



PUSHING
THE FRONTIERS
OF INNOVATIVE
RESEARCH

HOW TO ENHANCE EDUCATION FOR SUSTAINABLE DEVELOPMENT

Trends and good practice at LERU universities





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In education, academic institutions have a responsibility towards the future generation. As research-led educators, we are accountable for equipping young people with the knowledge and skillset needed to address the unprecedented challenges of the 21st century.

Statement adopted at the 39th LERU Rectors' Assembly, 21-22 May 2021

This paper was developed by the LERU ad-hoc group on sustainability, in which all LERU universities have a member, and without whose collective expertise this paper would not have been possible. Special thanks go to Linde Warland (University of Zurich), Per Mickwitz (Lund University), Thomas Rausch (University of Heidelberg), Gerard Govers (KU Leuven) and Jeannette Behringer (University of Zurich) for their efforts in conceptualising and co-writing this paper, and to Riina Koivuranta (University of Helsinki), Fabrice Calamé (University of Geneva), Teresa Sauras (University of Barcelona) and Daniela Kleinschmit (University of Freiburg) for additional input, feedback and text. Katrien Maes (LERU Office) was responsible for developing, co-writing and editing the paper. Yasmine Nowicki and Bart Valkenaers (LERU Office) helped with the design.



Foreword

I am delighted to introduce this special publication on education for sustainable development at LERU universities.

In the research-intensive universities that make up LERU we use our research to inform teaching so we can ensure that our students engage with the cutting-edge knowledge they need to go out into the world and have an impact.

This is never more important than in the case of sustainability and sustainable development as each year we see even greater effects of climate change and biodiversity loss.

We have a strong track record in carrying out ground-breaking research that tackles biodiversity loss, climate change, climate injustice and more. It is incumbent on us all to use this knowledge to develop and embed education programmes for sustainable development in our teaching programmes.

For some years now, sustainable development has been on the radar of the LERU leadership and several working groups. The ad-hoc group on sustainable development has been an important forum, having produced in 2021 a first paper about investment and procurement at LERU universities.

This new paper is a treasure trove of good practice examples showing the latest trends and developments on education for sustainable development at LERU universities. It is the result of two years of internal meetings of LERU universities' managerial leaders in sustainable development, exchanging information, learning from each other, and distilling their common observations and conclusions into this paper.



We aim to inspire, raise interest, and encourage everyone to join the debate on the many ways in which this can be done.

I hope you will enjoy perusing the rich and varied contributions from the LERU universities and reflecting on the high-level lessons we wish to share. Together, we continue our journey towards education for sustainable development.

Dr. Linda Doyle
Chair of LERU
Provost and President of Trinity College Dublin



As the world faces cascading and interlinked global crises and conflicts, the aspirations set out in the 2030 Agenda for Sustainable Development are in jeopardy.

António Guterres, 2022





Introduction

In order for future generations as well as all mankind today to be able to live well and meet their needs, a transition of the current production and consumption systems is required toward a sustainable culture and civilisation. This is crucial to mitigate climate change, preserve biodiversity and address inequalities, to name just a few.

Sustainable development¹ transitions will require knowledge and skilled, as well as ethically trained, people. Education for Sustainable Development (ESD)² is a follow-up of the discussion of sustainable development as a normative model, relevant to all nation states and the international community. Thus, the subsystem of education has been defined as crucial, and ESD has been developed as learning for change at all levels of education, including higher education. The specific challenge for universities is not only to be a “knowledge producer”, but to support transformative science. This requires for students to be enabled to contribute and act as changemakers to the required transformation within their field of expertise, but also to be able to live and work in complex and uncertain times. It should be noted that ESD, in addition to being linked to excellent pedagogy, is also an established field of research.

LERU universities have embraced sustainable development as a crucial, strategic issue. They are experienced in their continued contributions to sustainable development in their campus management³, in their research and in their education. With respect to the latter, there are a number of pressing issues and questions, such as how this educational transformation is taking place, which groups of students should acquire which skills and competencies, and what exact knowledge and competencies need to be taught and acquired. These issues are subject to debate and likely to evolve for the foreseeable future, as the state of the planet and the technology at our disposal will also evolve. Whilst the acquisition of competencies for sustainable development is an important part of ESD⁴, this paper does not focus as such on pedagogical aspects, but rather raises a number of important points for operationalising and integrating ESD strategies across the university. It is hoped this paper is useful across the university sector, as well as to policy makers to get a clearer view on what progress and challenges are for universities, and to allow us to advance while learning from each other.

This paper displays the rapidly increasing expertise about and experience with the strategic, programmatic and operational take-up of ESD at LERU universities, thereby offering inspiration to LERU and other universities. It presents trends, developments and practical examples from LERU member universities, and is structured along five topics: 1/ ESD drivers and strategies, 2/ BA and MA programmes, 3/ ESD initiatives for all students, 4/ lifelong learning, and 5/ ESD staff training. The work is the result of extensive discussion and exchange of experience among the members of the LERU ad-hoc group on sustainability to learn from each other and inspire each other. By sharing common experiences and examples publicly, LERU wishes to both raise awareness at a European, international and cross-sectoral level with policy makers and other stakeholders. LERU also invites other universities and stakeholders to join in the discussion and transformation.

- 1 “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED 1987). Sustainable development was further specified by the United Nations in 2015 in the resolution “Transforming our world: 2030 Agenda for Sustainable Development” and in the 17 Sustainable Development Goals (SDGs).
- 2 ESD means including key sustainable development issues into teaching and learning, for example, climate change, disaster risk reduction, biodiversity, poverty reduction, and sustainable consumption. It also requires participatory teaching and learning methods that motivate and empower learners to change their behaviour and take action for sustainable development. ESD consequently promotes competencies like critical thinking, imagining future scenarios and making decisions in a collaborative way. ESD requires far-reaching changes in the way education is often practised today (UNESCO, 2014).
- 3 Cf. LERU publication on investment and procurement at universities in connection with sustainable investment, with recommendations and good practice from LERU member universities, www.leru.org/files/Publications/LERU-statement-on-sustainable-investment-and-procurement_2021.pdf
- 4 For example, a European sustainability competence framework is proposed in a 2022 report by the Joint Research Centre, the European Commission’s science and knowledge service, <https://publications.jrc.ec.europa.eu/repository/handle/JRC128040>.



1

Drivers and strategies for ESD

There are **both internal and external drivers** behind the development of ESD strategies, programmes and activities at LERU universities and elsewhere. Internal drivers include, for instance, that LERU universities regard it as their responsibility to be actively attuned to societal developments and make sure that their graduates acquire evidence-based knowledge and develop the necessary skills to work for and live in the transition towards sustainable development upon graduating. External drivers play a role as well, whether fuelled by student or employer demands, or whether they come from governments that regulate public universities⁵. Some governments have taken action to make it mandatory for universities to provide ESD⁶.

LERU universities generally have included ESD as a key element in a general university strategy for sustainable development or have a specific strategy on ESD. The general strategic objective is typically stated as **“the theme of sustainability is to run through all of the university’s educational offerings”** or **“every student comes into contact with sustainability, regardless of their field of study”**.

It is well known that implementing a strategic commitment comes with a variety of **challenges**. These may range from raising awareness and creating buy-in, to developing appropriate organisational structures and culture, to securing the necessary resources, and more. Once a strategy is implemented, it needs to be monitored, assessed and refreshed regularly.

A unique and important characteristic of the university environment is **academic freedom**⁷, which includes the freedom of teaching: in relation to ESD **it is essential to ensure teachers recognise the value and benefits of integrating sustainable development in their teaching, and to support them in this endeavour**. A second distinguishing element is the fact that sustainable development is not “one single topic”, but a complex network of topics, based on the insight of a deep transformation of society in the view of ecosystem degradations and ethical requirements such as equal access to health and safe living conditions.

LERU universities are developing, implementing and updating their strategies to address ESD. Some indicative examples are given on the next pages.

⁵ In general, LERU universities think that it should be up to the universities to decide on the content of the education they provide. Nevertheless, professional education curricula tend to be highly regulated by the state, e.g. medical education.

⁶ For example, in Sweden the 1992 Higher Education Act: https://en.wikipedia.org/wiki/Swedish_Higher_Education_Act. In 2022 the French government decided that a teaching module on sustainability would become mandatory for undergraduate students.

⁷ See, for example, the 2023 LERU advice paper: www.leru.org/publications/challenges-to-academic-freedom-as-a-fundamental-right





On the following pages a few LERU universities describe how they are implementing their ESD strategies.

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UNIVERSITY OF CAMBRIDGE

Co-creation of climate and sustainability education futures with Cambridge Zero and Cambridge Climate Society

CAMBRIDGE ZERO

- An institution within the University and focal point for impact-driven collaboration.
- Has the critical role of facilitating and leading climate-focused action in education, alongside its locally-, nationally- and internationally-focused collaborations around climate research and governance.

