

**Katariina Heikkilä**

# **SUSTAINABILITY STUDIES IN UNIVERSITIES**

**– Review on Study Modules of  
Sustainable Development and  
Responsible Business in Finnish  
and Some European Universities**

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RESEARCH CENTRE



Turun yliopisto  
University of Turku

**Katariina Heikkilä**

Project Manager

Finland Futures Research Centre, University of Turku

katariina.heikkila@utu.fi

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**Finland Futures Research Centre**

**Turku School of Economics**

**FI-20014 University of Turku**

Visiting address: Rehtorinpellonkatu 3, 20500 Turku

Korkeavuorenkatu 25 A 2, FI-00130 Helsinki

Åkerlundinkatu 2, FI-33100 Tampere

Tel. +358 2 333 9530

[utu.fi/ffrc](http://utu.fi/ffrc)

[tutu-info@utu.fi](mailto:tutu-info@utu.fi), [firstname.lastname@utu.fi](mailto:firstname.lastname@utu.fi)

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# 1. THE AIM AND PROCESS OF ANALYSIS

The task of this report was to gather and analyse material about Finnish and additionally some international, in practice European, higher education programmes that offer minor or major subject in sustainable development or responsible business/corporate social responsibility (CSR).

Benchmarking was done in order to understand how the education is connected with research or practical projects, what educational methods are used and what kind of role is given to multidisciplinary in study modules. The purpose was to achieve comprehension whether Sustainable Development Studies in Turku University has unique characteristics and what might be the most interesting lines of development in the future.

The main focus of this benchmark report is on sustainable development. Sustainable development and responsible business/corporate social responsibility are subjects that intertwine together in many ways. In the Turku University Sustainable Development Studies are offered at the university level and Responsible Business at the level of the Turku School of Economics. However, they have clear connection and cooperation and Sustainable Development Studies are administered in the Finland Futures Research Centre that is situated at the Turku School of Economics.

Information retrieval was done through Internet search. Different actors working in the field of sustainable development and responsibility gather information about study programmes concerning sustainability issues. For this report, the portals of The Forum on Science and Innovation for Sustainable Development, Association for the Advancement of Sustainability in Higher Education (AASHE), University Leaders for a Sustainable Future (ULSF), The Higher Education for Sustainable Development (HESD) and Network for Business Sustainability (NBS) were used. The amount of information included in these portals varies. The AASHE's Academic Program database for example contained at the time of the retrieval 1436 sustainability-focused academic programs at 475 campuses in 65 states and provinces but the emphasis was in the North America. Some portals are kept updated while the information of some others seems to be collected for some specific purpose and they are not necessarily updated afterwards.

Besides using the ready-made portals and lists of study programmes, information retrieval was done in websites in order to explore the phenomenon at a more general level. The following words in different combinations were used as search words: Education for Sustainable Development; Sustainability; Sustainable Development; Responsible Business; Corporate Responsibility and Corporate Social Responsibility /+ research /+ education.

Several scientific journals publish articles concerning sustainable development and responsible business. Some journals concentrate on the pedagogic side and Education for Sustainable Development (ESD). Journals have been used sporadically. Articles especially from following journals have given insight to the benchmark process: International Journal of Sustainability in Higher Education, The Journal of Sustainability Education, Journal of Cleaner Production, Sustainability Science, and Journal of Business Ethics. Several reports describing pedagogic features and outcomes related to courses in Sustainable Development have been explored.

Material available was vast and time resources were limited. The benchmarking process was carried out using qualitative hermeneutic analysis: exploring the web sites and reading articles by turns and analyzing characteristics that were revealed in dialogue with these two material sources.

Numerous international study programmes in different universities were explored. Sometimes it was easy to find exact course programmes while in other cases the information available was more general by character. All the material that has been gone through has had an effect on the understanding about the phenomenon and the chapter describing international perspective includes even sporadic remarks. However, to be able to describe some modules in more detail, a selection of cases has been made and the tables of those cases are available in the appendixes. As the case descriptions rely on the information that was easily achieved in the Internet the tables occasionally lack some details. Nordic countries create a natural point of interest as neighboring states and they are also acknowledged to have a good reputation in both education and research in the field of sustainable development.<sup>1</sup> In addition there are some cases from the Netherlands, Germany and the United Kingdom and one consortium case. The cases are chosen as the examples of typical study programmes or they have some interesting feature be it a studying method or research institute etc.

International material used in this report deals mainly with international Master's programmes where teaching is given in English. This has been a deliberate choice keeping in mind that present-day students have a variety of options where to pursue their Master's degree after Bachelor studies. Exploring the Master's programmes gives an overview how universities value the education related to sustainable development and responsible business/CSR in their international study programme supply. However, some cases of minor studies on Bachelor level or a separate course have been added to the report because of their specific pedagogic aims and solutions.

At the national level, the aim was to go through minor studies and Master's programmes that concentrate on sustainable development or responsible business/corporate social responsibility at the university level. However, it is quite likely that not all the study modules were registered through

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<sup>1</sup> E.g. Matten and Moon 2004.

the search and as universities develop their study supplies constantly, new courses might have emerged or courses mentioned here may have been ceased after this report has been finished. Study modules in the universities of applied sciences were not taken into consideration in this report. The description of national cases is in chapter 3 and the tables of national minor and master study modules are available in the appendix.

The benchmarking report to internal education development use within sustainable development studies was ready at the beginning of January 2015. A slight check of information was done and some remarks and corrections were made to the original text at the end of 2015 before the report was published in FFRC series.

Higher Education units are worldwide facing tough competition for the economic resources and best students. The working life relevance of education, cooperation with business life and academic entrepreneurship, quality of education and internationalization are issues that are raised on the agenda in order to get along the competition and in some universities sustainability is included among the agenda.<sup>2</sup> However, Ryan and Tilbury note that it has to compete with other priorities in the field of universities development strategies.<sup>3</sup>

Enhancing sustainability skills among students has been a core issue in the United Nation's Decade on Education for Sustainable Development (DESD) since its launch in 2005. In the United Kingdom the National Union of Students and Higher Education Academy have commissioned research on how first and second year students take the sustainability skills. Surveys made in 2011 and 2012 show that over two-thirds of both groups viewed universities as key players in the delivery of sustainability skills. Students also thought that future employers value sustainability skills.<sup>4</sup> Jones Christensen et al. in their turn discovered in 2006 that the MBA students in the business schools with top rankings showed growing interest in ethics, corporate social responsibility and sustainability topics.<sup>5</sup>

A large-scale project "Rio+20 implementation in the Nordic HEIs: inventorying and exploring new steering measures to integrate sustainable development and ESD into all operations" was granted two years funding by the Nordic Council of Ministers in 2014. The project includes also a benchmarking process where educational aspects will be measured on the number of available sustainability

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<sup>2</sup> E.g. Anglia Ruskin University was named UK Entrepreneurial University of the Year at the Times Higher Education Awards in November 2014 and its sustainability research in Global Sustainability Institute (GSI) got excellent results in Research Excellence Framework (REF) in 2014. <http://www.anglia.ac.uk/entrepreneurial-university>; <http://www.anglia.ac.uk/global-sustainability-institute-gsi>

<sup>3</sup> Ryan & Tilbury 2013, 278.

<sup>4</sup> Ryan and Tilbury 2013, 278.

<sup>5</sup> Jones Christensen et al. 2007, 359.

courses and diplomas, combined with an evaluation of the teachers' qualifications and skills in Nordic universities. The results of this benchmarking process will enrich the overview that is given in this report.<sup>6</sup>

The definition of sustainable development used in this report is based on the definition presented in WCED-report in 1987 according to which sustainable development is development which meets the needs of the present without compromising the ability of future generations to meet their own needs.<sup>7</sup> Sustainable development includes ecological, economic, cultural and social aspects and the focus in this report has been on sustainable development study programmes that have somehow multi- or interdisciplinary character.

Matten and Moon's research on the CSR education uses CSR as an umbrella term that encompasses ethics, CSR and sustainability.<sup>8</sup> In this benchmarking report, distinction has not been made between them either. Basic definitions used are: Corporate Social Responsibility is the voluntary actions taken by a company to address the economic, social, and environmental impacts of its business operations and the concerns of its principal stakeholders. Responsible or Sustainable Business is business that contributes to an equitable and ecologically sustainable economy. It offers products and services that fulfill society's needs while contributing to the well-being of the inhabitants of the earth.<sup>9</sup>

The results of the benchmarking process are described in chapters 2 and 3. According to the given task, results are grasping the question of multi- and interdisciplinarity, learning methods and the connection with research and practical orientation. Chapter 4 recapitulates the findings and basic elements of case examples are gathered together in appendixes.

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<sup>6</sup> Finnsson 2014; NSCN 2014.

<sup>7</sup> World Commission on Environment and Development 1987, 41. About notions of sustainable development and sustainability see e.g. Coleman 2011; Kagan 2011, in the connection of business studies e.g. Brammer et al. 2012.

<sup>8</sup> Matten and Moon 2004.

<sup>9</sup> Jones Christensen et al. 2007, 351; Nicholls et al. 2013, 130; Crane et al. 2013.

