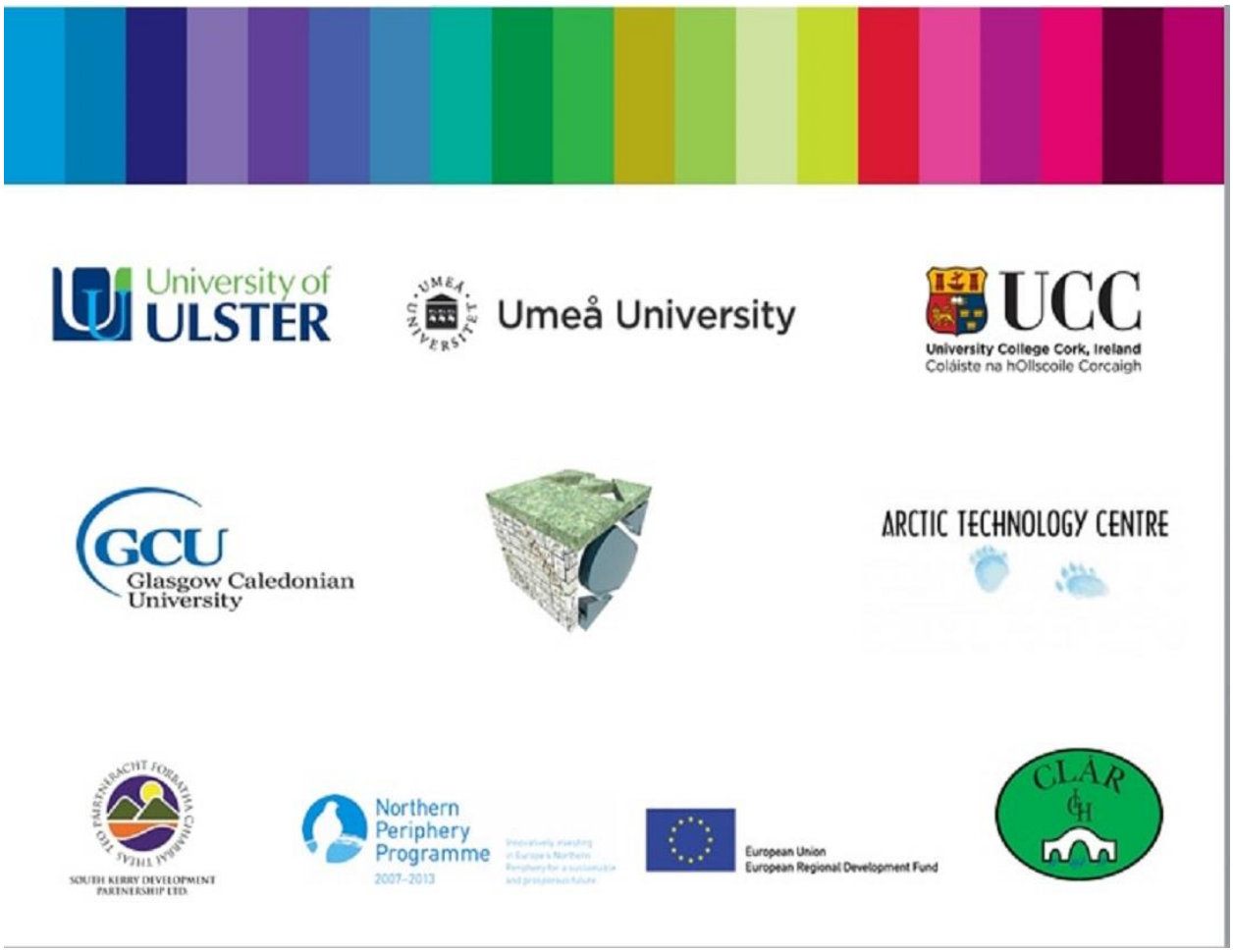