HIGHLIGHTED ACTIVITIES

1. Baseline Climate and Sustainability Education Report

Setting out the current state of climate and sustainability education across the University (autumn 2023), including:

- Analysis of university-wide staff and student consultation and national guidance materials for UK Higher Education by the QAA.
- Curriculum audit of every undergraduate module for opportunities that students may have to develop key climate and sustainability knowledge and skills.
- Pilot case study from each academic School at the University, exploring how climate and sustainability education are being actively embedded in the learning experience. These case studies aim to share best practice across the institution and inspire positive change. →





← 2. Curriculum project co-designed with students

- Adopting a 'students as partners' approach to develop student leadership skills while actively involving teaching staff in projects.
- Small student teams integrated into seven academic departments with a strong focus on vocational graduate careers, conducting audits of undergraduate degree programmes, working closely with department staff and their peers to formalise their processes.
- Adopting a multidisciplinary approach, with students reviewing selected lecture materials, reading lists and course information to climate education, reflecting the complex and interconnected nature of environmental challenges.
- Students enhance their learning experiences, are equipped with the knowledge, skills and perspectives needed to excel in a rapidly changing world and are prepared as future leaders with a deep understanding of climate and sustainability issues.
- Resulting reports to play a crucial role in shaping the educational strategies of the respective departments moving forward.
- Project running throughout the 2023-24 academic year, in collaboration with the Cambridge Climate Society.
- Following on from a 2022-23 Cambridge Climate Society Education Campaign calling for an increase in climate change education within the University, in which nearly 400 students, staff and members of student societies signed an open letter to the then- and present Vice-Chancellors.

Alongside this case study the University of Cambridge has also focussed on developing a number of new courses including MPhils in “Quantitative Environmental Sciences” and “Anthropocene Studies”, which join existing programmes in “Conservation Leadership” and “Engineering for Sustainable Development”, amongst others. The University also provides a number of opportunities for all students to access knowledge and training on sustainable development through co-curricular programmes, such as knowledge-based courses, leadership training and entrepreneurship competitions. In collaboration with the Mastercard Foundation, the University has also launched a fully-funded Master’s scholarship programme for African students, with a focus on Climate Resilience and Sustainability.



For more information on:

- The Climate Change Education project: www.cambridgeclimatesociety.com/education/educationproject23
- Sustainability at the University of Cambridge: www.environment.admin.cam.ac.uk
- Cambridge Zero: www.zero.cam.ac.uk/



TRINITY COLLEGE DUBLIN

ESD FELLOWSHIP PROGRAMME

Building a programme for Trinity which aims to empower students and staff to develop the knowledge, skills and attitudes necessary to act as agents of change for a sustainable future.

The ESD Fellowship Programme is centred on:

- Identifying relevant competencies for sustainability and the pedagogical approaches which support their development;
- Co-creating a shared vision for ESD as part of Trinity undergraduate and postgraduate education;
- Mapping existing ESD provision at Trinity including integration of ESD concepts and pedagogical approaches across undergraduate and postgraduate programmes.

Five academic staff members from across all three faculties seconded to work with Trinity's Centre for Academic Practice (Trinity Teaching & Learning) and Trinity Sustainability.



National context: supporting the delivery of Ireland's National Strategy on Education for Sustainable Development - ESD to 2030.

Funded by the Strategic Alignment of Teaching and Learning Enhancement Funding in Higher Education (SATLE), a National Forum and Higher Education Authority funding allocation which aims to drive teaching and learning innovation and enhancement across the Irish higher education sector. One of its current areas of focus is ESD. →





← **Trinity is also developing:**

- A sustainability strategy including a strategic vision, objective and action plan for ESD
- An ESD implementation plan for 2023-2026
- A common module for ESD



**MEMBERS OF TRINITY'S
ESD FELLOWSHIP PROGRAMME**



For more information on:

- Trinity's ESD activities: www.tcd.ie/teaching-learning/ESD/
- Ireland's national strategy on ESD: www.gov.ie/en/publication/02952d-national-strategy-on-education-for-sustainable-development-in-ireland/
- SATLE: www.teachingandlearning.ie/funding/



UNIVERSITY OF EDINBURGH

Strategy and vision on ESD are essential.

This entails that:

- Education for Sustainability commitments are included within the University's Social and Civic Responsibility Plan.
- Specific commitments on addressing the climate crisis through the curriculum are included within the University's response to the climate crisis.
- Further commitments will be included in the University's revised Climate Strategy which will be published in 2024.

Key insights:

- The leadership sends a clear message that ESD is important and needs to be part of the graduate vision and student experience.
- Ensure there is a focus on communications, piloting new models of multi-disciplinary teaching and structures, such as the Edinburgh Future Institute.
- Provide support to academic and professional staff to embed climate and sustainability within the delivery and content of their teaching.
- Ensure this is part of a wider curriculum strategic programme. Review can be an effective way to achieve top-down support and buy-in. →



EXCERPT FROM THE UNIVERSITY'S SOCIAL & CIVIC RESPONSIBILITY DELIVERY PLAN 2020 TO 2030

Strategic objectives	Key SDGs for strategic alignment	Additional SDG linkages
<p>We will become a net zero carbon and zero waste university. Developing and pioneering approaches to deliver a net zero carbon and circular economy and protecting and enhancing biodiversity.</p>		
<p>We will widen participation in higher education and support inclusion. Increasing opportunities and raising aspirations by making education and employment an achievable goal for more people in Scotland and globally.</p>		
<p>We will work together with local communities to contribute to improve the lives of people across the Edinburgh City Region and beyond.</p>		
<p>In our operations, research and teaching we will engage critically with, and contribute to the Sustainable Development Goals including the promotion, protection and respect for human rights.</p>		

Strategy 2030

Measures of success and key areas of activity are included for each strategic objective on the following pages linking – where relevant – to key deliverables included in Strategy 2030.



← Challenges:

- Bridging policy and practice: especially when developing and delivering multi-disciplinary courses across academic schools, there are challenges associated with administration and staff resource.
- Getting the right information to the right people: Raising awareness and communicating current opportunities to students, partly due to information overload and information not getting to key contacts who support students making decisions on course selection.



For more information on:

- The University's Social & Civic Responsibility Delivery Plan 2020 to 2030:
www.ed.ac.uk/sites/default/files/atoms/files/social_civic_responsibility_delivery_plan_2020_to_2030_0.pdf
- The University's publication on teaching sustainability:
www.ed.ac.uk/sites/default/files/atoms/files/what_is_teaching_sustainability_and_why_is_it_important_2023.pdf
- Sustainable Development at the University of Edinburgh:
www.ed.ac.uk/sustainability/programmes-and-projects/student-leadership-for-sustainability/sdgs-in-the-curriculum



UNIVERSITY OF HELSINKI



- The University of Helsinki has chosen five focus areas for curriculum design for 2023-2026, one of them being 'sustainability and responsibility'.
- According to the University's 2021–2030 strategic plan, the theme of sustainability is to run through all of the University's educational offerings. This means making sustainability expertise part of discipline-specific knowledge and skills as well as generic expert skills.
- The University provides the degree programmes with clear guidelines and material aiming to support staff to design new degree programme curricula that strengthen academic expertise with sustainability expertise.

In curriculum design, degree programmes should describe the sustainability expertise they provide and enable in terms of the following goals:

- 1) Strengthening of discipline-specific sustainability expertise. Guiding questions are: Which knowledge, skills, values and attitudes are key to discipline-specific sustainability expertise? Which Sustainable Development Goals of the United Nations are central to the degree programme, how do the degree objectives support the sustainability transformation, or how do the degree objectives support the understanding of sustainability specific to the discipline?
- 2) Development into a sustainability expert. Guiding question: How are studies that support the development of sustainability expertise included in the curriculum?
- 3) Strengthening of sustainability skills as part of generic expert skills. Guiding questions: How does the degree support the acquisition of generic expert skills, which include sustainability skills?

Success factors

- Strong support from top management, sustainability strategy, national UNIFI sustainability theses
- Pressure for integration of sustainability into education from the students' side
- Resources for the development of a sustainability course for all students and to staff competence development, sustainability course as a uniting and motivating factor for teachers

Challenges

- Lack of sustainability content knowledge and sustainability integration competencies of teachers, need for further training in sustainability contents and pedagogy
- Insufficient time and resources for university-wide discussions, starting from the concept of sustainability
- The recommending nature of the curriculum frame →





EXCERPTS FROM THE UNIVERSITY OF HELSINKI'S WEBSITE DEDICATED TO SUSTAINABILITY IN EDUCATION, RETRIEVED FROM WWW.HELUNKI.FI/EN/ABOUT-US/SUSTAINABILITY-AND-RESPONSIBILITY/SUSTAINABILITY-EDUCATION

SUSTAINABILITY IN EDUCATION

Knowledge and learning are for everyone

Our objective is to educate professionals capable of changing the world. Sustainability issues are linked to all fields of education, and at the University of Helsinki we offer sustainable development perspectives as part of many degree programmes, courses, study modules and staff training. In line with our sustainability and responsibility plan, sustainability expertise will be integrated into discipline-specific knowledge and skills, and generic academic skills. In support of this work, guidelines for sustainability expertise have been drawn up, boosting such expertise in various fields of science.

Which fields offer learning in sustainability?

Global societal and environmental problems require solutions that rely on a number of disciplines and transcend the boundaries between research and decision-making. Themes related to sustainable development are taught at almost all faculties, from the Faculty of Biological and Environmental Sciences to the Faculty of Arts.