## 2. STUDY MODULES AND PROGRAMMES AT THE INTERNATIONAL LEVEL

### Common Remarks on Study Programmes

Several concepts are used when discussing different aspects of integration of sciences. In multidisciplinary research different disciplines each from their own premises and methods gather to treat a research problem in common. The integrative element is the acceptance of the complex nature of the research problem and the recognition of separate discipline's insufficiency to solve the task alone. Interdisciplinarity adds in the former deeper dialogue between disciplines and strives to seek solutions together. Transdisciplinarity represents the strongest phase of integration of sciences and aims to achieve even conceptual and methodological cohesion.<sup>10</sup> Interdisciplinarity and transdisciplinarity are discussed at a broad level in the scientific arenas at the moment.<sup>11</sup>

The understanding that the sustainable development includes ecological, economic, social and cultural perspectives, makes scientific cooperation and dialogue essential part of research and education of sustainable development and responsible business/CSR. Also the global nature of the so called wicked problems and challenges related to sustainable development worldwide calls for research that goes cross the disciplinary boundaries. In many occasions transdisciplinary research nowadays means combining interdisciplinarity and participatory approaches and considering even non-scientific knowledge in the research processes.<sup>12</sup>

Aspects of interdisciplinarity and transdisciplinarity are raised often when the subject of sustainability is discussed. This can be detected in the descriptions of study programmes addressing sustainable development or corporate social responsibility. At the same time, though, the importance of the essential disciplinary content and clear formulation of the transfer points to neighboring scientific fields is maintained. New combinations and cross-disciplinary endeavors do not lessen the importance of the content and skills of separate disciplines. This is expressed e.g. in the strategies of Leuphana University. The overarching aim in Leuphana's Sustainability Science is to provide theoretical, methodological, organizational, and communicative skills needed to develop, realize, and reflect

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<sup>10</sup> E.g. Klein 1990 and 2010; Cantell et al. 2009; Godemann 2006.

<sup>11</sup> E.g. Aalto et al. 2012; Barry and Born 2013; Frodeman et al. 2010; Huutoniemi & Tapio 2014; Myllyntaus et al. 2011.

<sup>12</sup> United Nations 2015, 26; Stock & Burton 2011.



on one's own disciplinary and interdisciplinary research work and projects. This holistic way of thinking in sustainability research requires a close connection between sustainability studies on the humanities and the natural sciences through a transdisciplinary approach in research and teaching.<sup>13</sup> Prerequisites for Master in Sustainability Science in Leuphana University include a distinguished bachelor's degree and basic knowledge on at least one of the fields of sustainability sciences which include subjects both in natural and human sciences.<sup>14</sup>

Departments of science or environment seem to be typical bases for the Master's programmes that concentrate on sustainability issues. Social science's perspective forms one part of most course structures but there were far less examples of social sciences as a base department. However, many programmes are practically carried out in collaboration with several disciplines even though administration is held in one department. There are e.g. several examples where the study programme is organized together with Faculty of Science or Environment and Business School, e.g. the University of Plymouth, the University of Leeds and Royal Holloway, the University of London.<sup>15</sup> Sustainable development study programmes administered in humanities are scarce. In the University of Oslo there is Master's Programme Culture, Environment and Sustainability producing the academic degree of Master of Philosophy.<sup>16</sup> Case Master's programmes are introduced in the table 1.

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<sup>13</sup> <http://www.leuphana.de/en/graduate-school/master/course-offerings/sustainability-science.html>

<sup>14</sup> These subjects include in Leuphana: Biological chemistry, Biology, Chemistry, Ecology, Physics, Geology, Geoecology, Environmental Communication, Environmental Planning, Environmental Politics, Environmental Management, Environmental Economics, Environmental Law, New Media (Media Sciences), Environmental Informatics, Participation and Sustainability and Sustainability Ethics.

<sup>15</sup> University of Plymouth: Faculty of Science and Environment and Plymouth Business School, University of Leeds: Faculty of Environment and Leeds University Business School, and Royal Holloway, University of London: Department of Geography and School of Management.

<sup>16</sup> <http://www.uio.no/english/studies/programmes/ces-master/>

University	Master's Programme	Students
Blekinge Institute of Technology BTH, Department of Strategic Sustainable Development	Master's in Strategic Leadership towards Sustainability (MSLS), 60 ECTS, 10 months	?
Erasmus University in Rotterdam, Department of Business-Society Management	MSc in Global Business & Stakeholder Management (GBSM), 60 cr, one year	38
Leuphana University Lüneburg, Faculty of Sustainability Science	Master's Program Sustainability Science (MSc), 120 ECTS, 4 semesters	38
Lund University, Faculty of Social Sciences, Lund University Centre for Sustainability Studies, LUCSUS	Master's Programme in Environmental Studies and Sustainability Science (LUMES) (MSc), 120 ECTS two years	40
Nottingham University Business School, International Centre for Corporate Social Responsibility (ICCSR)	MSc in CSR, 12 months full-time, 180 credits	max 20
Royal Holloway, University of London, jointly by the School of Management and the Department of Geography	MSc Sustainability and Management, one year full-time, 180 credits	?
Stockholm University, Department of Biology Education, Stockholm Resilience Centre	Master's Programme Social-Ecological Resilience for Sustainable Development (SERSD), 120 ECTS, two years	15
Uppsala University, Department of Earth Sciences in collaboration with the Swedish University of Agricultural Sciences (SLU)	Master's Programme in Sustainable Development (MSc), 120 ECTS, two years (alternative 60 ECTS one year)	60
University of Exeter, College of Life and Environmental Sciences	MSc Sustainable Development, 180 credits <sup>17</sup> , 12 months	?
Universities of Graz, Leipzig, Utrecht, Basel, Hiroshima and Ca' Foscari University of Venice	International Joint Master's Programme in Sustainable Development (MSc), two years, 120 ECTS	students' number varies annually
University of Oslo, Centre for Development and the Environment (SUM)	Master's Programme in Development, Environment and Cultural Change (DEC), (MA in Philosophy), 120 ECTS, two years	20

**Table 1.** Selection of Master's Programmes related to Sustainable Development and/or Responsible Business.

<sup>17</sup> When converted, 180 credits is equivalent to 90 ECTS and that is completed in 12 months in Exeter and other corresponding cases in the UK. <http://admin.exeter.ac.uk/academic/tls/tqa/Part%202013/13CQF.pdf>

Master's programmes are typically two years' full time programmes demanding 120 ECTS for the degree. Another quite typical option is one year full time programme with 60 ECTS particularly in the Business schools. Especially in the United Kingdom many universities and business schools also offer part time programmes and options with blended learning.

Master of Science (MSc) seems to be the common degree granted and much used also in the context of business schools. In some cases the name of the degree has been deliberately changed from MA to MSc and that is mentioned in the introduction of the programme, e.g. International Centre for Corporate Social Responsibility (ICCSR) that arranges responsibility studies in Nottingham University Business School since 2002, informs that their MA in CSR was reclassified to MSc in CSR in 2010.<sup>18</sup> On the other hand, the degree can vary inside the same programme depending on the specialization track or orientation of former Bachelor studies towards natural or social sciences or humanities. Names of the Master's programmes related to sustainable development and responsible business are many as can be seen in the Table number 1.

After finishing this benchmark report in January, the Rotterdam School of Management has decided to change the name of its MSc in Global Business & Stakeholder Management to MSc in Global Business & Sustainability. The name change will take place in the next year and all students graduating after 1 February 2016 will receive the new degree title.<sup>19</sup>

Master's programmes in general make a distinction between natural and social sciences and humanities in their study modules in some way. In some programmes, like in Leuphana MSc Sustainability Science the distinction is clear and students choose either the in-depth perspectives of natural or human sciences while in some other cases the distinction is not that strict. Issues of sustainable development and CSR stimulate collaboration between universities and research institutes in different countries. This becomes evident both in the field of research and education when surfing through the websites of universities.

One example is the Joint International Master in Sustainable Development which was established in 2008. The Institute of Systems Science, Innovation & Sustainability Research of the University of Graz is the co-ordinating university and other degree awarding consortium members are Ca'Foscari University of Venice, Leipzig University and Utrecht University. Basel University and Hiroshima University function as associated mobility partners. University of Stellenbosch and TERI University in New Delhi joined the consortium as mobility partners in 2013. Emphasis of this two-year full time

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<sup>18</sup> <http://www.nottingham.ac.uk/business/ICCSR/teaching.php>

<sup>19</sup> <http://www.rsm.nl/master/msc-programmes/msc-global-business-sustainability/overview/>

programme (120 ECTS) is on interdisciplinary perspective. The focus is set on a comprehensive approach to the question of sustainable development and the needs and possibilities of societal transformation. The strengths and specializations in teaching and research of six prestigious partner universities are combined to offer a high profile programme to be concluded with a Master of Science joint or multiple degree. Curriculum includes 30 ECTS studies at one of the partner universities and at least 60 ECTS at home university.<sup>20</sup>

Issues related to sustainable development also call for new perspectives and generate new interdisciplinary combinations. One example of the new fields of research that crosses the scientific boundaries and has sustainability issues in its core might be Industrial Ecology. This interdisciplinary field has been developing quickly since late 1980's. It combines natural, technical and social sciences in a systems view at the scale levels from the global to the local. The new field has inspired even new higher education studies.<sup>21</sup> Leiden University for instance offers Master's programme in Industrial Ecology together with Delft University of Technology. Industrial Ecology is described in the web pages of Leiden University "as an emergent scientific discipline that promotes a systemic approach to human problems, integrating technical, environmental and social aspects. It is argued that this approach will show the way to sustainable development. For that reason Industrial Ecology is considered the toolbox for sustainable development or the science of sustainability."<sup>22</sup>

Also a new Erasmus Mundus Master's programme called MIND has evolved round Industrial Ecology. This two-year programme (120 ECTS) for up to 25 students is the first international master programme in Industrial Ecology worldwide. Consortium includes seven universities.<sup>23</sup> The MIND programme trains the students to conduct industrial ecology analyses of complex sustainability problems, to design industrial ecology solutions for these problems and to develop implementation strategies for those solutions identified.<sup>24</sup>

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<sup>20</sup> <http://www.jointdegree.eu/sd/>

<sup>21</sup> International Society for Industrial Ecology (ISIE) made a list of some course offerings related to industrial ecology and it was updated in 2009: <http://www.is4ie.org/Resources/Documents/IE%20Curriculums.pdf>

<sup>22</sup> <http://www.cml.leiden.edu/education/master/industrial/about-master-ie.html>

<sup>23</sup> University of Graz (co-ordinator), Chalmers University of Technology, Delft University of Technology, Leiden University, Asian Institute of Technology, Rochester Institute of Technology and Waseda University.

