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Urban Nature - Connecting Cities, Sustainability and Innovation

Course Guide

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Course Guide

Urban Nature: Connecting Cities, Nature and Innovation

A Massive Open Online Course

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THE INTERNATIONAL INSTITUTE FOR
INDUSTRIAL ENVIRONMENTAL ECONOMICS

About this Course

How can nature help us design and build our cities? Nature-based solutions have the potential to provide multiple benefits across a range of sustainability challenges facing cities. They can help to limit the impacts of climate change, enhance biodiversity and improve environmental quality while contributing to economic activities and social well-being.

But what are nature-based solutions? Examples include green roofs and city parks that reduce heat, city lagoons that can store water as well as vegetation and rain gardens to intercept storm water.

This course will explore nature-based solutions in cities in Europe and around the world. It will connect together the key themes of nature, cities and innovation. We will discuss how to assess what nature-based solutions can achieve in cities. We will examine how innovation is taking place in cities. And we will analyse the potential of nature-based solutions to help respond to climate change and sustainability challenges.

This course combines both technical knowledge and the social sciences to better understand nature-based solutions in a holistic perspective. New governance arrangements, business models and financing, forms of citizen engagement and innovation pathways will be needed to make the promise of nature-based solutions a reality.

In this course, we bring together a collection of diverse films, podcasts and key short readings on nature-based solutions as well as interactive forums and practical assignments to create an online learning community for nature-based solution in an urban world.

Outline and Objectives for this Course

This course will explore nature-based solutions in cities in Europe and around the world. It will connect together the key themes of cities, nature and innovation. We will discuss how to assess what nature-based solutions can achieve in cities. We will examine how innovation is taking place in cities. And we will analyse the potential of nature-based solutions to help respond to climate change and sustainability challenges.

The course has four overall objectives:

- Increased knowledge on nature-based solutions in an urban world.
- Deeper understanding of the relationship between cities, nature and innovation.
- Improved critical thinking on the opportunities and challenges for nature-based solutions to contribute to transforming cities.
- Expanded ability to use systems thinking to assess nature-based solutions.

The course runs over five weeks and consists of five modules. The learning activities consist of quizzes (one for each module) and one written and peer reviewed assignment.

Modules in this Course

Module 1 - International overview of nature-based solutions

By studying this module you can gain an increased knowledge and a deeper understanding of nature-based solutions in an international and European context. The concept of nature-based solutions is presented and discussed with examples that explore the opportunities, benefits and challenges associated with mainstreaming nature-based solutions.

Lesson 1 – Introducing nature-based solutions

Films (Presenters/Producers)	In this film you will learn about …
1. International overview for nature-based solutions (Harriet Bulkeley)	… an introduction to nature-based solutions and the interconnections between cities, nature and innovation.
2. International lessons on nature-based solutions from Australia (City of Melbourne)	… insights from the Urban Forest Strategy in Melbourne, Australia.
3. European lessons with nature-based solutions from Sweden (City of Malmö)	… insights from a Business Innovation District in Malmö, Sweden.

Lesson 2 – Mainstreaming nature-based solutions

Films (Presenters/Producers)	In this film you will learn about …
4. Climate change and nature-based solutions	… the relationship between climate change with cities, nature and innovation.
5. Mainstreaming nature-based solutions – part 1 (Christine Wamsler)	… different approaches to mainstreaming nature-based solutions.
6. Mainstreaming nature-based solutions – part 2 (Christine Wamsler)	… different approaches to mainstreaming nature-based solutions.

Lesson 3 – Listen and learn about nature-based solutions

Podcast (Presenters/Producers)	In this podcast you will learn about …
7. Bringing Nature Back into Cities (Episode 1 in Podcast Series)	… Green roofs make buildings cool. Literally. As cities deal with the impacts of climate change, green roofs can offer solutions and help with rainwater management, insulation and cooling, amongst other benefits.

Module 2 - Assessment methods for nature-based solutions

By studying this module you can gain an increased knowledge and a deeper understanding of possibilities and challenges for valuing and assessing the impacts of nature-based solutions. Assessment and valuation methods are presented and discussed in the context of different perspectives on cities, nature and innovation.