Since learning belongs to everyone, we provide teaching in sustainability both in short individual courses and in the form of entire degrees. We offer a course on sustainability that is targeted at all students of the University.

Sustainability Studies Network

The University of Helsinki is part of the Sustainability Studies Network, which offers the opportunity to study sustainability-related courses from several Finnish universities and faculties. The courses are open to all undergraduate, postgraduate and exchange students from the network's partner universities.



Climate University

The Climate University offers free online courses to anyone who wishes to make the sustainability transition happen. The Climate University, developed collaboratively by Finnish higher education institutions, is a network of 28 universities and universities of applied sciences led by the Institute for Atmospheric and Earth System Research (INAR). It aims to develop teaching related to the climate and sustainability at Finnish higher education institutions and general upper secondary schools.



For more information on:

- The University's Strategic Plan 2021-2030: www.helsinki.fi/en/about-us/strategy-economy-and-quality/strategic-plan-2021-2030#:~:text=In%202030%2C%20the%20University%20will,teaching%20of%20a%20high%20standard
- The University's Sustainability in education website: www.helsinki.fi/en/about-us/sustainability-and-responsibility/sustainability-education





IMPERIAL COLLEGE LONDON

IMPERIAL ZERO POLLUTION

'EDUCATION FOR SUSTAINABILITY' STRATEGY

In 2023 Imperial College London started developing its 'Education for Sustainability' Strategy, as an outcome of the College's Sustainability Strategy 2021-26. It is expected to be approved in 2024 and implemented in 2025-2026.

IMPERIAL

EDUCATION FOR SUSTAINABILITY WORKING GROUP ESTABLISHED

- First convened in October 2023
- Works with staff and students across Imperial to help integrate sustainability, as broadly described by the Sustainable Development Goals, into teaching and extra-curricular activities, and including:
 - **Sustainability Literacy:** Teaching the core skills and competences necessary to understand and tackle sustainability problems to students and staff.
 - **Application of Science to Sustainability:** Creating opportunities in the curriculum and through extra-curricular activities for students and staff to apply teaching and learning to tackle sustainability problems.
 - **Sustainable Lab Practice:** teaching by adopting best practice in laboratories.
- The Working Group are exploring the concept of "Science Activism" against the Sustainable Development Goals.
- The goal is for every student at Imperial to feel able to have a positive outcome on global challenges through the intentional application of their science discipline.
- In practice, students should be able to create measurable, beneficial environmental and social changes that can be attributed to their specific interventions.
- As the only STEM-B-based⁸ university in the UK, Imperial is well-placed to build on the intersection between scientific and business expertise with the passion that students and staff feel for making a positive difference in the world.



⁸ STEM-B stands for science, technology, engineering, mathematics and business.

For more information on:

- Sustainability in education at Imperial:
www.imperial.ac.uk/sustainability/our-education/



UNIVERSITY COLLEGE LONDON

UCL's new draft Strategic Plan includes sustainability in connection with education:

“Our aim is a broad institutional framework for education that evolves our UCL Connected Curriculum principles in pragmatic ways, so local determination and interpretation can flourish. This should provide the framework for decisions about future investment in the tools that support our teaching and consider explicitly how we can increase interdisciplinarity in the curriculum and give our students, regardless of discipline, the grounding to navigate, for example, questions of sustainability, data science and carbon reduction, given that this capacity will be increasingly sought by employers”.

A four ‘corner’ approach to ESD, currently under discussion, based on the following:

- Integrate sustainability into the ‘welcome’ programme - ensuring that students can see this is important to UCL from the moment they arrive;
- Work to embed sustainability into modules: creating a guide for module designers to consider sustainability;
- Integrate sustainability into our co-curricula activity such as volunteering programmes;
- Develop a pan-university programme around a particular global challenge (such as the climate crisis, global health, etc. →





SCREENSHOT OF UCL'S WEBSITE DEDICATED TO SUSTAINABILITY IN EDUCATION, RETRIEVED FROM WWW.UCL.AC.UK/SUSTAINABLE/WHAT-UCL-DOES/SUSTAINABLE-EDUCATION

UCL's Sustainability Strategy makes the commitment that at UCL every student will have the opportunity to study and be involved in sustainability by 2024.

Why is Sustainable Education important?

A report published in 2021 by Students Organising for Sustainability (SOS) found that 91% of students agree their place of study should actively incorporate and promote sustainable development and that 84% would like to see sustainable development activity actively incorporated and promoted through all courses.*

What is UCL doing?

We work to ensure that UCL education is a sustainable education across the curriculum, campus, and community.

- UCL's Sustainable Education Steering Group has developed an [approach to embedding sustainable literacy across UCL](#);
- Learn about our impact on education from our [annual report](#).

Meet our Students



For more information on:

- ESD at UCL: www.ucl.ac.uk/sustainable/what-ucl-does/sustainable-education

Sustainable Education Initiatives



Welcome and Inductions

We introduce new students to topics of sustainability at the beginning of their university journey.



Staff Resources

We provide resources for staff to embed sustainability into the classroom and to connect with each other.



Teaching and Learning on Campus

We offer opportunities to students and staff to solve real-life sustainability challenges on campus with a Living Lab Project.



LUND UNIVERSITY

A basic understanding and knowledge of sustainability is included in programmes in all cycles and within all subjects.

This contributes to continuous reflection on the relation between education and sustainable development so that sustainability aspects are integrated in the students' future professional roles.

As a part of a functioning student influence, students also participate in the work of integrating sustainable development in Lund University's activities.

For more information on:

- Lund University's strategy for sustainable development 2019-2026: www.sustainability.lu.se/sustainability-lund-university/sustainability-strategy-and-sustainability-plan/lund-university-strategy-sustainable-development
- ESD at Lund University: www.sustainability.lu.se/education

Lund University's vision for education and student participation:

- All students acquire knowledge and understanding of sustainable development and how their programmes relate to this, and thereby contribute expertise in their future roles in society.
- There is continuing professional development within sustainable development for all employees at Lund University.
- The University supports student initiatives in sustainable development and there are opportunities for students to participate in work to achieve the goals of the strategy.

SCREENSHOT OF LUND UNIVERSITY'S WEBSITE DEDICATED TO SUSTAINABILITY IN EDUCATION, RETRIEVED FROM WWW.SUSTAINABILITY.LU.SE/EDUCATION

Education for sustainable development

The educational programmes at Lund University provide students with perspectives on sustainable development from a wide range of topics.

Basic subject knowledge is a prerequisite for the kind of interdisciplinary, impact-driven force needed to meet our global challenges and to create change.

We are looking for a student employee
Apply no later than 7 January

MOOCs - digital courses about sustainability

Student organisations within sustainability
Are you a student and want to engage in sustainability issues? We have collected some sustainability initiatives that students at Lund University are involved in.





UNIVERSITY OF OXFORD

- Sustainability education is becoming more visible and coordinated at the University of Oxford, with several new initiatives cutting across teaching, learning and research.
- The Environmental Sustainability Strategy of the University of Oxford, adopted in March 2021, includes the priority to 'offer all students the opportunity to study environmental sustainability, either within or outside the examined curriculum'.
- This ESD work is now firmly embedded in University governance and staff, through the Curriculum Subgroup of the Environmental Sustainability Subcommittee and a dedicated Curriculum Project Lead on the environmental sustainability team.
- The strategic importance of ESD at Oxford is reflected in a number of new initiatives:
 - The Vice-Chancellor's Colloquium, a new interdisciplinary skills programme focused on climate change during the pilot year,
 - A new interdisciplinary research hub at the Oxford Department of Education, created to support education and training in response to climate change,
 - The University and the Oxford University Student Union recently joined the Responsible Futures Programme of SOS-UK.



I spoke during my admission speech about the de-skilling that British students experience due to the 'great divide' that A-level choices brings when it comes to humanities versus STEM. I am pleased to announce that we will be launching, in Hilary term, the Vice-Chancellor's Colloquium, an experiment in helping students learn from each other across the divide. This pilot, non-compulsory course, being currently developed in collaboration with Continuing Education and colleagues from across divisions and colleges will allow undergraduates from STEM, humanities and social sciences backgrounds to come together to enhance their critical thinking, communication, numeracy and data analysis skills. Building on the success and popularity of our student-led Oxford School of Climate Change, we've decided to make climate the unifying theme of the pilot colloquium.

Professor Irene Tracey
CBE FRS FmedSci,
at the Vice-Chancellor's Oration



For more information on:

- The University's environmental strategy: <https://sustainability.admin.ox.ac.uk/environmental-sustainability-strategy>
- The Vice-Chancellor's Colloquium: www.conted.ox.ac.uk/about/the-vice-chancellors-colloquium
- The Education and Training for the Climate (ETC) Hub: <https://etc.education.ox.ac.uk/>



2

Trends in programme development at BA and MA levels

Whilst sustainable development is an already established or a newly emerging component of many existing bachelor (BA) and master (MA) programmes⁹ at LERU universities, it may be argued that new BA and MA programmes dedicated entirely to sustainable development, or to aspects of it, are another cornerstone for ESD. There is indeed discussion among LERU universities about the need for new ESD programmes versus the need to reform already existing education to include sustainable development. This discussion affects ESD in a broad sense, from individual lectures, courses and programmes to entire faculties and the university as a whole. Although the consensus among LERU universities is that **both new aspects and modifications of existing education are needed, the question for each university to deal with is which balance is needed.**

In many BA and MA programmes focusing on sustainable development at LERU universities, **inter- or transdisciplinary perspectives are central features.** Although universities have made significant progress in this respect, it is well documented that truly inter- or transdisciplinary structures are not easy to develop¹⁰. Challenges such as the acceptance of interdisciplinarity as a unique complex of competences different from disciplinary science or proper recognition in funding and career advancement, whilst being addressed, take time to take hold.