<sup>24</sup> <http://www.emmind.eu/>

## Learning Methods

Master's Programmes describe their learning methods in the web pages at a general level and they are quite similar. Throughout the study programme descriptions concerning the sustainability it is emphasized that in order to understand and deal with the so-called wicked problems of the present-day world it is indispensable to get used to interdisciplinary dialogue and working in teams. The following learning methods are typically listed: lectures, group work, case studies, simulation games, individual assignments, presentations, workshops, seminars and field trips. Additionally an open and interactive environment, peer learning and a collegial coaching relationship between instructors and learners are mentioned in one way or another. Group works and case studies are in the focus when interdisciplinarity is emphasized.

In the following three examples of study courses are given and thereafter the attention is directed to distance learning and MOOCs, and student-led initiatives.

### Three Case Examples of Study Modules

Case courses presented here are chosen in order to give some examples of different ways and practices to teach sustainable development issues in the university level. Case examples are all interdisciplinary by character and they each have their own profile. Related to all cases, sustainable development studies are seen important in the university level and interdisciplinarity is encouraged. Furthermore, two of these courses are offered at the Bachelor level. They have been chosen keeping in mind the learning method of the course KEKO1 in the University of Turku. The KEKO1 course is open to both undergraduate and Master's students and therefore the examples of team work courses also in the Bachelor level are seen as an interesting point of comparison.

#### Leuphana University Lüneburg, Germany

Organizational Context	Study Module	Special Course	Form of Study
Leuphana University Lüneburg, 4 Faculties: Education, Business, Culture and Sustainability	All Bachelor programme students start with the so called Leuphana Semester (30 cr)	Leuphana Semester includes an interdisciplinary course Science bears responsibility (10 cr)	All students get an introduction to research, sustainability issues and interdisciplinarity through project work and Conference Week

In the Leuphana University Lüneburg, all students participate so called Leuphana Semester as they start their Bachelor programme studies. Leuphana Semester includes 30 credit points of which a module called 'Science bears responsibility' gives 10 credit points. During the Leuphana Semester students

come together in interdisciplinary learning communities and develop inter- and transdisciplinary discursive competence, which is firmly rooted in disciplinary competence. Later on after Leuphana Semester students can also take part in the Complementary Studies programme, which offers interdisciplinary seminars.<sup>25</sup>

'Science bears responsibility' module consists of four elements: lecture series, tutorials, project seminar and Conference Week. During the lecture series and accompanying tutorials students are introduced to the complexity of sustainable development and provided with a preliminary set of tools so that they can orientate themselves in the subsequent transdisciplinary debates about sustainability. In roughly 60 project seminars, each with 25 participants, students start to gain an in-depth look at a single topic in sustainable development. Students carry out small-scale projects where they test their own hypotheses, which are then presented to the general public at the end of the semester in the Conference Week. There will be guests from politics, science and civil society and Conference Week is an opportunity to enter into discussions with guests about the opportunities and limits of shaping the future.<sup>26</sup>

Whatever academic specialization students later choose, the module 'Science bears sustainability' offers students the opportunity in their first semester to explore an interdisciplinary topic. This happens by using the normative concept of sustainable development to investigate fundamental issues related to the responsibility of science in society. Students analyse research questions in interdisciplinary project seminars and present their results during the Conference Week. The module gives students both an interdisciplinary introduction to science, and formats for confronting issues in sustainable development.<sup>27</sup>

The analogy to the academic research process and the project character of the seminars are the two core didactic elements of the module 'Science bears responsibility'. The lecture series and tutorials represent the traditional form of knowledge acquisition while the project seminars are closer to the actual way knowledge is generated. The Conference Week in its turn resembles the communicative phase of the research process. The project-oriented profile is achieved through the high degree of independent group work embedded in a real problem context associated with the challenges of sustainable development. Project work includes the planning of the research project from identifying a specific research question to the research design, to creating a work schedule and the implementation of the project together with presentation of the results and critical reflection on the research

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<sup>25</sup> Michelsen 2013; see also: <http://www.leuphana.de/en/college/first-semester.html>

<sup>26</sup> Michelsen 2013, 1508-9; <http://www.leuphana.de/college/studienstart/konferenzwoche.html>

<sup>27</sup> Michelsen 2013, 1507.

results. During the Conference Week, students learn both about a common format of critical reflection in science and the production of knowledge and its influence on society. It also allows an assessment of student work in quasi-realistic contexts. According to Michelsen, the role of the teacher in this study module is more like a moderator of independent learning processes than a traditional teacher.<sup>28</sup>

### University of Gothenburg, Sweden

Organizational Context	Study Module	Target Group	Form of Study
University of Gothenburg, Faculty of science, cooperation with Chalmers and Centre for the Development and the Environment (GMV)	Separate course in Masters level: Project Management for Sustainable Development, 15 cr	Offered to students both in University of Gothenburg and Chalmers University of Technology since 2002.	An interdisciplinary course with large project task done in groups, includes field work in nearby region.

A course called Project Management for Sustainable Development (Fallstudiekurs i hållbar utveckling in Swedish) is arranged in the University of Gothenburg in the faculty of science. This 15 credits course covers ten weeks of full-time studies and includes a large project assignment supported by seminars and lectures. Previous to the course, a term of reference for the project is formulated by the teachers and stakeholders in a specific local context in the Gothenburg region. The course proceeds through seven phases that are: 1. Planning, 2. Mapping, 3. Modeling, 4. Scenario identification and formulation, 5. Indicator identification and formulation, 6. Evaluation and 7. Report and the presentation phase. The aim of the course is to give theoretical and empirical knowledge about complex social and environmental problems from interdisciplinary perspectives. It also gives methodological training and learns students to plan, carry out and report work done individually and in a group. Both qualitative and quantitative methods are used.

The course is interdisciplinary by character and it is offered to students both in the University of Gothenburg and Chalmers University of Technology. The first course was arranged in 2002 and an evaluation report was made of the course in 2010.<sup>29</sup> Until recently the course was organized together with the Centre for Environment and Sustainability (GMV Göteborgs Miljövetenskapliga Centrum)

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<sup>28</sup> Michelsen 2013, 1509–1510.

<sup>29</sup> Undén 2010; Undén and Forshufvud 2010.

which is a joint centre of the University of Gothenburg and Chalmers. Some of the older reports produced in the course are found in the web page of the Centre for Environment and Sustainability.<sup>30</sup> The course plan is available in the web pages.<sup>31</sup>

### Leiden University, the Netherlands

Organizational Context	Study Module	Target Group	Form of Study
Leiden University, Faculty of Science, the Institute of Environmental Sciences (CML)	Minor in Sustainable Development (30 EC) in Bachelor programme	Half year full-time intensive programme with three courses, designed for all degree programmes	An interdisciplinary character that is carried out by working in groups

Faculty of Science in Leiden University in the Netherlands organises Minor in Sustainable Development. Minor is available to apply for all third year Bachelor students in different programmes and yearly intake is 50 student maximum.<sup>32</sup> Half year full-time Minor is shortly presented here as an example of minor studies that has strong interdisciplinary character and combines academic and practical skills. The teaching is offered by the Institute of Environmental Sciences (CML) and the key educational feature of the institute is to bring together students from different disciplinary backgrounds and e.g. during this study year 19 disciplines are represented.

The minor consists of three courses that are closely coordinated. Courses are not a combination of existing courses but they are planned to form a coherent whole. Minor starts with a course 'Sustainable Development: Big Issues New Answers' (15 ETCS) that takes 11 weeks.<sup>33</sup> The course includes teaching three days a week between 9.30-17 hours. Studying methods include lectures, debates, seminars, writing and presenting short papers and a longer paper. Two days a week are for self-study reading and writing. Professor Arnold Tukker, the Director of the CML, is among teachers.

Second course is 'Project group: Design of European Research' (10 ETCS). Students work in groups and they have as a task to plan, write and defend a full proposal for a research study on a sustainability theme in the context of the 7<sup>th</sup> Framework Programme of the European Union

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<sup>30</sup> <http://gmv.gu.se/samverkan/samverkan-inom-utbildning/fallstudiekurs-i-hallbar-utveckling>. One example: [http://gmv.gu.se/digitalAssets/1447/1447740\\_rapport\\_fallst\\_2012\\_hisingen\\_2050\\_12-05-26.pdf](http://gmv.gu.se/digitalAssets/1447/1447740_rapport_fallst_2012_hisingen_2050_12-05-26.pdf)

<sup>31</sup> <http://utbildning.gu.se/kurser/hitta-kursplan/kursplan/?courseId=ES2415>

<sup>32</sup> [http://www.cml.leiden.edu/education/minor/minor\\_overview.html](http://www.cml.leiden.edu/education/minor/minor_overview.html)

<sup>33</sup> <http://media.leidenuniv.nl/legacy/schedule-course-big-issues-new-answers-cml.pdf>. For study year 2015-2016 see: [https://studiegids.leidenuniv.nl/en/courses/show/46935/Duurzame\\_ontwikkeling\\_tp](https://studiegids.leidenuniv.nl/en/courses/show/46935/Duurzame_ontwikkeling_tp)



(EU/FP7).<sup>34</sup> During this process, students apply their knowledge and skills gained in the previous course (Big Issues New Answers). Many of the topics in EU/FP7 relate to the interdisciplinary problems concerning sustainability. Students imitate the submission procedure by finding partners from other countries, presenting an extensive state-of-the-art report and submitting a detailed schedule. They will even write a rebuttal to the evaluation of their proposal done by the CML tutors and fellow students. The course instructs students to use the vocabulary of project management and to work in an interdisciplinary team to address a complex sustainability problem. The course gives a valuable learning experience of making an international research grant application.