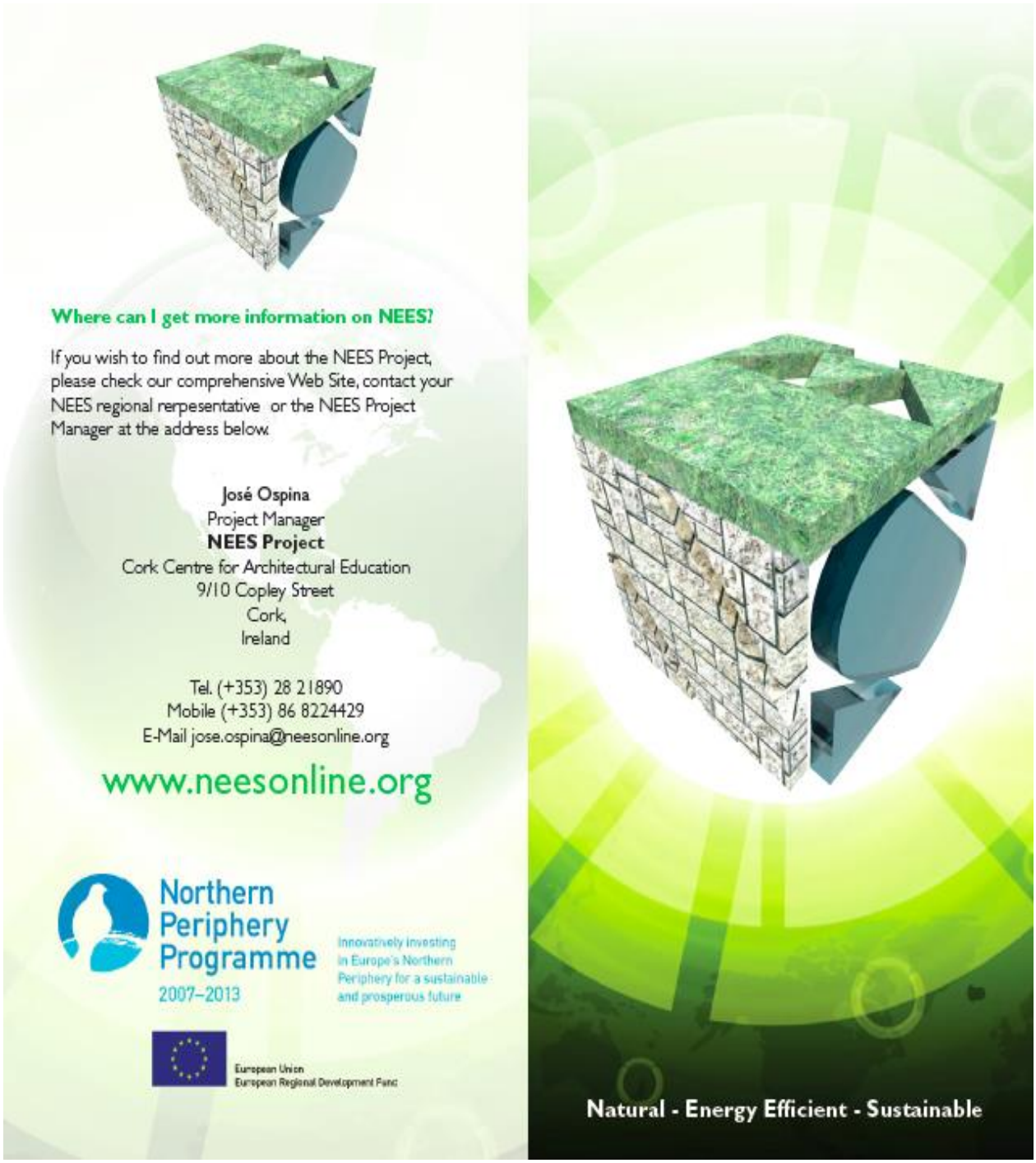
Training for Sustainable Building