Lesson 1 – Issues and assessment for nature-based solutions

Films (Presenters/Producers)	In this film you will learn about …
1. Issues: What issues are addressed by nature-based solutions?	… the issues that nature-based solutions address in multi-functional ways.
2. Assessment methods for nature-based solutions (Helena Hanson)	… valuing nature-based solutions and a range of assessment methods.

Lesson 2 – Nature-based solutions in action

Films (Presenters/Producers)	In this film you will learn about …
3. Perspectives on nature – Allowing nature to find its way	… a critical thinking perspective on nature, cities and innovation.
4. Experiences with nature-based solutions from Sweden (Malmö)	… a practical example of the implementation of nature-based solutions in Sweden.
5. Insights from IUCN and the URBES project	… key insights and findings about nature-based solutions from Berlin, Barcelona and Rotterdam.

Lesson 3 – Listen and learn about nature-based solutions

Podcast (Presenters/Producers)	In this podcast you will learn about …
6. Urban trees and gardens: How good are they really for you? (Episode 2 in Podcast Series)	… Living in a neighborhood with lots of trees will make you live longer… or will it? Urban nature is said to bring diverse health, social, economic and environmental benefits to cities and their populations.

Module 3 - Governance strategies for nature-based solutions

By studying this module you can gain an increased knowledge and a deeper understanding of governing the implementation of nature-based solutions. The concept of governance is presented through examples and the role of collaboration and engaging citizens and communities is highlighted.

Lesson 1 – Collaborations and governance for nature-based solutions

Films (Presenters/Producers)	In this film you will learn about …
1. Collaborations: Who are needed to make nature-based solutions a success?	… the role of collaborations to implement nature-based solutions in multi-functional ways.
2. Governance strategies for nature-based solutions (Yuliya Voytenko Palgan)	… an introduction to governance strategies for nature-based solutions and the interconnections with cities, nature and innovation.

Lesson 2 – Nature-based solutions in action

Films (Presenters/Producers)	In this film you will learn about …
3. Perspectives on nature – Strengthening cultural identity	… a critical thinking perspective on nature, cities and innovation.
4. Experiences with nature-based solutions from Sweden (Kristianstad)	… a practical example of the implementation of nature-based solutions in Sweden.
5. Insights from IUCN and the URBES project – Berlin	… key insights and findings about nature-based solutions from Berlin.

Lesson 3 – Listen and learn about nature-based solutions

Podcast (Presenters/Producers)	In this podcast you will learn about …
6. All hands on deck: Governing urban green (Episode 3 in Podcast Series)	… The city of Barcelona has an entire strategy dedicated to taking care of its trees, called the Tree Masterplan. To create this Masterplan, the city talked to over 700 different people to understand their needs, viewpoints and opinions on this topic.

Module 4 - Business models for nature-based solutions

By studying this module you can gain an increased knowledge and a deeper understanding of enabling finance and developing business models for nature-based solutions. The importance of business models and role of financing is investigated and illustrated through examples and experiences with nature-based solutions.

Lesson 1 – Business and finance for nature-based solutions

Films (Presenters/Producers)	In this film you will learn about …
1. Needs: What is needed to make nature-based solutions a reality?	… the needs to implement nature-based solutions in multi-functional ways.
2. Business models and nature-based solutions (Helen Toxopeus)	… an introduction to business models for nature-based solutions and the interconnections with cities, nature and innovation.

Lesson 2 – Nature-based solutions in action

Films (Presenters/Producers)	In this film you will learn about …
3. Perspectives on nature – Going with the economic flow	… a critical thinking perspective on nature, cities and innovation.
4. Experiences with nature-based solutions from Sweden (Lomma)	… a practical example of the implementation of nature-based solutions in Sweden.
5. Insights from IUCN and the URBES project – Barcelona	… key insights and findings about nature-based solutions from Barcelona.

Lesson 3 – Listen and learn about nature-based solutions

Podcast (Presenters/Producers)	In this podcast you will learn about …
6. Valuing nature: Can money really grow on trees? (Episode 4 in Podcast Series)	… To ensure its survival, Food for Good cooperates with local enterpreneurs and tries to generate some of its own income by selling the vegetables grown on the farm.

Module 5 - Innovation pathways for nature-based solutions

By studying this module you can gain an increased knowledge and a deeper understanding of innovation pathways for nature-based solutions. The role of visions and pathways is discussed with examples of nature-based solutions and different ways of working with nature, cities and innovation.