Third course is an area study and there are two options which to choose, either a) Waste not Want not: A Future without Waste (7 ETCS)<sup>35</sup> or b) International course on water issues and water management in the Philippines (10 ECTS). The latter one includes field work in Philippines in January 2015. Since 2011 the international course on water and water management has been organized in the Philippines. 28 students participate in this one month course: 14 European students through Leiden University and 14 Philippine students through Isabela State University. Intercultural teams conduct a short field study on a theme related to water management in Isabela Province. The aim of the course is to learn about water issues and to gather practical experience with fieldwork and working in interdisciplinary, international teams. The diverse background of the students includes anthropology, biology, forestry, agriculture and civil engineering among others.<sup>36</sup>

## Distance Online Learning

The growth of distance learning courses can be seen as part of more general phenomenon where higher education is developing more fluid boundaries with many areas of further education, professional practice and community learning.<sup>37</sup> Many universities and business schools offer distance learning possibilities as well in the realm of sustainability and responsible business. Distance learning is seen as one competitive feature in the supply of teaching and it is used also in the marketing. The University of Edinburgh for example, advertises its distance learning possibilities as follows: "Our online learning courses also offer flexible exit routes, allowing you to shape your academic journey to

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<sup>34</sup> For the study year 2015–2016 the context has been updated and it concerns the Horizon 2020 Program. [https://studiegids.leidenuniv.nl/courses/show/46937/Projectgroep\\_Ontwerp\\_van\\_Europees\\_Onderzoek](https://studiegids.leidenuniv.nl/courses/show/46937/Projectgroep_Ontwerp_van_Europees_Onderzoek)

<sup>35</sup> At the study year 2015–2016 there will be an area study '2030: sustainable Leiden?'. [https://studiegids.leidenuniv.nl/courses/show/46939/Area\\_study\\_sustainability](https://studiegids.leidenuniv.nl/courses/show/46939/Area_study_sustainability)

<sup>36</sup> Watercourse Philippines – Leiden University. <https://www.facebook.com/pages/Watercourse-Philippines/312676025504087>; for year 2016 see: [https://studiegids.leidenuniv.nl/en/courses/show/45903/Fieldschool\\_Water\\_Management\\_in\\_the\\_Philippines\\_Winter](https://studiegids.leidenuniv.nl/en/courses/show/45903/Fieldschool_Water_Management_in_the_Philippines_Winter)

<sup>37</sup> e.g. Ryan & Tilbury 2013, 273–274.

suit your needs.”<sup>38</sup> There is a quickly growing trend to develop study modules providing more flexible study opportunities instead of strict programmes throughout the universities. This is linked with the changing values and demands of education among young people and the increasing demand to combine studies and working life.<sup>39</sup>

There are plenty of opportunities to finish separate courses or whole degrees through either complete distance learning or by combining workshop days at the campus with online learning in different universities as the following two examples illustrate:

- Bournemouth University, the School of Applied Studies offers possibility to conduct the whole MSc Green Economy through distance learning. The annual intake of students varies from 10–15. The duration is one year full time and two years part time. It is also possible to conduct the degree in parts which helps with the payments.<sup>40</sup>
- The Distance and Independent Studies Center (DISC) at TU Kaiserslautern advertises itself as “one of the leading post-grad distance learning programmes in Germany”. It offers ‘Sustainable Development Cooperation’ distance learning Master’s degree held in German.<sup>41</sup>

### **Massive Open Online Courses (MOOCs)**

Massive Open Online Course, MOOC, started as an innovative experiment to strengthen the co-learning aspect and since the first experimental course in Canada in 2008 the development has got many directions.<sup>42</sup> MOOC is a study course that is offered online to anyone interested worldwide and participation has been free of charge so far. Courses include in average 5–12 weekly online sessions. In addition to online lectures, students participate in online discussions and perform individual assignments that demand varying number of independent study hours per week. Attending a MOOC requires an enrollment and study materials are available only during the course.

According to some studies, the profitability of MOOCs is not an easy task as they require a lot of planning work before the course and human work resources during the course to sustain web discussions and feedback.<sup>43</sup> Also the quite low completion rate of MOOCs has raised discussion among

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<sup>38</sup> <http://www.ed.ac.uk/studying/postgraduate/degree-guide/online-learning/programmes>

<sup>39</sup> Bisoux 2014. See e.g. University of Exeter, Distance Learning and Modular Programmes. <http://www.exeter.ac.uk/postgraduate/degrees/distance/>

<sup>40</sup> <http://courses.bournemouth.ac.uk/courses/postgraduate-degree/green-economy/none/3126/>

<sup>41</sup> <http://www.zfuw.uni-kl.de/en/distance-learning-courses/management-law/sustainable-development-cooperation/>

<sup>42</sup> Cormier & Siemens 2010; Hollands & Tirthali 2014.

<sup>43</sup> Hollands & Tirthali 2014; Ruth 2012.

educators. One obvious reason is related with the custom: as registering for a MOOC is often a pre-condition to seeing its content and so evaluating its worthiness, students might shop multiple courses before settling on which to commit to.<sup>44</sup>

MOOCs are one possibility among different virtual teaching methods and not an end in itself. The strategy that the University of Bath has expressed related to MOOCs puts the phenomenon quite well into words as it says:

*“MOOCs have been available for some years but are still a highly experimental area of study. The University of Bath is committed to providing a wide range of opportunities for independent learning, which is why we are excited by the potential of MOOCs. The experience of running our three current courses will influence the future MOOCs we offer. As well as providing courses, we are keen to play a leading role in shaping future developments in MOOCs and other approaches to online learning. Our current courses are available on FutureLearn.com. The University of Bath is a member of the FutureLearn partnership, which includes some of the best UK and international universities, as well as institutions with a huge archive of cultural and educational material.”<sup>45</sup>*

As this quote describes, MOOCs are part of a larger phenomenon, that is to say distance online learning and many universities are at the phase of experimenting MOOCs and their value by the cost. According to an extensive literature review by Haggard (2013) MOOCs might act as a tipping point for Higher Education even though their meaning may have been over hyped so far.<sup>46</sup>

MOOCs offer a possibility to view lectures given by well-known experts in the field but they do not necessarily train students to the challenges of multidisciplinary dialogue. The number of participants in a MOOC may run to thousands and that challenges the way how web-based interaction succeeds in assignments related to lectures. Several universities worldwide offer MOOCs related to sustainable development issues as well, e.g. Copenhagen Business School launched its first MOOC on Social Entrepreneurship in September 2014 and more than 22.000 people signed up. The course was re-run already in April 2015.<sup>47</sup> From the case universities, e.g. Stockholm Resilience Centre offered fall

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<sup>44</sup> Reich 2014.

<sup>45</sup> <http://www.bath.ac.uk/study/moocs/>

<sup>46</sup> Haggard 2013.

<sup>47</sup> <https://www.coursera.org/course/socialentrepeneur>

2014 MOOC Planetary Boundaries and Human Opportunities: The Quest for Safe and Just Development on a Resilient Planet together with the Sustainable Development Solutions Network (SDSN) and it was re-run in September 2015.<sup>48</sup>

After completing a MOOC course, the student may get a verified certificate or Statement of Participation that may cost or be free of charge depending on the platform where the course is organized. At the moment, students may include earned MOOC certificates in their degree studies with varying degree but a trend towards granting credits might be evolving. Above mentioned Stockholm Resilience Centre for instance, mentions that while their course is not credit granting, they encourage students to work with their own institutions to explore the option of granting credit for online coursework.

Below in table 2. are some examples of MOOCs offered at the beginning of 2015.