As major efforts are underway to promote and support interdisciplinarity where desired, it is clearly the case that sustainable development acts as a fertile testing ground for further developing ambitious inter- or transdisciplinary structures, innovative institutes, etc.¹¹

⁹ And indeed also at the doctoral level, but this is not within the scope of this paper.

¹⁰ See, for example, LERU papers on interdisciplinarity of 2016 and 2023: www.leru.org/publications/interdisciplinarity-and-the-21st-century-research-intensive-university and www.leru.org/publications/implementing-interdisciplinarity-in-research-intensive-universities-good-practices-and-challenges

¹¹ For example, in 2022 Stanford university started the Stanford Doerr School of Sustainability, which is its first new school in 70 years.





On the following pages, we give examples from the wide-ranging developments in programme development on ESD at LERU universities, with examples showing specific disciplinary or interdisciplinary approaches, to online programmes, etc.

<u>Universitat de Barcelona</u>	<u>23</u>
<u>University of Copenhagen</u>	<u>24</u>
<u>Université de Genève</u>	<u>25</u>
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UNIVERSITAT DE BARCELONA



Including sustainability as a crosscutting competence

In 2008 the University of Barcelona approved six skills to be included in every BA and MA programme, two of which are sustainability and ethics.

Over 20 Bachelor and Master programmes deal with sustainability, for example:

“Environmental Sciences degree” and “Geography and global change” are two programmes that are explicitly focussed on sustainable development.

www.ub.edu/futurs/tots-els-graus

The University coordinates the European University CHARM-EU's Master in Global Challenges for Sustainability, where students have the opportunity to address the pressing need for sustainability in a transdisciplinary and challenge-based environment.

www.charm-eu.eu/index.php/masters/globalchallenges

Educational vision and goals:

- All students learn about sustainability and about the potential link of their programme to sustainable development and the SDGs. Several subjects along the curriculum include contents about sustainable development ensuring that every student acquires basic knowledge on the topic.
- A Learning-Service methodology is extensively used to connect academic knowledge in sustainable development to practice together with society.
- BA final degree projects and MA theses include a mandatory section in which students explain and reflect about the impact of their projects on sustainable development and sustainability.



For more information on:

- UB and the SDGs: www.ub.edu/ods/
- UB and the environment: www.ub.edu/ossma/medi-ambient
- UB and health: www.ub.edu/universitatsaludable/
- UB's Solidarity Foundation: www.solidaritat.ub.edu/?lang=en



UNIVERSITY OF COPENHAGEN

Offering over 300 courses related to sustainability

Example: The MA programme in climate change

- A two-year interdisciplinary MSc programme combining natural and social science approaches to the study of climate change
- Developed and run as a collaboration between natural and social science faculties
- Attracting students from other universities in Denmark and Sweden

SCREENSHOT OF UCPH'S WEBPAGE WITH COURSES ORGANISED ACCORDING TO SDGS, RETRIEVED FROM [HTTPS://SUSTAINABILITY.KU.DK/STUDIES/STUDY-SUSTAINABILITY/](https://sustainability.ku.dk/studies/study-sustainability/)

We want to make it as easy for you as possible, to navigate sustainability studies at UCPH. That is why we have put together a course mapping, to gather courses and programmes related to the sustainability field - all in one page. The courses are categorised under the Sustainable Development Goals which they relate to. Therefore you may find that some courses are listed under multiple goals. Moreover, the courses are divided into Bachelor or Master's program courses, and ordered according to which block or semester they are taught in. Some courses may be taught in Danish, or have specific admission requirements, all which will be noted in brackets next to the course name.

Please note that the courses are taught and administered under individual faculties, and thus the Sustainability Science Centre carries no responsibility for admission or course content. When clicking the course, you will be redirected to the online course catalogue. For further information on the course, please contact the relevant Study Board or Course Coordinator.

Click on the Sustainable Development Goal which you are interested in, and find relevant sustainability related courses for you!



For more information:

- <https://sustainability.ku.dk/studies/study-sustainability/>
- <https://studies.ku.dk/masters/climate-change/>



UNIVERSITÉ DE GENÈVE



STUDENTS IN THE IHDS MASTER PROGRAMME (2018)

MA IN INNOVATION, HUMAN DEVELOPMENT AND SUSTAINABILITY

- Highly multidisciplinary with a focus on challenge-based learning in team-based workshops
- Training students to analyse problems and identify innovative solutions in terms of the governance of sustainability, in close collaboration with the institutions of International Geneva
- Created in partnership with Tsinghua University (Beijing)
- Dual or Single track:
 - The Dual track links two complementary programmes, one in Geneva and the other in Beijing for a MSc in Management Science (one year of courses in each university plus internship in Geneva and thesis in Beijing), to earn two diplomas after two and a half years of study
 - The Single track leads to a University of Geneva MSc with an exchange semester at one of the partner universities (currently Tsinghua, Bogotá, Dakar, Exeter, Lund, Medellín, Pisa, Sydney, Yonsei, Los Angeles, Akosha).
- Stems from a partnership between the University of Geneva and UN Agencies and other international organisations and NGOs present in Geneva, focusing on the implementation of the Agenda 2030 and the Sustainable Development Goals (SDGs). This ecosystem provides many opportunities for internships.

For more information on:

- The IHDS Master programme:
www.unige.ch/sciences-societe/formations/masters-in-english/innovation-human-development-and-sustainability/



UNIVERSITÄT HEIDELBERG



Sustainability as a guiding perspective for future teachers

THE HEIDELBERG SCHOOL OF EDUCATION INCORPORATES SUSTAINABILITY IN TRAINING FUTURE TEACHERS

The Heidelberg School of Education (HSE) is a joint scientific institution of Heidelberg University and Heidelberg University of Education.

Vision: Teaching and learning in the spirit of Sustainable Development Goal 4 (Quality Education) play a crucial role in empowering people to actively participate in the upcoming transformation processes. Learners should be enabled to make informed, responsible, and future-oriented decisions.

HSE OFFERS AN EXTRACURRICULAR QUALIFICATION IN SUSTAINABILITY FOR FUTURE TEACHERS

- Aim: to enable future teachers to develop or extend their own sustainability competences, to discover links between subject-specific topics and sustainability perspectives, and to acquire scientific and methodological ESD-related skills
- Participants: students of all subjects and school types wishing to acquire knowledge and practical skills to design learning environments that are both research-based and critical, as well as curriculum-based
- Programme: one semester, 15 credit points, including courses, workshops, excursions and practical seminars specifically developed for the additional qualification. Students can also attend these workshops as stand-alone events.
- Guiding perspective provided by the State of Baden-Württemberg ESD framework for interdisciplinary engagement covering all dimensions of sustainability in school curricula

HSE ACTS AS AN INCUBATOR FOR THE IMPLEMENTATION OF SUSTAINABILITY-RELATED COURSES IN UNIVERSITY CURRICULA, HAVING CREATED, FOR EXAMPLE:

In climate physics:

- A blended learning course, created as part of a Digital Higher Education Fellowship
- Combining current climate change research with transfer activities in education and science communication
- A central starting point for a new module in the mandatory teacher training programme at the Department of Physics and Astronomy

In geography:

- An interlacing module with ESD focus in the Master of Education programme
- Building on the long-standing partnership between the Heidelberg Center for the Environment (HCE) at Heidelberg University and the ESD Centre at Heidelberg University of Education



UNIVERSITÄT
HEIDELBERG
ZUKUNFT
SEIT 1386

For more information:

www.hse-heidelberg.de/nachhaltigkeit
(in German)



UNIVERSITY OF MILAN



MA IN GLOBAL HEALTH (MGH)

- Online second-level, vocational master offered by the Centre for Multidisciplinary Research in Health Science, in close collaboration with experts and teachers from different faculties of the University, other important universities and organisations from Italy, and major academic institutions from abroad
- Main objective: deepening of knowledge and the study of major contemporary global health issues from a transdisciplinary and international perspectives
- Training students and future leaders to operate in different contexts which include the public sector at the national level (ministries of health, foreign affairs, cooperation to development, etc.) or local (e.g., regional public health authorities), international organisations, non-governmental organisations active in the field of health and development, public-private partnerships and the private sector engaged in health
- One-year programme (60 ECTS) open to all graduate students holding a Master's degree with different backgrounds (to Health Sciences to Ecology, Economics etc.).
- Delivered entirely in English
- Third edition 2023-2024



UNIVERSITÀ
DEGLI STUDI
DI MILANO

For more information:

- www.machresearch.it/pages/masterGlobalHealth/index.php



UNIVERSITY OF ZURICH



INTERDISCIPLINARY BA IN BIODIVERSITY

- New BA programme based on many years of research experience in the field of biodiversity. Biodiversity is one of the most complex and fascinating attributes of our planet. At the same time, this diversity is threatened by human activities.
- Focuses on biodiversity sciences, biological systems and the process-oriented understanding of organisms (microbes, plants, animals) and their habitats.
- Strong emphasis on:
 - topics related to sustainability as well as ecological and evolutionary principles
 - process-oriented understanding of organisms and their habitats
- Inter- and trans-disciplinarity, integrating topics from environmental chemistry, environmental ethics, environmental economics

For more information:

- www.biodiversitaet.uzh.ch/en.html





3

Courses and activities on offer to all students

There are many courses and a variety of educational activities on sustainable development on offer to students outside of their degree programme at LERU universities. They range from courses, to workshops, to living labs, to pre-semester weeks, in person as well as via online teaching.

