
What is meant by ecological building materials? Assess the properties of brick and cement in the context of ecological building materials. (15)
- Q.5 What do you mean by conservation and development? What steps would you recommend to keep the harmony in both? (15)
- Q.6 a) How environmental criteria can be prioritized in building design and assessment. (10)
b) Can qualitative issues be prioritized in a valid way?

- Q.7 Discuss the concept of “Living within Ecological Limits”. How living in harmony with nature supports the social and economic fabric of any society? (10)

ASSIGNMENT No. 2

TOPICS FOR REPORT WRITING

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 compiling this report and presenting it in the workshop.
3. This assignment requires thorough review of literature to develop the conceptual framework before conducting the field research, which also needs to be incorporated in the report systematically.
4. You can select any of the given topics for field research; the field visits should preferably be based closed to your home address.
5. Your research report should be at least 20-25 typed pages covering both theoretical and practical components.
6. Include the following sections in your report:
 - a) Introduction and objectives of the study
 - b) Methodology for field research
 - c) Review of literature
 - d) Data Analysis with statistics and graphical representations
 - e) Conclusions / suggestions
 - f) Appendices and bibliography
7. Prepare three copies of this assignment, one for yourself, one for the tutor and the third one for the department of Home and Health Sciences (AIOU) for record. Attach three assignment forms with this assignment as for assignment one.
8. As the student is suppose to do a presentation in the workshop to the resource person and course mates, they should prepare transparencies or other illustrative material for effective presentation.
9. You are advised to consult source material frequently, if you need any guidance you may contact your tutor or write to the:
***Programme Coordinator, Environmental Design Programme,
Department of Home and Health Sciences (AIOU).***

Research Topics

Select any one of the following topics

Evaluation of the Built Environment Quality

1. Select two sets of building projects.
 - a) At least two buildings where you consider sustainability criteria are strictly followed.
 - b) At least two buildings where you feel the sustainability rules are loosely followed.
2. List down:
 - a) Sustainability measures consciously implemented.
 - b) Sustainability measures ignored.
3. Interview at least 25 persons in each type of building to assess if the building designed is user friendly or (Discuss the method adopted for evaluation, encountered in evaluation of building selected for study).
4. Suggest improvements in the selected building projects for future reference to plan and design sustainable projects.

Conservation and Sustainable Development

You have studied in your course that “Conservation and Sustainable Economic Growth are complementary objectives”.

1. Considering the above face review the current and previous two development plans of your own region (KDA, LDA, RDA, FDA etc.) to assess how much importance is given to conservation to protect the natural and historic environment.
2. Analyze if there is any specific strategy regarding the listed buildings.
3. Select one particular area/locality in your region to evaluate the conservation plan and its implementation during last five years.
4. Highlight the successful attempts made in the regard.

Ecology and Sustainability of Building materials

Select 5 most commonly used building materials and analyze them on account of:

- a) Energy consumption in production processing and transportation.
 - b) Pollution in production, use and demolition.
 - c) Renewable or non-renewable source.
 - d) Potential for re-use/recycling.
 - e) Health hazards in production and use.
 - f) Cost of maintenance.
- Suggest alternate choices for non-environment friendly materials.

Marking Guide

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

For the theory based assignments you are requested to follow the marks division as indicated on the assignment that is seven questions, making a total of hundred. The questions that are further divided into parts a, b etc. accompany a further division of marks as well.

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 expected to stick to the guidelines provided to maintain the standardization and uniformity.