Vocational Training Modules for the

Natural Energy Efficiency and Sustainability (NEES) Project

DOCUMENT SUMMARY





This document contains a summary and index of the materials contained in the NEES training modules and training manual.

Contents

Introduction and overview of the NEES vocational training modules.

The NEES vocational training package consists of set of training modules that address the various aspects of Natural, Energy Efficient and Sustainable (NEES) building practices.

The package is made up of six modules; Module 1 General principles, Module 2 Construction Methods, Module 3 Envelope 1 Roofs and earth construction, Module 4 Envelope 2 Windows and insulation, Module 5 Accreditation and certification and Module 6 Energy and water usage.

The modules are designed to be stand alone and each module can be delivered individually or as part of the series. Each module consists of a PowerPoint slide presentation which contains notes and images.

Module 6 is designed as a support module and covers some of the fundamental building energy principles.

This manual contains additional training support material that can be used to aid delivery of the modules and a list of the headings from each module and the intended learning outcomes.

The NEES training materials consist of the following

This training manual on the principles of sustainable design and defining and identifying renewable materials and;

6 Vocational Training modules.

Module 1 General Principles of holistic design

Module 2 Housing Construction Methods and principles

Module 3 House Envelope 1 Roofs and Earth construction

Module 4 House Envelope 2 Windows and natural Insulation

Module 5 Certification and accreditation

Module 6 Energy and Water usage

Module 1: General Principles of holistic building and construction design.

1.0 Introduction

1.1 **NEES principles and criteria**

1.2 **Sustainable Materials Principles**

1.3 **Embodied Energy**

1.4 **Carbon Footprint**

1.5 **Natural Materials**

1.6 **Health Issues**

1.7 **Life cycle disposal and durability**

1.8 **Performance and energy efficiency issues**

Module 1 learning outcomes

After completion of this module the learner will be (able to):

1. List and describe the principles of holistic building design.
2. Appreciate the role and importance of embodied energy and carbon in relation to the specification of building products and materials.
3. Be familiar with the characteristics of natural and renewable material and their role in construction

Module 2: Housing Construction Methods and principles.

2.0 **Introduction**

2.1 **Conventional Construction**

2.2 **Thermal performance principles**

2.3 **Airtightness**

2.4 **Foundations**

2.5 **Timber frame construction**

2.6 **Engineered timber products**

2.7 **Solid Timber Construction**

2.8 **Hemp-Lime Hempcrete**

Module 2 learning outcomes

After completion of this module the learner will be (able to):

1. Aware of the importance of thermal performance of materials and detailing in relation to low energy builidngs.
2. Be familiar with a range of low impact construction principles.
3. Be familiar with a range of natural and renewable construction materials and their application in the built environment..

Module 3: House envelope 1 Roofs and Earth construction.

3.1 **Green Roofs**

3.2 **Earth Construction**

3.3 **Retrofit Methods and Material**

Module 3 learning outcomes

After completion of this module the learner will be (able to):

1. Be familiar with the principles and application of green roofs
2. Be familiar with range of low impact construction techniques and materials including, cob and earth, strawbale and timber frame building techniques.
3. Aware of the principles of retrofit techniques and the technical challenges associated with low energy retrofitting.
4. Understand the concept of breathability in relation to building materials.

Module 4: House envelope 2 Windows and Natural Insulation

4.1 **Windows**

4.2 **Passive Solar Design**

4.3 **Insulation types**

4.4 **Cellulose**

4.5 **Sheeps Wool**

4.6 **Hemp**

4.7 **Wood Fibre Insulation**

4.8 **IBO Catalogue Data**

4.9 **Comparative case study**

4.10 **Insulation products**

Module 4 learning outcomes

After completion of this module the learner will be (able to):

1. Be familiar with the concept of passive solar design.
2. List and describe the properties of a range of natural insulation materials
3. Be aware of a range of innovative low impact insulation materials.

Module 5: Certification and accreditation.

5.0 Introduction

5.1 CE marking

5.2 Construction Products Directive (CPD)

5.3 Agrément Certification

5.4 Carbon Offsetting

5.5 Natureplus Certification

5.6 REACH

5.7 COSHH

5.8 Environmental Product Declarations (EPDs)

5.9 Life Cycle Assessment LCA

5.10 ASBP

5.11 LEED

5.12 Living Building Challenge

5.13 Cellulose case study

Module 5 learning outcomes

After completion of this module the learner will be (able to):

1. Be familiar with certification and accreditation as it applies to construction products. .
2. Understand the role and importance of certification and accreditation in relation to the specification of low impact products and materials for construction projects.

Module 6: Energy and Water Usage

Module 6 learning outcomes.

After completion of this module the learner will be (able to):

1. Be familiar with the principles of power and energy measurement
2. Understand the basic principles of building heat loss.
3. Be familiar with a range of building energy usage reduction strategies
4. Be aware of ways to reduce water usage in buildings.