At present, all such courses are voluntary; no university yet has a sustainable development course that is mandatory for all students, although in some cases individual faculties or departments have made them mandatory. **A change towards more mandatory courses is expected to happen in the next few years, especially where there is strong support from the university leadership.**

Building a compulsory education project targeting several tens of thousands of students is a major challenge for universities. It **requires a solid institutional anchoring of sustainable development**, concerted efforts in consultation and planning, well developed coordination and communication channels.

Other issues include compliance with external frameworks that regulate universities' educational programmes, as well as the availability of human and financial resources.

Among **practical hurdles**, LERU universities note that course structures often prevent students from taking additional courses outside their general curriculum. Providing ECTS credits for voluntary courses, micro-credentials, course completion certificates, etc. can help to make voluntary courses attractive to students from all disciplinary backgrounds.





The examples on the following pages illustrate the variety of ESD activities on offer to all students across LERU universities.

<u>University of Freiburg</u>	<u>31</u>
<u>Université de Genève</u>	<u>32</u>
<u>KU Leuven</u>	<u>33</u>
<u>University of Milan</u>	<u>34</u>
<u>Université Paris-Saclay</u>	<u>35</u>
<u>Sorbonne University</u>	<u>36</u>
<u>Utrecht University</u>	<u>37</u>
<u>University of Zurich</u>	<u>38</u>



UNIVERSITY OF FREIBURG



SUSTAINABILITY CERTIFICATE

- Offers all University of Freiburg students the opportunity to develop sustainability competencies in three areas:
 - Foundations: consisting of a multi-disciplinary lecture series and a seminar on systems thinking in interdisciplinary teams
 - Electives: offering students a range of courses offered by the Certificate and collaborating faculties
 - Practice: allowing students to do an internship, discover Service Learning or carry out their own projects under the supervision of scientific staff or an external organisation
- Optional 14 ECTS-points programme
- Launched at the initiative of the Student Sustainability Office
- Success factor: collaborative and interdisciplinary working environment and the practical skills the programme offers
- Challenge: reaching out to students from all faculties

For more information:

- www.zfs.uni-freiburg.de/de/zertifikat-nachhaltigkeit

ERSTIAKADEMIE ZUKUNFTSFÄHIG (SUSTAINABILITY FIRST-SEMESTER ACADEMY)

- An Introductory Week on the topic of sustainability for 50 first-year students who are selected on the basis of an application
- Goal: encourage students of different disciplines to get engaged with sustainability issues within and outside of university
- Organised by student assistants from student sustainability office (developed from an earlier voluntary student initiative)
- Includes various workshops, games, city tours and excursions and hybrid panel events with other universities on the topic of sustainability

AWARDING OF THE FIRST SUSTAINABILITY CERTIFICATES





UNIVERSITÉ DE GENÈVE



The University offers three courses to all students in any bachelor/faculty:

DÉVELOPPEMENT DURABLE I

- Covers the basic knowledge needed to understand sustainability.
- Based on the concept of a 'safe and just space for humanity' (also known as the Oxfam Doughnut), which integrates the notions of planetary limits, human development and ethical notions.
- Course format alternates lectures and workshops.

DÉVELOPPEMENT DURABLE II

- Presents various tools for analysing a project with a view to predicting its effects on sustainability.
- Students put these skills into practice by analysing legislative proposals (forthcoming Swiss popular initiatives) with a view to producing an expert report.
- Course format alternates between lectures, external guests and workshops.

ETHIQUE DE L'ENVIRONNEMENT

- Philosophical ethics course, introducing students to the field of environmental ethics and the contemporary issues involved.
- Using case studies, students are invited to engage in applied ethical reflection in order to think collectively about the normative means needed to meet ecological challenges.

Challenges

- Three ECTS offered for each course, but acceptance of these credits vary from bachelor to bachelor.
- Convincing the faculties to make space for these credits into the curriculum.

For more information:

- www.unige.ch/rectorat/cours-transversaux



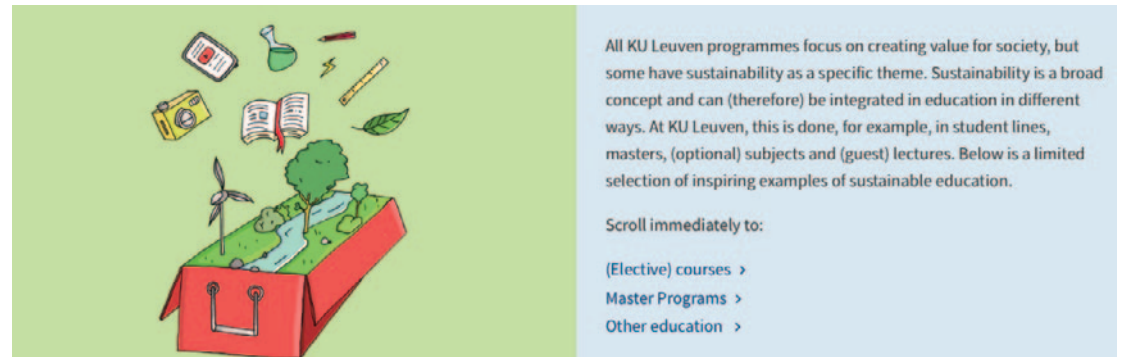
KU LEUVEN



BA COURSE ON GLOBAL SUSTAINABILITY CHALLENGES

- An interdisciplinary, introductory BA course on global sustainability challenges
- 12 classes on different sustainability themes, each taught by a different group of experts
- Objectives: students gain insight into the current state of the planet in different areas, and make links between the themes by focusing on systems thinking.
- Themes range from climate to circular economy and from global governance to migration.

SCREENSHOT RETRIEVED FROM WWW.KULEUVEN.BE/DUURZAAMHEID/SUSTAINABILITY/EDUCATION/SPOTLIGHT



KU LEUVEN

For more information:

- https://onderwijsaanbod.kuleuven.be//2020/syllabi/v/e/H0000AE.htm#activetab=doelstellingen_idp7125328
- www.kuleuven.be/duurzaamheid/sustainability/education
- www.kuleuven.be/duurzaamheid/sustainability/education/spotlight#andere



UNIVERSITY OF MILAN



THE SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT LAB

- A 32-hour course open to students from all faculties and enrolled in BA or MA programmes
- Highly multi- and interdisciplinary, pivoted on case studies of incidence and global scope
- Aims: enabling students to
 - individualise the competencies in her/his institution in terms of sustainability management
 - better accomplish and disseminate sustainable behaviours
- Course requirements: Students attend at least 75% of classes and submit a final essay to pass the course. The course is held in Italian.
- Offers 4 ECTS.
- Not compulsory, except for some explicitly sustainability-related degree programmes.
- Challenge: the restricted number of 'free' ECTS available to students.
- Students' final feedback requested to monitor the overall impact of the course and to understand how to improve it.



UNIVERSITÀ
DEGLI STUDI
DI MILANO

For more information:

- www.unimi.it/en/education/degree-programme-courses/2024/laboratory-sustainability-and-sustainable-development-1



UNIVERSITÉ PARIS-SACLAY

A MULTIDISCIPLINARY SPOC (SMALL PRIVATE ONLINE COURSE) ON THE CHALLENGES OF THE ECOLOGICAL TRANSITION

- Objective: for a large part of the undergraduate student body to develop an understanding of the mechanisms of global warming and the erosion of biodiversity, and of the links with lifestyles and consumption patterns
- Enrolment: 1,500+ undergraduate students per year, open to students in all disciplines
- Compulsory for students in the second year of their BA degree
- Multidisciplinary: more than 40 researchers, assistant professors and professors contribute.
- 25 hours of training
- Coursebook: an open e-book has been developed for this course, available at: www.edp-open.org/books/edp-open-books/427-enjeux-de-la-transition-ecologique

Two mandatory SPOCs for all doctoral researchers: one providing keynote lectures and the other detailing the environmental impacts of research and research practices

Enjeux de la transition écologique



Enseigner la transition écologique aux étudiants de licence à l'université
Sous la direction de Jean-Michel LOURTIOZ, Jane LECOMTE et Sophie SZOPA assistés de Catherine EVEN et Guillaume ROUX

Cet ouvrage, aux nombreuses illustrations, donne une vision transversale des changements environnementaux d'échelle mondiale que connaît notre planète aux limites finies. Son objectif est, en particulier, de faire comprendre les mécanismes et conséquences du réchauffement climatique et de l'érosion de la biodiversité ainsi que leurs relations avec nos modes de vie et de consommation.