Lesson 1 – Pathways and visions for nature-based solutions

Films (Presenters/Producers)	In this film you will learn about …
1. Visions: What is the role of visions for nature-based solutions?	… the role of visions to implement nature-based solutions in multi-functional ways.
2. Innovation pathways – part 1 (Bernadett Kiss)	… an introduction to innovation pathways for nature-based solutions and the interconnections with cities, nature and innovation.
3. Innovation pathways – part 2 (Bernadett Kiss)	… an introduction to innovation pathways for nature-based solutions and the interconnections with cities, nature and innovation.

Lesson 2 – Nature-based solutions in action

Films (Presenters/Producers)	In this film you will learn about …
4. Perspectives on nature – Working with nature	… a critical thinking perspective on nature, cities and innovation.
5. Experiences with nature-based solutions from Sweden (Eslöv)	… a practical example of the implementation of nature-based solutions in Sweden.
6. Insights from IUCN and the URBES project – Rotterdam	… key insights and findings about nature-based solutions from Rotterdam.

Lesson 3 – Listen and learn about nature-based solutions

Podcast (Presenters/Producers)	In this podcast you will learn about …
7. Innovating with nature, people and places (Episode 5 in Podcast Series)	… The city of Barcelona is reinventing the work with soil; a social entrepreneur in Utrecht is trying to challenge the way the government cooperates with local green initiatives; and a housing company in Malmo is redefining neighbourhood design.

Assignment: Urban Nature in My City

In this assignment we want you to focus on a specific example of urban nature (implemented, ongoing, planned or proposed) in your city. The urban nature should be part of a strategy to improve your city in response to climate change and/or key sustainability challenges facing your city. Make sure to use what you have learned in the course as regards to governance strategies, business models, citizen engagement and innovation pathways. For inspiration have a look at the Urban Nature Atlas with some 1000 examples of urban nature as well as the field guide on nature-based solutions by Apolitical.

The assignment consists of three parts. To complete these activities, you need to get out in your city and explore the urban nature – what exists or the lack of it! You need to also add a photo (taken by you) to your assignment.

Part 1 – Problem: Describe a problem or combination of problems that you are concerned about in your city (it can be a problem generated by your city or affecting your city). For example, air pollution from congested traffic in the city or flooding caused by intense rainfalls. Why do you find that this problem is relevant in your selected city? What are the impacts of the problem on your city and its citizens? To begin your assignment, you can look at the website of the city government in your selected city. But remember to use your experiences in your city as the foundation of defining and explaining the problem.

Part 2 – Solution: Present and analyse how urban nature is being used or planned to respond to the problem. For example, the development of an urban forest strategy or storm water management through investments in green and blue infrastructure. Can you describe the urban nature and its effects on your city? How is the urban nature helping to improve your city? If your city lacks an adequate or ambitious use of urban nature to respond to the problem you have identified, then present and analyse the limited response. The urban nature should be assessed by you in terms of its expected impacts.

Part 3 – Action: Suggest improvements to inspire further action on your selected problem through urban nature. For example, the development of a metropolitan urban forest strategy connecting wider and different parts of your city or a requirement that all building surfaces (walls and roofs) increases the use of urban nature. Can you suggest key improvements to the urban nature you have identified in your city? What new activities could be needed to promote transformative change in your city through the broader application of urban nature?

Present your assignment using the following format (maximum credits for each part are indicated within brackets):

- **Short Summary** – Write a 1-2 sentence summary that reflects the key findings from your assignment on urban nature. Try to grab attention and present a key message. (4)

- **Main Parts** – Describe parts 1, 2 and 3 as presented above. Each part should be at least 50 words and not exceed 150 words. (10 + 10 + 10)

- **Illustrate** – Add a pin in the city of your choice to the course map and provide a photo (taken by you) capturing the urban nature or issue you have focused on in a visual way. Add your summary as well. (6)

- **Key Resources** – i) explain how you have used the films and readings from the course to support your assignment and ii) list any additional references (not from the course, for

example hyperlinks) you have used to present the selected city, its problems, initiatives and suggested improvements. (6 + 4)

- **Share** – Jump on twitter to share your assignment on urban nature in your city (remember to add @lunduniversity @naturvation @coursera @kesmccormick @harrietbulkeley). This is an optional activity.