Selection of MOOCs at the beginning of 2015			
The University of Bath	Make an Impact: Sustainability for Professionals	12.1.–16.2. 2015, 3 hours work/week	<a href="https://www.future-learn.com/courses/sustainability-for-professionals">https://www.future-learn.com/courses/sustainability-for-professionals</a> , Statement of Participation to purchase
The Lund University, IIIIEE – International Institute for Industrial Environmental Economics	Greening the Economy: Lessons from Scandinavia	19.1.–20.2. 2015, 5-8 hours work/week	<a href="https://www.coursera.org/course/greeningtheeconomy">https://www.coursera.org/course/greeningtheeconomy</a> verified certificate 49 dollars
The University of Edinburgh	Critical thinking in global challenges	19.1.–23.2. 2015, 1–2 hours work/week	Not a course on global challenges themselves; instead it uses the context of these thought-provoking challenges to practice critical thinking. <a href="https://www.coursera.org/course/critical-thinking">https://www.coursera.org/course/critical-thinking</a> verified certificate 49 dollars

**Table 2.** Selection of MOOCs which started in January 2015.

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<sup>48</sup> <https://www.sdsnedu.org/learn/planetary-boundaries-and-human-opportunities-fall-2014>;  
<https://www.sdsnedu.org/learn/planetary-boundaries-and-human-opportunities-september-2015>

The MOOC organized by the International Institute for Industrial Environmental Economics (IIIE) in the Lund University got positive feedback and a new course with some new materials and format improvements started already in September 2015 and will be relaunched again in January and February 2016. The same organizers have even created a new course Greening the Economy: Sustainable Cities that starts in January 2016. Richter et al. presented in the Global Cleaner Production and Sustainable Consumption conference 2015 their practical experience with the curriculum design, production and delivery of the MOOC Greening the Economy: Lessons from Scandinavia and analysed how the combination of different learning methods succeeded in a course with about 20 000 participants all over the world.<sup>49</sup>

### Student-led courses

Students' active role in teaching related to sustainable development issues creates quite an unique example in Uppsala in Sweden. Centre for Environment and Development Studies, CEMUS, was created in 1995 as a joint centre between Uppsala University and the Swedish University of Agricultural Sciences in Uppsala and it is a student initiated and student-run university centre. Today it is a part of the Uppsala Center for Sustainable Development, CSD Uppsala.<sup>50</sup>

Student-led initiative has proved to be fruitful and CEMUS has given dozens of courses during over 20 years of activities. The teaching language has been English already many years since exchange students are eager to participate in the courses. It is said that CEMUS has affected the way how teaching and learning are carried out in Uppsala.<sup>51</sup> Students are employed by CEMUS as course coordinators. They plan, run, and evaluate university courses at the undergraduate and graduate level. The syllabus and learning outcomes are developed and solidified through a collaborative process involving students and university staff. At the moment, e.g. the following courses include in the course offerings:<sup>52</sup>

- Hållbar utveckling B (Sustainable development) 30 cr
- Hållbar utveckling (Sustainable development) 15 cr
- Livsfilosofi och det moderna samhället (Philosophy of live and the modern society) 7,5 cr

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<sup>49</sup> The information is gathered from the official page for Greening the Economy - A Massive Open Online Course (MOOC) at Lund University in Sweden <https://www.facebook.com/iiieemooc> and the course page in the Coursera <https://www.coursera.org/learn/greening-the-economy/>; Richter et al. 2015.

<sup>50</sup> The Baltic University Programme (BUP), a university collaboration based in sustainable development is also a part of CSD Uppsala. Student driven education at CEMUS: [http://www.cemus.uu.se/dokument/sustainable\\_dev\\_uppsala.pdf](http://www.cemus.uu.se/dokument/sustainable_dev_uppsala.pdf)

<sup>51</sup> Hald 2011.

<sup>52</sup> CEMUS education see <http://www.csduppsala.uu.se/education/>

- Applied Sustainability Science 30 cr
- Actors and Strategies for Change – Towards Global Sustainable 7,5 cr
- Sustainable Design 7,5 cr
- Climate Change Leadership 15 cr
- Sustainable Development Project Management and Communication 15 cr

## Research Centres and Institutes

According to the benchmarking process versatile study programmes and research centres often go hand in hand. Research feeds teaching and vice versa. Active research institutes give food for thought to students in many ways as they organize seminars and international conferences and publish their scientific results in journals. Research institutes invite visiting scholars and students become acquainted with research projects with international partners. Part of the research centres and institutes have an active role in education and offering study courses and part of them act more like a hub of information and contacts and concentrate on research. They may offer scientific support for students in the phase of writing the thesis or PhD dissertation. In Stockholm University for example, the courses of Master's Programme Social-Ecological Resilience for Sustainable Development are firmly embedded in the research of Stockholm Resilience Centre. Theses are mainly incorporated in on-going research projects and are all related to one of the research themes at the Stockholm Resilience Centre. Graduates are encouraged to publish their research in the peer reviewed journals.<sup>53</sup>

There are other forms of research networks as well which promote the visibility of expertise related to sustainable development issues. For instance sustainable environments and societies are one of the Plymouth University's priority subject areas for research and university has compiled together into one web page its eight research centres addressing sustainability questions from different perspectives.<sup>54</sup> Plymouth has much sustainability research expertise and another web page gathers together more centres and gives an overview of the variety of university staffs' and students' activities related to sustainability.<sup>55</sup>

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<sup>53</sup> Stockholm Resilience Centre. <http://www.stockholmresilience.org/21/education.html>

<sup>54</sup> Plymouth University. Research themes: sustainable environments and societies: <http://www1.plymouth.ac.uk/research/ourresearch/themes/Pages/environment.aspx>

<sup>55</sup> Plymouth University. Research expertise: <http://www1.plymouth.ac.uk/research/issr/centres/Pages/default.aspx>

### 3. STUDY MODULES AND PROGRAMMES AT THE FINNISH LEVEL

In the following two chapters, some features of minor studies and Master's programmes in Finnish universities are presented.

#### Minor Study Modules

According to this benchmarking process study modules related to sustainable development, responsible business/CSR and environment have been increasing recently. At least ten universities offer some minor studies in this field.<sup>56</sup> Finnish universities and their study programme opportunities related to sustainable development and responsible business/CSR can be found in different portals and databases with varying success. Minor study modules gain less visibility but the case is the same with minors in the international context.

The information retrieval showed that instruction and research related to sustainable development can be scattered in different disciplines and research institutes and the fragmented pieces of information do not get as good visibility and coverage as separate minor and major studies or entities focused on sustainability. In the University of Oulu for example, there are individual courses in both masters and PhD-level related to sustainable development in several disciplines and in the spring 2015 Oulu Business School piloted a new course Globally Responsible Business.<sup>57</sup> In December 2014 there was a doctoral defense related to Education for Sustainable Development (ESD) in the Faculty of Education.<sup>58</sup> Additionally, The Martti Ahtisaari Institute's research activities focus on the challenges of sustainable and responsible business, as well as functioning of the global markets and economy as a whole. The Institute is part of the Oulu Innovation Alliance and it offers an international doctoral programme related to the research focus areas.<sup>59</sup> All this interesting information has to be picked up separately from the university's different web pages.

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<sup>56</sup> Numbers of the units offering teaching must not be taken exact as gaps may easily have been left in the information retrieval. However, the numbers give an overview of the scale of the teaching related to sustainable development minor study modules in Finnish universities in 2015.

<sup>57</sup> <http://www oulu.fi/blogs/node/29750>

<sup>58</sup> Villanen 2014.

<sup>59</sup> [http://www.maigbe.com/martti\\_ahtisaari\\_institute](http://www.maigbe.com/martti_ahtisaari_institute)

Minors included to this report are presented in Table 3.

University	Minor	Credits	To whom
Aalto University	The Creative Sustainability (CS)	15–25 ECTS	master's students in Aalto
Hanken School of Economics (Helsinki and Vaasa)	Corporate Responsibility (CR)	25 cr	all students + 25 stud. in U. of Helsinki
Lappeenranta University of Technology	Sustainability	approx. 24 ECTS	all degree programme students
Swedish School of Social Science	Minor in Environment	25 cr	all students, also in U. of Helsinki
UniPID network	Virtual Minor: Sustainability in Development	25 cr	students at member universities
University of Eastern Finland	Multidisciplinary studies in Environment	25 or 60cr	all students
University of Helsinki	Multidisciplinary minor in Environment (YMS)	25 cr	all students
University of Jyväskylä	Environment and Society	25-40 cr	all students
University of Lapland	Environmental Studies	25–60 ECTS cr	all students
University of Tampere, School of Management + open university	Responsible Business	15 ECTS	many student groups
University of Tampere + open university	The Sustainable Development Study Programme	25–35 ECTS	all students
University of Turku, School of Economics	Responsible Business	25 cr	all students
University of Turku	Sustainable Development Studies	25 cr	all students
University of Vaasa	Minor in Environment	26 cr	all students
Åbo Akademi University + open university	Environmental knowledge	25–60 cr	all students

**Table 3.** Minor studies related to sustainable development and environment or responsible business offered in Finnish universities 2015.



According to the titles of the minors three of them concentrate on responsible business perspective while the rest are named after sustainable development, sustainability or environment. Most minors include course options from different disciplines in order to give a versatile view of the issues related to sustainable development and environment. Distance learning opportunity is offered by UniPID-programme where it is possible to complete virtual minor in Sustainability in Development. In some cases (e.g. in the University of Turku and Åbo Akademi) students can include separate courses from UniPID virtual minor to their minor in the home university.

A distinctive pedagogic feature of some minors related to sustainable development, in the universities of Helsinki and Turku for instance, is that they include a joint introduction course with a group work. Project courses related to real-life cases are used in a few study modules in Responsible Business as well, e.g. in Hanken, the Aalto University and the University of Tampere. In the following, one example of such a course is given.

### University of Helsinki

Organizational Context	Study Module	Target Group	Form of Study
Helsinki University Centre for Environment (HENVI), minor in Environment	Mandatory course: Introduction to multidisciplinary environmental studies, 5 cr	Offered to students in the University of Helsinki.	An interdisciplinary course with lectures and a group work.