Pour l'essentiel, il reprend l'un des premiers enseignements numériques dispensé à grande échelle en 2020 sur les « Enjeux de la transition écologique » auprès de plusieurs milliers d'étudiants de licence de toutes disciplines de l'Université Paris-Saclay.

À l'instar de ce cours, cet ouvrage s'articule en quatre parties. Partant d'une perspective historique des évolutions du climat et de la biodiversité, les trois premières parties montrent l'impact grandissant de l'humanité sur les flux d'énergie et de matière de la planète et sur les trajectoires évolutives du vivant. Cet impact conditionne en retour la survie de nos sociétés et du monde tel que nous le connaissons.

La quatrième et dernière partie de cet ouvrage offre un cadre de réflexions pour une transition vers un développement soutenable. Cette transition peut être une opportunité pour repenser nos façons de produire, de travailler, de consommer, de nous déplacer, tout en visant l'équité sociale pour un « bien vivre ensemble » partagé sur la planète.

Pour répondre à l'objectif de transversalité de l'ouvrage, plus de quarante enseignant(e)s-chercheurs(euses) et chercheurs(euses) d'horizons différents y ont contribué, mêlant savoirs des sciences de la nature aux sciences humaines et sociales en passant par le droit, l'économie, la gestion, l'agronomie et la médecine.

DOI : 10.1051/978-2-7598-2661-2
ISBN (ebook) : 978-2-7598-2662-9
ISBN (e-pub) : 978-2-7598-2716-9
Novembre 2021
428 pages

OPEN E-BOOK, SCREENSHOT RETRIEVED FROM WWW.EDP-OPEN.ORG/BOOKS/EDP-OPEN-BOOKS/427-ENJEUX-DE-LA-TRANSITION-ECOLOGIQUE



SORBONNE UNIVERSITY



THE ENVIRONMENTAL TRANSITION MODULE

- An online awareness module on the environmental transition
- Objective: develop students' knowledge base to understand the changes underway and, from there, to contribute to individual and collective approaches to create sustainable transition models
- The Module includes five inseparable conferences-debates:
 1. From sustainable development to environmental transition
 2. Environmental emergencies: climate, biodiversity, health
 3. Environmental emergencies: ocean, energy and resources
 4. The roles of economic actors
 5. Environmental transition and citizenship
- Open to all students, whatever their level (BA-MA-PhD) and their field, and all staff, whatever their background
- Possibility of course follow-up validation by the SULITEST (Sustainability Literacy), a renowned international test focused on the construction of a sustainable future (www.sulitest.org/fr/)
- This Module serves as a basis for developing face-to-face teaching in various departments of the faculties. Interdisciplinarity is essential.
- Outlook: Mapping work is undertaken to identify all offerings on sustainable development and transitions, aiming to pool and create interdisciplinarity within the University and with external partners.



UTRECHT UNIVERSITY



WATER SAMPLES TAKEN BY A LIVING LABS "PFAS REMEDIATION" TEAM MEMBER

LIVING LABS

- Aiming to create sustainability-related testing grounds on campus and bringing together education, research and operations
- In line with the University's strategic plan 2025
- Living labs is a testing ground: real-world experiments in which researchers, students and societal partners co-create solutions for complex sustainability challenges.
- The University facilitates the development of living labs by mobilising people and their ideas, thus providing a learning experience based on solving real world problems.



**Utrecht
University**

For more information:

- www.uu.nl/en/organisation/uulabs/campus-as-a-living-lab/living-labs-portfolio



UNIVERSITY OF ZURICH



STUDENTS AT THE 2023 STUDYWEEK



“SUSTAINABLE DEVELOPMENT AND TRANSFORMATION”, A TRANSDISCIPLINARY STUDY WEEK FOR MA STUDENTS

- A stand-alone, first-week course for MA students from all seven faculties at the university.
- Addresses the topic of the necessary societal transformation and supports scientific understanding of social change.
- Based on the ESD concept in fostering not only knowledge transfer but also the development of attitudes and competences for change.
- Sustainable development requires transdisciplinary teaching with and for society. Interdisciplinarity is integrated as different crucial aspects of sustainable development are addressed, such as the ethical foundation of sustainable development, the socio-ecological requirements as well as current non-sustainable development and trade-offs.
- Students choose among five topics: climate justice, sustainable finance, circular economy, social inequality and agroecology.
- Taught by a tandem of two experts: one from science and one with a practical background. This may present a challenge for lecturers as they are being asked to jump “out of the disciplinary box”.
- To be integrated in a future, still-to-be decided Minor Programme at the University of Zurich.



University of
Zurich ^{UZH}

For more information:

- www.sustainability.uzh.ch/en/research-teaching/teaching/Study-Week.html



4

Lifelong learning

Due to the pressing need for action on sustainable development, it is important to include lifelong learning (LLL, or continuing education) in a discussion on ESD. LLL is about enabling people to access education throughout their lifetime and ensuring that everyone has the knowledge, skills and competences they need to thrive in their personal and professional lives. LLL students may be working professionals or retirees, local or long-distance learners, interested citizens of all ages and all kinds of learners with a varied educational background.

As the many opportunities and challenges around LLL in itself merit a fuller discussion, which is not possible in this publication, it may suffice to note here that LLL is an area of change for universities, shaped by new and rapidly changing technologies, in part fueled by the Covid pandemic and by advances in artificial intelligence, and influenced by changing social habits and expectations.

LERU universities provide LLL on sustainable development via on-campus and via online learning programmes such as MOOCs (massive open online courses), SPOCs (small private online courses), etc., thus **reaching far more and other students than they can otherwise reach**¹². Micro-credentials, as a way to certify the learning outcomes of short-term learning experiences, are being developed in many cases.

LERU universities see LLL as an opportunity to **strengthen the engagement in their cities and regions** on the topic of sustainable development, as on other topics. LLL courses on campus are regularly used as a means of networking between the academic world, the business world and local government.

¹² For example, 80,000 students have enrolled thus far at the University of Copenhagen's MOOC on the Sustainable Development Goals; more than 55,000 students at Lund University's MOOC "Circular Economy - Sustainable Materials Management".





On the following pages are a few examples of LLL programmes at LERU universities, including in-person and online courses, and targeting different types of learners.

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<u>University of Freiburg</u>	<u>42</u>
<u>Lund University</u>	<u>43</u>
<u>University of Oxford</u>	<u>44</u>
<u>ETH Zurich</u>	<u>45</u>



UNIVERSITY OF COPENHAGEN



“THE SUSTAINABLE DEVELOPMENT GOALS” MOOC

- Students get a historical overview of how sustainability has been understood, as well as a thorough introduction to the SDGs – what they are, how progress can be measured, and how the SDGs are relevant for the management of the global systems supporting humanity.
- The course examines how various societal actors are responding to and implementing the SDGs.
- Students gain up-to-date knowledge of the current understanding of human impacts on the Earth at the planetary level.

“TRANSFORMATION OF THE GLOBAL FOOD SYSTEM” MOOC

- Focuses on how food systems can become more sustainable.
- Consists of four modules, with each focusing on an essential factor for developing more sustainable food systems: (1) Boosting the small, (2) Transforming the big, (3) Losing less and (4) Eating smarter.
- In each of these key areas, students meet people from different countries around the world, who work every day to find and spread solutions that work.

UNIVERSITY OF
COPENHAGEN



For more information:

- <https://sustainability.ku.dk/studies/mooc/>



UNIVERSITY OF FREIBURG

FREIBURG OFFERS VARIOUS ONLINE SUSTAINABILITY-RELATED MASTER PROGRAMMES FOR PROFESSIONALS, FOR EXAMPLE:



Master of Science in Global Urban Health

An interdisciplinary modular and full-time course for graduates in the fields of social sciences, medicine and in similar backgrounds with professional experience in health sciences, environmental health, urban planning, migration or social sciences.

The curriculum focuses on the analysis of environmental health risk factors and socio-economic determinants of health in urban areas and on epidemiology and infectious diseases, as well as on migration, violence and mental illness within vulnerable groups of the urban population.

The programme is based on national and international Global Health and Urban Health concepts and is in line with international strategies such as the Sustainable Development Goals.

Learn more at: www.wb.uni-freiburg.de/wb/angebote/guh-msc

Master of Science in Solar Energy Engineering

Students specialise in one (or more) topics in solar energy, such as solar cell technologies, photovoltaic systems and powerplants, solar thermal energy, grid integration, and electricity networks.

Upon successful completion students can, for example, depending on their specialisation:

- Achieve a qualitative and global understanding of today's and tomorrow's energy needs;
- Understand the physics of solar cells, integration of renewable energies into the power grid, and the fundamentals of storage applications;
- Understand physics, design, and engineering of solar thermal systems.