It is important that you select issues and material that you find relevant for your assignment, that you justify why you have selected them and find them relevant, and that all parts of the assignment is presented in a clear, logical way. Submit your assignment before the soft deadline at the end of week 4 to allow time for your peers to review your work.

In this assignment you are not only submitting your own work, you also take on the role as a reviewer, grading the work of three other course participants. Please allow yourself sufficient time for these reviews, so that you can give your peers a good, fair and justified assessment of their work.

When evaluating assignments by others, you will be asked to look at both relevance and clarity of the different submission parts. Try to be both objective and open minded in your evaluation and grading. When asked to give comments and feedback (appreciated but not graded) be nice, polite and provide brief, constructive critique.

Example: Urban Nature in My City

Title: Urban Forest Strategy in Melbourne

Summary: A healthy urban forest will play a critical role in maintaining the liveability of Melbourne in the face of a changing climate.

Part 1: The City of Melbourne is facing the significant challenges of climate change, population growth and urban heating, placing pressure on the built fabric, services and people of the city. The increasing heat in the city associated with climate change is a major concern for the city government as it poses health risks for people in the city. At the same time, parks and gardens as they have been designed in the past are insufficient to help "cool" the city. And in fact, many trees and plants in the city are under stress from heat and limited water. So the whole strategy around a green and liveable city needs to be transformed.

Part 2: The City of Melbourne has developed an Urban Forest Strategy that seeks to protect against future vulnerability by providing a robust strategic framework for the evolution and longevity of the urban forest in Melbourne. The strategy aims to adapt the city to climate change, mitigate the urban heat island effect by bringing the inner-city temperatures down, create healthier ecosystems, become a water-sensitive city, and engage and involve the community.

Part 3: The urban forest strategy in Melbourne is impressive. An improvement could be to connect the growing of more trees and plants in the city to also increase the biodiversity. Increased biodiversity is a way of improving resilience of the urban forest as the climate is changing. A further step forwards could be to benchmark the strategy against the best in the world, and aim to be the world leader on developing an urban forest in the City of Melbourne. Business in the city could also be engaged to invest in planting trees.

Illustrate: A green pin with a picture and short description has been added in Melbourne, Australia on the Course map.

Resources: The main resources used from the course, included the films in week 1 on an international overview and week 3 on governance strategies. A key reading used was Taking Action for Urban Nature: Innovation Pathways. The Urban Forest Strategy on the website of City of Melbourne was also used for the assignment.

Course Grading

How do I pass the course?

The activities that are graded in this course are the 5 quizzes and a peer assessed assignment. Only these 2 activities are graded, meaning that you do not get credits for (or are graded on) viewing the course videos, looking over the readings, or participating in forum discussions. However, by doing these activities we are convinced that you will learn a lot and will be more prepared to do the graded activities!

The quizzes

Your final grade is determined by your score on 5 equally-weighted quizzes, with each quiz worth 10% of the final grade. When you take a quiz, you get a number of credits (your score) depending on how well you do in the test. Each credit you earn in the course represents 1%. You can get maximum 50 credits by completing the 5 weekly quizzes successfully. Consequently, the quizzes constitute in total 50% of the grade.

In each quiz you must get at least 80% of the total score in order to pass. You have 2 hours to complete the quiz, and if you do fail your attempt, you can re-take the quiz 2 more times within this time period. If you do not succeed within these 2 hours, after 8 hours you will get a new 2 hours timeslot to make new attempts.

Once you have completed a successful attempt, the score you get in this attempt is the result being graded. If you score 80% on the quiz, you have passed the threshold and you add 8 credits (out of maximum 10) to your final grade.

The assignment

The assignment consists of a) your submission and b) your peer review of 3 assignments by your peers. You must complete b) in order to obtain credits for a). You can get a maximum of 50 credits for completing the peer-assessed assignment.

By completing the peer assessment part of the assignments, you are not only helping your fellow students, but you also help yourself completing the course. Completing more than 3 reviews is highly appreciated, but you will not earn any more credits.

What is the pass rate for the course?

You must do and pass all the graded activities in order to pass the course. There is an 80% threshold for passing each of the quizzes, and a 60% threshold for passing the peer assessed assignment, so the overall pass-rate of the course becomes 70%. Once you have completed and passed both of the graded course activities, you have passed the course.

How can I get a course certificate?