Helsinki University Centre for Environment (HENVI) organizes since 2006 Multidisciplinary minor in Environment (25 credits). It includes a mandatory course called Introduction to multidisciplinary environmental studies (5 credits) and elective courses which are chosen freely from a selection of study courses in different disciplines. However, students have to take courses equally from natural sciences and humanities and social sciences. The overall aim of the mandatory course is to introduce students to environmental studies and teaching personnel in different faculties. The Introduction course runs the fall semester. It consists of lectures, individual assignments and a group work that is done during the course. The groups are formed of students from different backgrounds so that students can practice interaction in a multidisciplinary environment and even get a touch of interdisciplinarity during the work. Students carry out multidisciplinary group works that deal with some phenomenon related to environment. A separate panel discussion addressed with one of the group themes is organized at the end of the course. The panel is open to a larger audience and it has some visiting experts. In the

course web page it is possible to see what kind of themes students have been addressing during recent years and read student evaluations of previous courses.<sup>60</sup>

## Master's Programmes

Most master's programmes included in this report concentrate on the connections of sustainable development and business. The Master's Degree Programme in Environmental Policy and Law in the University of Eastern Finland has two courses related straight to sustainable development issues: Sustainability and Natural Resources (5 cr) and Corporate Social Responsibility in Natural Resources Management (5 cr) but otherwise it consists of the advanced study of law and policy in relation to the environment, climate change and natural resources. Master of Science in Technology programmes, except the joint programme in Creative Sustainability in the Aalto University, are not included in this report as the information retrieval concentrated more on programmes in other faculties than technology or engineering. It is acknowledged that studies on environmental engineering for instance often have sustainable development issues among their core learning targets and it would be useful to go through them as well.<sup>61</sup>

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<sup>60</sup> Cantell et al. 2009; <http://www.helsinki.fi/henvi/opetus/johdantokurssi.htm>

<sup>61</sup> See e.g. Study Guide of Lappeenranta University of Technology <https://uni.lut.fi/en/web/lut.fi-eng/study-guides9> or the Tampere University of Technology, Department of Chemistry and Bioengineering. <http://www.tut.fi/en/about-tut/departments/chemistry-and-bioengineering/index.htm>

University	Master's Programme	Students
Aalto University: Schools of Business, and Arts, Design and Architecture, and Engineering	Master's Programme in Creative Sustainability (CS), 120 ECTS	varies, 2014 8 2015 16
Lappeenranta University of Technology	Master's Programme in Strategy, Innovation and Sustainability (MSIS), 120 ECTS  *+ graduate students of the School of Business who choose programme for their Master studies	20 *
University of Jyväskylä, School of Business and Economics	Master's Degree Programme in Corporate Environmental Management (CEM), 120 ECTS	20–25
University of Tampere, School of Management	Master's Programme in Business Studies – Specialization Responsible Business, 120 ECTS	10
Hanken School of Economics	Master's Programme in Business Management with the specialization track in International Strategy and Sustainability, 120 ECTS	10–15
Aalto University, Department of Management Studies	Master's Programme in Management and International Business (M&IB), specialization in Sustainability Management, 120 ECTS	varies, 2014 29 2015 40
University of Eastern Finland	Master's Degree Programme in Environmental Policy and Law, 120 ECTS	20

Table 4. Master's programmes related to sustainable development or responsible business/CSR in Finnish universities in 2015.

Discussion about the meaning and role of MOOCs is under way also in Finnish Universities. Although the contents of MOOCs are reviewed often very general in character it is suggested that they might function as introductory courses to different fields of interest.<sup>62</sup> In the Master's Programme in Strategy, Innovation and Sustainability (MSIS) in the Lappeenranta University of Technology students may include MOOCs in the MSIS degree, but they must be agreed beforehand with the Academic Director by submitting an informal application letter. The maximum of 12 ECTS of MOOCs can be accepted in the degree. These courses can be located to replace elective courses in core studies (strategy, innovation or sustainability).<sup>63</sup>

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<sup>62</sup> Törmänen 2014.

<sup>63</sup> Lappeenranta University of Technology Study guide 2014-2015, page 259: <https://uni.lut.fi/en/web/lut.fi-eng/study-guides9>

Encouraging students to keep track of ongoing research can be put into practice by inviting them to participate in seminars and conferences, inviting guest speakers and visiting lecturers and by organizing special courses. One example is Cases in Organizational Ethics -course that was a joint course of BI Norwegian Business School, Estonian Business School, the Kaunas University of Technology, the Riga International School of Economics and Business Administration, the University of Jyväskylä, the University of Tampere, and the Vilnius University. The master students in business or economics could enroll to this course that was a practical result of a joint project financed by Nordplus Higher Education. The aim was to create and coordinate an intensive course for the Master students of business and economics that stimulate them to act in a morally responsible way and deepen their knowledge and skills how to create organizations which contribute to sustainable development. The project partners took problem-based learning and specifically case studies as the basic teaching method tackling environmental and ethical issues in the Nordic-Baltic context and applied it in the course that was kept in one of the partner universities in turn. Students from Master's Programmes both in Tampere and Jyväskylä had the possibility to enroll this course. According to the evaluation of implemented courses students have valued the course especially because it included real-life cases and exercises. The course also offered a natural starting point for a dialogue in an international context.<sup>64</sup>

The International Master's Degree Programme in Corporate Environmental Management in the University of Jyväskylä is shortly described here as an example of the development of Master's studies on corporate social responsibility in Finland.

### **The School of Business and Economics of the University of Jyväskylä**

Organizational Context	Master Degree	History	Interdisciplinary character
The School of Business and Economics of the University of Jyväskylä, The Corporate Environmental Management (CEM)	International Master's Degree Programme in Corporate Environmental Management	Has its origins at the beginning of 1990's	Interdisciplinary is emphasized and some compulsory basic studies on environmental science are included

The School of Business and Economics of the University of Jyväskylä was the first university in the Nordic region to offer a complete Master's and doctoral programme in Corporate Environmental

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<sup>64</sup> Puc̃ e' taite' 2012; See also Development of Moral Competence in Leadership and Management (DECOM) project: <https://www.jyu.fi/jsbe/en/research/groups/leadership/ethos/projects>.

Management. International Master's Degree Programme in Corporate Environmental Management has its origins already at the beginning of 1990's when environmental issues started to emerge in both research and teaching at the School of Business and Economics. In 1995 a new master's programme dedicated to environmental issues was launched. The programme got a new name Corporate Environmental Management in 2001. The focus of the orientation toward environmental sustainability issues in organizational and business context is stressed meanwhile integration with the other two dimensions of corporate social responsibility is also implemented into the curriculum.<sup>65</sup>

The structure of the teaching stems from the early start in 1990's and the curriculum stresses understanding at three levels: 1. identifying environmental impacts of organizations and products 2. managing environmental impacts, that is to improve the environmental performance of the company and 3. creating eco-competitiveness through excellence in the previous levels.<sup>66</sup> Interdisciplinarity is considered important because environmental issues are interdisciplinary by character and they do not respect the traditional boundaries of disciplines. It is taken for essential that the students of environmental management have basic knowledge of physical environmental impacts and there is a vivid cooperation with the Department of Environmental Sciences. All students make some compulsory basic studies on environmental science and technology.

The Corporate Environmental Management (CEM) in the School of Business and Economics has as a central pedagogic principle to value continuing dialogue between theory and practice during the entire learning process and to encourage social interaction between the students and the teachers. Emphasis is also put on the active connection to the scientific research done within the discipline. Current research interest includes: material flow management, sustainable production and consumption, sustainability strategies and marketing, environmental values and cultures, and strategies and business concepts for sustainable energy solutions.<sup>67</sup>

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<sup>65</sup> Pesonen 2003.

<sup>66</sup> Pesonen 2003, 166.

<sup>67</sup> Pesonen 2003, 168; <https://www.jyu.fi/jsbe/en/cem>

## 4. DISCUSSION

The purpose of this report was to achieve comprehension whether Sustainable Development Studies in the University of Turku has unique characteristics and what might be the most interesting lines of development in the future. Based on the benchmarking process some general observations were made. In many ways, these remarks are intertwined together even though they are here described separately.

1. Discussion about the contents of sustainable development, sustainability and responsibility
2. Importance of the visibility of the offerings of teaching and research
3. The role of interdisciplinarity, interaction and cooperation with stakeholders in teaching
4. The role of Education for Sustainable Development (ESD) and PRME in universities

### Discussion of the Contents of Sustainable Development, Sustainability and Responsible Business

There are a growing number of study modules worldwide, both in the undergraduate and the post-graduate level as well in the PhD-level that concentrate on issues of sustainable development and responsible business. The meaning and contents of these concepts are discussed at every turn and different perspectives are emphasized.<sup>68</sup>

The questions related to sustainable development require to be studied from different viewpoints and disciplines and therefore multidisciplinary and interdisciplinary research and education are seen important. Benchmarking also showed that issues related to sustainable development attract the new openings and new fields of research to emerge. Industrial ecology is one example that was described in the report. Different aspects of innovation are in many occasions combined with sustainability, for example the Aalto University, the Copenhagen Business School, the University of Graz and the Nottingham University Business School have education in this field.