Blended learning format: online study + 1 week of on-campus events per year

Part-time study, five to seven semesters

Language of instruction: English

Learn more at:

www.studium.uni-freiburg.de/en/program-offerings/continuous-education-programs/info/690



LUND UNIVERSITY



Lund University has developed several MOOCs on sustainable development. They are:

- open to anyone with an interest, regardless of previous experience
- taught in English
- free of charge

Examples:

- “Working for a sustainable future: concepts and approaches”
- “Greening the economy: circular economy – sustainable materials management”
- “Greening the economy: sustainable cities”



LUND
UNIVERSITY

For more information:

- www.sustainability.lu.se/education/moocs-digital-courses-about-sustainability



UNIVERSITY OF OXFORD



The Department for Continuing Education at the University of Oxford offers a range of programming related to sustainability, from day and weekend programmes on biodiversity for the Oxford community to the part-time professional master's degree on Sustainable Urban Development.

Public engagement and life-long learning opportunities are also provided through the University's gardens, libraries and museums (GLAM). As a reflection of the importance of sustainability to their operations and exhibitions:

- Senior staff at the Ashmolean Museum recently completed Carbon Literacy training.
- All six GLAM institutions collaborated with the Environmental Change Institute to create a museum trail and interactive learning experience called the Museum of Climate Hope.

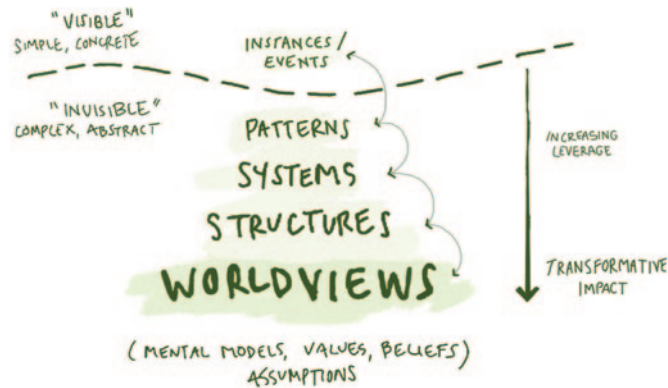


For more information:

- www.conted.ox.ac.uk/search#/?s=&areas=Environment%20and%20sustainability&sort=title
- www.glam.ox.ac.uk/museum-climate-hope-trail



ETH ZÜRICH



LIFELONG LEARNING FOR SUSTAINABILITY

As a university of science and technology committed to lifelong learning, ETH Zurich fosters the transfer of knowledge and technology from academia to practice. **Continuing education programmes enable professionals to update** their specialist knowledge and develop new competences.

Two Certificate of Advanced Studies (CAS) programmes address the **Sustainable Development Goals** and expand towards a holistic perspective of **regeneration**.

CAS ETH in Climate Innovation

Responding to climate change by mitigation and adaptation requires deeply transformative changes of all systems and overall society towards net-zero emissions.

- What: Working with real-world case studies, the Climate Innovation programme empowers climate-change leaders to support and lead the transition towards net-zero emissions. Future climate leaders learn the knowledge and skills needed to 1. Lead this transition, 2. Navigate uncertainty and complexity, and 3. Develop impactful solutions in interdisciplinary teams.
- Learning objectives: This “Science into Practice” programme builds on: 1. System Knowledge, 2. Transformational Learning Experience, 3. Network Activation, with an emphasis on Dialogue and Exchange.
- Learning outcomes: The participants learn to develop high-quality, critical, impactful solutions in interdisciplinary teams; communicate successfully about change-making activities, climate-change challenges and related solutions; and practice self-reflection and assume a role as climate leaders in the transition towards net-zero emissions.
- Formats: Participants engage in peer learning (including with programme alumni) and draw on a network from business, government and non-governmental sectors to identify and prototype impactful solutions in interdisciplinary teams.

For more information:

- <https://usys.ethz.ch/en/weiterbildung/cas-eth-in-climate-innovation-.html>



CAS ETH in Regenerative Systems: Sustainability to Regeneration

A transdisciplinary certificate programme in Designing Resilient Regenerative Systems (DRRS)

- What: The CAS programme hybridises science, design, and transformative praxis. It embodies systems physically through experiential (outdoor) didactics, social engagement, and personal inner development.
- Learning objective: To meet today's challenges (e.g., climate change, economic inequality), the CAS complements academic training from non-design disciplines to expand on creatively dealing with complexity and use these skill sets based on worldview values and directions to intervene.
- Formats: Exciting real-world, living illustrations take participants to the partnering real-world weaving lab, the MonViso Institute (Ostana, Italy) – embodying complex systems from governance scales of green chemistry, to material supply chains, to products, buildings, communities and their services, to landscapes, bio-regions and transnational cooperation.
- Flexible delivery: The DRRS programme contains four free-of-cost Massive Open Online Courses (MOOCs), a set of individual learning modules (Pathways), an executive study programme and a rich virtual learning community. A postgraduate Master of Advanced Studies ETH in Regenerative Systems is under development to provide a formal qualification at the end of the learning journey.



For more information:

- <https://systemicdesignlabs.ethz.ch/drrs/>



5

Staff training

Staff training is an important area of change at LERU universities¹³. There appears to be a rapidly growing awareness at LERU universities and elsewhere that **the aspect of “train-the-trainer”, training those who train others, is a crucial lever for expanding ESD**. While many teaching staff already include sustainable development in their lectures, others may not be so keen or may be keen but do not know how to start. It simply cannot be assumed that all staff involved in learning and teaching have a good understanding of sustainability issues. **Staff need to be supported and feel confident** to make changes to enable this.

Therefore, an important task for university management is to achieve buy-in and adoption without making training mandatory for all teaching staff in all contexts.

Academic freedom is a treasured value at LERU and other universities. It carries both duties and responsibilities, both in research and teaching, as was argued in a recent LERU paper¹⁴. LERU universities have experienced that when training is imposed, it risks becoming a potentially ineffective box-ticking exercise. On the other hand, voluntary training risks attracting those already convinced and not reaching certain staff people.

Beyond teaching staff, LERU universities have noted that there is considerable benefit to be derived from providing support and resources **for professional and administrative staff**, whether they are directly or indirectly involved in ESD.

¹³ Training is highest on the list of opportunities cited by higher education institutions in a report by IAU (p.11 in https://iau-aiu.net/IMG/pdf/iauhesdsurvey2023_accelerating_actions.pdf) – also: “The survey found that teaching and learning is the area with the highest engagement with sustainable development (86.2%), followed by research (79.4%) and campus operations (67.8%). Respondents considered campus operations, community engagement, and vision/mission essential areas of engagement by respondents, though they needed to be developed.”

¹⁴ Most recently, a 2023 LERU advice paper: www.leru.org/publications/challenges-to-academic-freedom-as-a-fundamental-right





The examples on the following pages illustrate the approaches and accomplishments of a selection of LERU universities in the area of ESD training.

<u>Universitat de Barcelona</u>	<u>49</u>
<u>University of Edinburgh</u>	<u>50</u>
<u>University of Helsinki</u>	<u>51</u>
<u>Leiden University</u>	<u>52</u>
<u>KU Leuven</u>	<u>53</u>
<u>Imperial College London</u>	<u>54</u>
<u>Université Paris-Saclay</u>	<u>55</u>



UNIVERSITAT DE BARCELONA

Training courses for teaching,
administrative and technical staff

“HOW TO INCLUDE SUSTAINABILITY IN YOUR SUBJECT’S SYLLABI, LET’S START!”

- For UB’s teaching staff
- Practical knowledge about activities for teaching sustainability in classrooms provided together with reflections about challenges and difficulties
- Developed by UB’s Institute for Career Development and launched in 2023

www.ub.edu/idp/web/ca/cursos/ub/fp2023/ods

“ROUNDTABLE – WORDS OR ACTIONS: BRING THE SDGs INTO YOUR WORK”

- For UB’s administrative and technical staff
- Focus on the Sustainable Development Goals (SDGs) and sustainability; with several sessions dealing with two to three SDGs, each including practical examples on how to become more sustainable in specific working environments (offices, laboratories...).

www.ub.edu/portal/web/formacio-pas/detall-novetats/-/detall/taula-rodona-paraules-o-fets-introdueix-les-ods-a-la-teva-feina-i





UNIVERSITY OF EDINBURGH

SUPPORT FOR TEACHING SUSTAINABILITY

Embed sustainability in the taught curriculum with the help of a variety of development resources.

“No matter what your discipline or experience, we encourage you to join our community of practice which is co-organised with the UN centre of regional expertise in education for Sustainable Development.”