In this course, you can register for a Course Certificate issued jointly by Coursera and Lund University. In order to get a certificate, you need to i) verify your identity when doing the quizzes

and the assignment, ii) pay a fee of about 49 US dollars to Coursera (or apply for financial aid), and iii) complete and successfully pass all graded activities in the course. Once you have completed the course, you will be informed by Coursera how you can access your course certificate. It is Coursera who administrates the course certificates and it is not within the authority of the course administrators to influence this process.

Course Readings

In this course there is a compendium that is the primary reading. There is a chapter for each module in the course in the compendium. There are also additional readings that provide further insights and knowledge on cities, nature and innovation.

Module 1 Reading - Introduction

Urban Nature Compendium (chapter 1)

Innovation Pathways for Urban Forests

Innovation Pathways for Water Challenges

Module 2 Reading - Assessment

Urban Nature Compendium (chapter 2)

Urban Nature Atlas

Module 3 Reading - Governance

Urban Nature Compendium (chapter 3)

Taking Action for Urban Nature: Governance Strategies

Taking Action for Urban Nature: Citizen Engagement

Module 4 Reading - Business

Urban Nature Compendium (chapter 4)

Taking Action for Urban Nature: Business Models

Module 5 Reading - Innovation

Urban Nature Compendium (chapter 5)

Taking Action for Urban Nature: Innovation Pathways

Course Teachers and Staff

In this course, you will meet a diversity of teachers from a mix of organisations. The combination of teachers is designed to enhance your learning experience in the course by providing different perspectives and voices. You will meet the teachers across the 5 modules in the course.

In addition to the teachers in this course, you will interact with course developers and pedagogues who are working to help make your experience in the course as fruitful and interesting as possible. Furthermore, there are multiple community teaching assistants that support the discussion forums and activities in the course.

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Dr. Helena Hansson

Reseacher
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Dr. Helen Toxopeus

Researcher
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About the IIIEE and Lund University

International Institute for Industrial Environmental Economics (IIIEE)

[The International Institute for Industrial Environmental Economics (IIIEE)](#) at Lund University in Sweden is an international centre of excellence on strategies for sustainable solutions. The IIIEE is ideally suited to understand and explain the interdisciplinary issues in greening the economy utilising the diverse disciplinary backgrounds of its international staff. The IIIEE has been researching and teaching on sustainability and greening the economy since the 1990s and it has extensive international networks connecting with a variety of organizations.

In 1995, the IIIEE launched its unique Masters Programme in Environmental Policy and Management (EMP) to educate professionals committed to and capable of solving global sustainability challenges. In 2005, the IIIEE joined a consortium to launch the Erasmus Mundus Masters Course in Environmental Sciences, Policy and Management (MESPOM). MESPOM is delivered in cooperation with 3 European and 2 North American universities. More than 1000 graduates of these programmes from over 100 nations are contributing to sustainable development in industry, government, UN organisations, NGOs, SMEs and academia.

The IIIEE has extensive experience with online education both on undergraduate and graduate levels and it has received the E-xcellence label by the EADTU. The IIIEE education is interdisciplinary and it has a close engagement with real-life practice in the private and public sectors. The international character of our Masters education and our outstanding Alumni Network has supported intense learning across national boundaries. The IIIEE has designed and developed 2 MOOCs on greening the economy.

Lund University

[Lund University](#) is located in the south of Sweden, in the city of Lund. It was founded in 1666 and it has almost 50,000 students and 7,500 staff. It is ranked in the top 100 universities in the world. Lund University provides education and research in engineering, science, law, social sciences, economics, medicine, humanities, theology, fine art, music and drama. It has initiated MOOCs on greening the economy, sustainable cities, business law and global health. Lund University is located in the south of Sweden, in the city of Lund. It was founded in 1666 and it has almost 50,000 students and 7,500 staff. It is ranked in the top 100 universities in the world. Lund University provides education and research in engineering, science, law, social sciences, economics, medicine, humanities, theology, fine art, music and drama. Lund University has launched MOOCs on greening the economy, sustainable cities, circular economy, nano-physics, business law, and academic writing – with more to come!

Urban Nature is a Massive Open Online Course designed and developed by the International Institute for Industrial Environmental Economics (IIIEE) at Lund University in Sweden in collaboration with partners in the Naturvation project

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