The notion that sustainable development is development which meets the needs of the present without compromising the ability of future generations to meet their own needs includes the perspective of the future and many study modules and courses bring this forth in their study objectives at the general level. It would be another task to figure out how much actual futures research methods are

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<sup>68</sup> e.g. O'Byrne et al. 2015.

taught and used in the courses. The student led courses and initiatives occasionally integrate futures thinking and perspective in their course and event offerings.<sup>69</sup>

Some universities that offer Master's programmes on sustainable development have specific key concepts that they focus on throughout the studies. In the Stockholm University Master's Programme concentrates on the notion of social-ecological resilience for example. In Blekinge Institute of Technology the students concentrate on the Framework for Strategic Sustainable Development (FSSD) that is a research based generic framework for planning in complex systems, focus either on research or more practical orientation.<sup>70</sup> The research perspective of humanities is expressed e.g. in the research of the Centre for Development and the Environment (SUM), that organizes the Master's Programme Development, Environment and Cultural Change (DEC) in Norway.<sup>71</sup> It seems, however, that cultural sustainability is an area that would deserve more explicit attention in majors and minors. That might be a study area that could be highlighted more in the context of sustainable development studies in the University of Turku as the cultural dimension is one part of the study course KEKO1.<sup>72</sup>

Godemann et al. note that some business schools have first integrated sustainability issues to their MBA programmes, and rankings such as the Aspen Institute Ranking which evaluates the integration of sustainability into the MBA programmes may have influenced on this trend. According to Godemann et al. this may lead to an increase in the integration of sustainability issues into BA/BSc, MA/MSc and PhD programmes in the near future.<sup>73</sup> Rasche et al., however, point out that there is much to do also in the field of MBA programmes. As a result of research based on data from the Beyond Grey Pinstripes survey they conclude that even though elective courses on business ethics have increased more effort should be put on getting business ethics integrated into all disciplines.<sup>74</sup>

There are discussions what are the differences between the notions of sustainable development, sustainability and sustainability science.<sup>75</sup> According to O'Byrne et al., there should be even more

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<sup>69</sup> E.g. In teaching of CEMUS or in the activities of an international non-profit student-driven organization on sustainable economics and management, oikos, that launched in 2011 the oikos FutureLab as its new annual flagship event to convene student members from all chapters together with alumni, faculty, advisors, and partners and share perspectives on the future. See e.g. CEMUS Sustainable Development a Course. Why sustainability needs fiction. Imagination, Future Worlds, Design Fiction, and Diegetic Prototypes. <http://cemusstudent.se/wp-content/uploads/2012/02/141210-Lakin-Anderson-Why-Sustainability-Needs-Fiction.pdf>; Oikos FutureLab: <http://oikos-international.org/programmes/conferences/futurelab/>

<sup>70</sup> <http://www.bth.se/ste/tmslm.nsf/pages/Of88849955f94f01c1257dac002e10cf?OpenDocument>

<sup>71</sup> <http://www.sum.uio.no/english/research/>

<sup>72</sup> About the study structure see: <http://www.utu.fi/fi/sivustot/kestava-kehitys-ja-vastuullinen-liiketoiminta/Sivut/home.aspx>

<sup>73</sup> Godemann et al. 2011, 41.

<sup>74</sup> Rasche et al. 2013, 83.

<sup>75</sup> E.g. Komiyama & Takeuchi 2006.

discussion about what the new emerging field called sustainability science should include, in order to achieve more understanding in common to the content of sustainability science studies.<sup>76</sup> Some universities have started to use the term sustainability science, e.g. the Leuphana University, the Lund University and the Tokyo University. It is interesting to notice that at the beginning of 2015 when this report was being written the University of Helsinki opened a new position of a Sustainability Science Fellow who “will be working within a context of sustainability science, an emerging field that facilitates the design and implementation of sustainability through a critical framework.”<sup>77</sup>

New initiatives of collaboration arises round the education and research related with sustainability. One of the recent examples is the Joint Center for Global Sustainability and Cultural Transformation (CGSC) that is established by Leuphana University of Lüneburg (LUL) and Arizona State University (ASU). Their aim in common is to pursue excellence in sustainability research and education and they will develop further their joint transdisciplinary learning environment the Global Classroom and a new joint Master’s programme Global Sustainability Science.<sup>78</sup> In order to strengthen the cooperation between those universities that give sustainability degree education even a Network of Programs in Transformational Sustainability (NEPS) has been established in 2015 and its partners are at the moment from Europe (Maastricht University, Lund University, UPC Barcelona, Leuphana University of Lüneburg), Asia (Tokyo University), Africa (Stellenbosch University) and North America (Arizona State University).<sup>79</sup>

## Importance of the Visibility of the Offerings of Teaching and Research

In the era of overwhelming information parade it is a challenge to get coverage and stand out from the rest in order to get the best students and funding. Universities are in such a competitive situation that they use all possible arguments for marketing their study programmes. Ranking lists, accreditations and awards are all carefully mentioned in the web pages worldwide and annual reports describe

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<sup>76</sup> O’Byrne et al. 2015.

<sup>77</sup> [http://www.helsinki.fi/henvi/news/150109\\_sustainabilityScienceFellow.html](http://www.helsinki.fi/henvi/news/150109_sustainabilityScienceFellow.html)

<sup>78</sup> <https://global.asu.edu/center-global-sustainability-and-cultural-transformation>; <http://www.leuphana.de/zentren/cgsc.html>; <http://www.leuphana.de/graduate-school/master/studienangebot/global-sustainability-science.html>

<sup>79</sup> <https://global.asu.edu/center-global-sustainability-and-cultural-transformation>; <http://www.leuphana.de/zentren/cgsc.html>; <http://www.leuphana.de/graduate-school/master/studienangebot/global-sustainability-science.html>



in words, numbers and, figures the activities of schools, departments and institutes. The use of social media and short videos in the universities' web pages is common.<sup>80</sup>

International case examples include several research centres and institutes of varied size. Many of them coordinate or take part into teaching besides research activities. Examples can be found also in Finland. The RESPMAN Research Group in the University of Tampere for instance, organizes and gives the teaching of responsible business.<sup>81</sup> In Joensuu the Institute for Natural Resources, Environment and Society (LYY), a network organization based at the University of Eastern Finland (UEF), combines the social and cultural research expertise for application in the analysis of the environment and natural resource uses in several faculties and shares information about seminars and other activities through its web pages.<sup>82</sup> The Arctic Centre in the University of Lapland is specialized in the Arctic region multidisciplinary research and education, and sustainable development issues are among its expertise areas.<sup>83</sup>

The decision of the Sustainable Development Studies in the University of Turku in the fall of 2014 to launch an informal and interactive umbrella seminar for researchers and teachers interested in topics related to sustainable development and corporate responsibility is a step forward from the perspective of visibility. The information about seminar gatherings is given in the web page bulletin of the University of Turku and so acts for the visibility of research activities related to sustainable development and corporate responsibility even outside the academia. The high relevance of publicity of research seminars can be seen in other universities as well, the Helsinki University Centre for Environment (Henvi) for example informs actively about its research and teaching in the public web pages and aims to develop as a Sustainability Science Centre in coming years. Henvi offers the minor subject, Environmental multidisciplinary studies, that resemble the Sustainable Development Studies in the University of Turku, and also Doctoral programme in interdisciplinary environmental sciences (DENVI).<sup>84</sup>

Visibility can be viewed from yet another angle, namely the working life relevance of the studies. Working life relevance is highly topical in all education in universities at the moment, and in the web pages that describe the study programmes the working life relevance of the studies is described in

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<sup>80</sup> E.g. Annual report of Centre for Research into Sustainability (CRIS). <https://www.royalholloway.ac.uk/Management/Cris/documents/CRIS-Annual-Report-2013-14.pdf> and an example of communicating rankings in the same university: <https://www.royalholloway.ac.uk/management/aboutus/whymanagement.aspx>

<sup>81</sup> <http://www.uta.fi/jkk/en/research/themes/respman/introduction.html>

<sup>82</sup> <http://www2.uef.fi/en/lyy/about-us>

<sup>83</sup> <http://www.arcticcentre.org/EN/ABOUT-US>

<sup>84</sup> <http://www.helsinki.fi/henvi/>; <http://www.helsinki.fi/henvi/denvi/index.html>

detail.<sup>85</sup> Studies of Sustainable development are seen as relevant for the future working life both among the students and employers.<sup>86</sup> From this point of view it is of importance to mediate the content of studies, whether it is minor or major, in such a way that employers for instance can easily access the information about the study structure even outside the university.

## **The Role of Interdisciplinarity, Interaction and Cooperation with Stakeholders in Teaching**

There are case examples in the material where students have an active role in the implementation of the course. In Finland the Helsinki University Centre for Environment (Henvi) offered in 2015 for the first time Master's degree students an opportunity to join a multidisciplinary team to plan a course Sustainable development in teaching. Students are also in charge of the teaching in the course.<sup>87</sup> This resembles student led course offerings in CEMUS in Uppsala.

Cooperation and dialogue between students and teaching staff (and possibly stakeholders outside the university) strengthens the learning process and may produce interesting and high-quality results. Study modules with interdisciplinary team work include in several study programmes. The aim is to instruct dialogue and encourage for cooperation between disciplines in teams. The learning objectives are twofold: learn to apply suitable methods for solving problems related to issues of sustainability and to do that in an interdisciplinary team context. The goal is to find a balance between theory and practicality as the problems of sustainable development are complex and solutions demand integrative in-depth knowledge from many perspectives. As a result of the team work students produce a scientific paper, a research report or a research grant proposal for example.

The studies of sustainable development draw multidisciplinary and interactive learning methods. The Master's Programme Sustainability Science and Policy (SSP) organized by the International Center for Integrated Assessment and Sustainable development (ICIS) in the Maastricht University for instance describes that problem based learning is used as an educational format throughout the studies and it is one example of how the learning methods are gradually gaining more attention in the study programme descriptions.<sup>88</sup> Multi- and interdisciplinary cooperation is put forward through new

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<sup>85</sup> Ryan 2011; National Co-ordinating Centre for Public Engagement 2014; e.g. <http://www.nottingham.ac.uk/business/programmes/msc/index.aspx>

<sup>86</sup> See e.g. Undén & Forshufvud 2010; Pesonen 2003.