From the University’s website dedicated to support for teaching sustainability



THE UNIVERSITY
of EDINBURGH

COMMUNITY OF PRACTICE

- For staff and students, including PhD tutors, involved in learning and teaching, who wish to embed climate and sustainability
- A forum to share best practice, share approaches to common challenges and provide further training opportunities

CARBON LITERACY TRAINING

- For all staff (and students), including those involved in learning and teaching activities
- Includes eight hours of learning time, encouraging those involved in learning and teaching to think through their influence and how they could embed climate, carbon and sustainability issues into their delivery and content

For more information on:

- The Community of Practice:
www.ed.ac.uk/sustainability/programmes-and-projects/student-leadership-for-sustainability/sdgs-in-the-curriculum/support-for-your-teaching
- ESD in the community of practice (video): <https://youtu.be/BwIF4U7W7kQ>
- The Carbon Literacy Training:
www.ed.ac.uk/sustainability/programmes-and-projects/sustainability-innovation-leadership/sustainable-leadership/professional-development/carbon-literacy-training



UNIVERSITY OF HELSINKI



Strategic funding supporting staff's sustainability competences

The strategy of the University of Helsinki states that the themes of sustainability will be exhaustively integrated into all education programmes. Strategic funding has been directed to support the staff members to develop their own sustainability competences and to think about their own teaching in relation to sustainability. Four practice examples are given here.



GUIDELINES FOR CURRICULUM WORK

- Sustainability and responsibility form one of the focus areas for curriculum design for 2023-2026.
- Guidelines for curriculum work were provided for all teaching staff, as well as examples of integrating sustainability skills into teaching in different disciplines.

COURSES AND TRAININGS FOR STAFF

- "Sustainability starts with us": self-study online training for staff. Published 3/2023. A more comprehensive staff sustainability course will be ready in 2024.
- Support materials and workshops have been developed for all education coordinators and teachers.
- The Centre for University Teaching and Learning (HYPE) has developed a university pedagogy, including courses with sustainability focus (e.g. Learning in higher education (5 cr); Constructive alignment in course design (5 cr))

TEACHERS FOR SUSTAINABILITY (TFS) NETWORK

- Provides opportunities for teachers to build and strengthen their expertise in sustainability education, get peer support and find partners to collaborate with and develop sustainability education.
- Activities include online and onsite workshops and events, and an online discussion group for knowledge sharing.

SEED FUNDING FOR EDUCATIONAL PROGRAMMES

- Educational programmes can apply for seed funding for the development and production of methods and teaching materials.
- 13 development projects from eight faculties have received seed funding thus far.





LEIDEN UNIVERSITY

At Leiden University, sustainability is at the heart of all programmes and courses, irrespective of the particular discipline.

The University's Sustainability Vision 2030 is the starting point for a new implementation programme with goals and activities for the period 2023-2026.

GLOBAL PROBLEMS, LOCAL ACTIONS: TEACHING SUSTAINABILITY ACROSS DISCIPLINES AND THE WORLD USING WORKSHOPS AND AN OPEN ONLINE COURSE

Teachers from across different disciplines, from law to medicine, English literature to psychology, often want to engage with large-scale sustainability challenges the world faces, like climate change and biodiversity loss. But busy academics can lack the time and confidence to integrate sustainability into their courses. The Local Actions project, which received funding from the Leiden University Funds, aims to lower this barrier, making it easy for teachers to incorporate sustainability topics as part of their introductory courses. For example, introductory law courses can include examples of climate change litigation. The aim is to empower and educate learners both inside and outside the classroom.

Lesson modules, background video content, and practical exercises are provided to teachers, making it easy for busy instructors to incorporate sustainability into their own disciplines. These are then made freely available for teachers worldwide, with the aim of reducing barriers to teachers as far as possible to include sustainability topics within their courses.



How does it work?

The Local Actions project builds a set of teaching tools to empower and educate learners and teachers. Students take local action on a sustainability issue and subsequently link this to concepts in different disciplines.

Read more at

- Vision on sustainability 2030 - Leiden University ([universiteitleiden.nl](https://www.universiteitleiden.nl))
- Global problems, local actions: Leiden professors help teachers, students and citizens to engage with environmental issues - Leiden University ([universiteitleiden.nl](https://www.universiteitleiden.nl))



**Universiteit
Leiden**
The Netherlands



KU LEUVEN



SUSTAINABLE EDUCATION NETWORK

- A learning network that brings together teachers and assistants to see how sustainable education can be shaped concretely within KU Leuven
- Initiative of the University's working group Lab Education and Sustainability
- Makes visible educational initiatives and good practices regarding sustainable education
- Creates contacts, opportunities and partnerships between teachers who are committed to sustainable education at KU Leuven, for example, by identifying, inventorising, exchanging and further developing sustainable pedagogical methods
- Regular face-to-face network meetings and a Teams online environment

KU LEUVEN

For more information on:

- The Learning Network: www.kuleuven.be/duurzaamheid/sustainability/education/network
- Staff training: www.kuleuven.be/duurzaamheid/sustainability/sustainable-operations/trainingforstaff



IMPERIAL COLLEGE LONDON



STAFF TRAINING OPPORTUNITIES IN ESD

- First climate literacy course introduced in November 2023
- Open to professional, operational, academic, and teaching staff
- Half-day course takes staff through the basics of climate change; its impacts, and the actions organisations and individuals can take to limit the impacts.
- Course objectives: to help staff feel more confident when discussing climate change and provide a better understanding of what actions they can take towards limiting climate change.
- Attendees are asked to make two climate pledges: one change they wish to make as a staff member and one for their personal life.
- A 1-hour follow-up session takes place after a month to see how the climate pledges are getting along as well as how the material has sunk in with additional resources and guidance.



UNIVERSITÉ PARIS-SACLAY



MAKING IPCC AND IPBES REPORTS' SUMMARIES FOR POLICYMAKERS ACCESSIBLE TO STAFF

- A one-day training to make the content of the IPCC and IPBES¹⁵ reports, and specifically, their summaries for policymakers, accessible to all staff
- Making use of original outreach devices and involving PhD students to help deliver the training
- For all staff members, whatever their background and level of expertise
- Roll-out scheduled for January 2024

¹⁵ IPCC is the Intergovernmental Panel on Climate Change; IPBES is the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services.



Conclusion

Responding to the world's challenges as expressed in the UN Sustainable Development Goals is a matter of highest urgency.

LERU universities have the potential, and the responsibility, to contribute to the necessary societal transformation processes. In education, it is clear that today's students need both a basic conceptual knowledge about the major aspects of sustainable development as well as insight into how their individual research disciplines, enriched by connections with other disciplines, may contribute to sustainable solutions.

LERU universities have already, albeit to different degrees, embarked on the road to gradually develop and expand their individual approaches to ESD. However, in view of the urgency as outlined in the documents of various international expert panels, this process clearly requires more attention.

Given their important role in educating current and future generations of experts and decision makers, it is logical for LERU (and other) universities to link the goals of sustainable development to their desired, university-wide outcomes of education. Clearly, one size does not fit all: different disciplines and different faculties require tailor-made solutions. To accelerate the efforts towards firmly integrating ESD in universities' teaching portfolios it is essential to conceive this endeavour as a continuous participatory process, where ideally bottom-up and top-down initiatives interact in a synergetic way.

Despite the widely agreed urgency, making certain activities, courses, programmes, etc. such as those described above, mandatory for students or staff may be hard to sell and may not be the most successful way to start to include sustainable development in university teaching. Thus, initial stimulation of intrinsic motivation is important. While incremental build-up may be acceptable for the starting phase, bolder steps are needed, and are indeed emerging. Frontrunners or a coalition of the willing can and do act as catalysts. Establishing a centre for the development of ESD may help to develop special expertise: values, attitudes, skills and competences – tailored to specific needs of faculties and departments. In a participatory process, bottom-up initiatives and institutional, top-down decisions can create valuable synergy.

Finally, LERU universities are keen to continue to learn from each other, to reflect on continuously emerging innovative practice examples provided by partner institutions, and, where appropriate, to adapt successful strategies to their own environment. In doing so, LERU universities would live up to society's expectations and provide the necessary catalyst for the required transformation processes. Moreover, LERU thus raises awareness at a European, international and cross-sectoral level with policy makers and other stakeholders, and invites other universities to join in the discussion and transformation, and to share their experiences.



UNIVERSITY OF AMSTERDAM



UNIVERSITAT DE BARCELONA



UNIVERSITY OF CAMBRIDGE



UNIVERSITY OF COPENHAGEN



TRINITY COLLEGE DUBLIN



UNIVERSITY OF EDINBURGH



UNIVERSITY OF FREIBURG



UNIVERSITÉ DE GENÈVE



UNIVERSITÄT HEIDELBERG



UNIVERSITY OF HELSINKI



UNIVERSITEIT LEIDEN



KU LEUVEN



IMPERIAL COLLEGE LONDON



UNIVERSITY COLLEGE LONDON



LUND UNIVERSITY



UNIVERSITY OF MILAN



LMU MÜNCHEN



UNIVERSITY OF OXFORD



SORBONNE UNIVERSITY



UNIVERSITÉ PARIS-SACLAY



UNIVERSITY OF STRASBOURG



UTRECHT UNIVERSITY



ETH ZURICH



UNIVERSITY OF ZURICH



About LERU

LERU was formed in 2002 as an association of research-intensive universities sharing the values of high-quality teaching in an environment of internationally competitive research. The League is committed to: education through awareness of the frontiers of human understanding; the creation of new knowledge through basic research, which is the ultimate source of innovation in society; the promotion of research across a broad front, which creates a unique capacity to reconfigure activities in response to new opportunities and problems. The purpose of the League is to advocate these values, to influence policy in Europe and to develop best practice through mutual exchange of experience.

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