<sup>87</sup> [http://www.helsinki.fi/henvi/uutiset/150924\\_keke\\_opetuksessa\\_kurssi.html](http://www.helsinki.fi/henvi/uutiset/150924_keke_opetuksessa_kurssi.html); <https://kekeop.wordpress.com/>

<sup>88</sup> <http://www.maastrichtuniversity.nl/web/Schools/ICIS/TargetGroup/MScSustainabilityScienceAndPolicy/SustainabilityScienceAndPolicy.htm>

combinations of disciplines in joint Master programmes. One example is The Erasmus Mundus Joint Master Degree programme in Pervasive Computing and Communications for Sustainable Development (PERCCOM) which combines advanced Information and Communication Technologies (ICT) with environmental awareness and sustainability, and organizes teaching in different universities and private companies during four semesters.<sup>89</sup>

The observation that one has to join forces in order to be able to solve the wicked problems in the society encourages transdisciplinary cooperation with organizations outside the academia. Transdisciplinary efforts are put into practice in different ways, in May 2015 in the Rotterdam University established the Wicked Problems Plaza being one example.<sup>90</sup>

It is suggested that new learning and teaching methods, e.g. the student led courses and different forms of virtual learning, are challenging the traditional way to carry out higher education in universities.<sup>91</sup> The benchmarking process gives some support to these trends as it showed the growing flexibility of studies and the expanding amount of online learning possibilities in the explored universities. The complex character of sustainable development issues calls for active participation and discussion between representatives of different disciplines. This kind of active participation is modelled in distant online courses through virtual group discussion. In MOOCs like Greening the Economy: Lessons from Scandinavia (organized by the IIIIEE in Lund) there can be thousands of students discussing the challenges of sustainability in different societies. At the same time, however, in many study modules and Master's programmes the intensive interdisciplinary face to face interaction and problem solving in the campus area is mentioned to be the strength of the studies.

## The Role of Education for Sustainable Development (ESD) and PRME in Universities

Themes of sustainable development and responsible business/CSR have got more attention in many universities during recent years. It has been noticed that students show increasing enthusiasm toward sustainability issues and the complex challenges that present-day societies face demand new solutions and interdisciplinary mindset.<sup>92</sup> The question at the moment seems to be whether the sustainability and CSR should be integrated into curricula at all levels and disciplines or whether to develop

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<sup>89</sup> <http://perccom.blog.univ-lorraine.fr/>

<sup>90</sup> <http://www.rsm.nl/about-rsm/news/detail/4819-centre-for-resolving-wicked-problems-opens-in-the-hague/>

<sup>91</sup> Johnson et al. 2014; Bisoux 2014.

<sup>92</sup> E.g. Hanken School of Economics 2014, 9; Jones Christensen et al. 2007.

separate study programmes.<sup>93</sup> The UN related activities like Education for Sustainable Development (ESD)<sup>94</sup> and the PRME initiative<sup>95</sup> aim to promote the gradual integration aspect. Some case universities have actively adopted this line of the procedure in their common strategies. Gothenburg University for instance, adds a certain sustainability label to all courses that with varying degrees include the elements of sustainable development in their curriculum and so helps students to seek and find that type of courses.<sup>96</sup> Gothenburg University Library also offers a Toolbox in Education for Sustainable Development (ESD). It is meant as an aid to educational planners and teachers at the University of Gothenburg in the process of integrating sustainable development in teaching.<sup>97</sup> Also in the University of Plymouth and Leuphana University Lüneburg sustainability integration in education and research is among the core issues in the development strategies.<sup>98</sup>

The ideas of ESD and Green Campus are developed in universities in Finland as well. Lappeenranta University of Technology (LUT) for instance has included sustainability at the core of the university's strategy and its endeavors have been awarded with environmental certification in accordance with the ISO 14001 standard. LUT is the first university in Finland where the environmental system covers

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<sup>93</sup> In some case universities, both ways are used: e.g. all undergraduate students in Nottingham University Business School participate the core course Business Ethics in their third year of studies and there are two Master's programmes and one MBA related to CSR available as well.

<sup>94</sup> E.g. Ryan 2011.

<sup>95</sup> Launched in 2007 the Principles for Responsible Management Education (PRME) initiative provides an engagement structure for academic institutions to advance social responsibility through incorporating internationally accepted values into curricula and research gradually. The PRME is the first organized relationship between the United Nations and business schools. So far Aalto University, School of Business; Hanken School of Economics; HAAGA-HELIA University of Applied Sciences, JAMK University of Applied Sciences, Lappeenranta University of Technology and Turku School of Economics from Finland have joined the initiative. Altogether over 500 business schools and management-related academic institutions from over 80 countries across the world are signatories to the PRME. <http://www.unprme.org/about-prme/index.php>. See also Godemann et al. 2014.

<sup>96</sup> For Sustainability Labeling in University of Gothenburg see: <http://utbildning.gu.se/kurser/hallbarutveckling>

<sup>97</sup> The Toolbox includes a wealth of material from various sources like scientific literature, reports, links of institutions and NGOs with different initiatives and films related to sustainable development issues. Gothenburg University Library. <http://libguides.ub.gu.se/ESDverktyg>

<sup>98</sup> Plymouth University pioneered in 1973 one of the UK's earliest interdisciplinary programmes in environmental sciences. In 2005 the UK government funded the establishment of a national Centre of Excellence called the Centre for Sustainable Futures (CSF) in Plymouth University. The CSF leads the university's ongoing commitment to embed environmental, sustainability and ethical education across the subject spectrum, with the result that some 49% of all programmes reflect sustainability principles. <https://www.plymouth.ac.uk/your-university/sustainability/sustainability-education>

the operations of the institution as a whole: research, teaching, social interaction and support functions. The Green Campus project of LUT was awarded in the International Sustainable Campus Network competition as the best campus in Excellence in Campus category in 2013.<sup>99</sup>

Projects related to Education for Sustainable Development (ESD) work actively for the implementation of sustainability issues at different levels in the universities and they produce reports of the achievements and challenges. Recent project reports for instance study the development of Education for Sustainable Development in Nordic countries and highlight good practices in the European Higher Education Institutions.<sup>100</sup>

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<sup>99</sup> [http://www.lut.fi/web/en/news/-/asset\\_publisher/IGh4SAywhcPu/content/id/355865;](http://www.lut.fi/web/en/news/-/asset_publisher/IGh4SAywhcPu/content/id/355865)  
[http://www.lut.fi/web/en/green-campus?utm\\_source=frontpage-big-banners&utm\\_medium=banner&utm\\_content=green-campus&utm\\_campaign=internal-links-en](http://www.lut.fi/web/en/green-campus?utm_source=frontpage-big-banners&utm_medium=banner&utm_content=green-campus&utm_campaign=internal-links-en)

<sup>100</sup> Karvinen et al. 2015; UESD 2015.

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## Internet links in footnotes according to the university

Anglia Ruskin University

<http://www.anglia.ac.uk/entrepreneurial-university>

<http://www.anglia.ac.uk/global-sustainability-institute-gsi>

Arizona State University

<https://global.asu.edu/center-global-sustainability-and-cultural-transformation>

Blekinge Institute of Technology

<http://www.bth.se/ste/tmslm.nsf/pages/0f88849955f94f01c1257dac002e10cf?OpenDocument>

Bournemouth University

<http://courses.bournemouth.ac.uk/courses/postgraduate-degree/green-economy/none/3126/>

Copenhagen Business School

<https://www.coursera.org/course/socialentrepreneur>

Erasmus Mundus Master's programme MIND, University of Graz as co-ordinator

<http://www.emmind.eu/>

Joint International Master in Sustainable Development, University of Graz as co-ordinator

<http://www.jointdegree.eu/sd/>

#### Lappeenranta University of Technology

<https://uni.lut.fi/en/web/lut.fi-eng/study-guides9>

<http://perccom.blog.univ-lorraine.fr/>

[http://www.lut.fi/web/en/news/-/asset\\_publisher/lGh4SAywhcPu/content/id/355865](http://www.lut.fi/web/en/news/-/asset_publisher/lGh4SAywhcPu/content/id/355865)

[http://www.lut.fi/web/en/green-campus?utm\\_source=frontpage-big-banners&utm\\_medium=banner&utm\\_content=green-campus&utm\\_campaign=internal-links-en](http://www.lut.fi/web/en/green-campus?utm_source=frontpage-big-banners&utm_medium=banner&utm_content=green-campus&utm_campaign=internal-links-en)

#### Leiden University

<http://www.cml.leiden.edu/education/master/industrial/about-master-ie.html>

[http://www.cml.leiden.edu/education/minor/minor\\_overview.html](http://www.cml.leiden.edu/education/minor/minor_overview.html)

<http://media.leidenuniv.nl/legacy/schedule-course-big-issues-new-answers-cml.pdf>

[https://studiegids.leidenuniv.nl/en/courses/show/46935/Duurzame\\_ontwikkeling\\_tp](https://studiegids.leidenuniv.nl/en/courses/show/46935/Duurzame_ontwikkeling_tp)

[https://studiegids.leidenuniv.nl/courses/show/46937/Projectgroep\\_Ontwerp\\_van\\_Europees\\_Onderzoek](https://studiegids.leidenuniv.nl/courses/show/46937/Projectgroep_Ontwerp_van_Europees_Onderzoek)

[https://studiegids.leidenuniv.nl/courses/show/46939/Area\\_study\\_sustainability](https://studiegids.leidenuniv.nl/courses/show/46939/Area_study_sustainability)

<https://www.facebook.com/pages/Watercourse-Philippines/312676025504087>

[https://studiegids.leidenuniv.nl/en/courses/show/45903/Fieldschool\\_Water\\_Management\\_in\\_the\\_Philippines\\_Winter](https://studiegids.leidenuniv.nl/en/courses/show/45903/Fieldschool_Water_Management_in_the_Philippines_Winter)

#### Leuphana University Lüneburg

<http://www.leuphana.de/en/graduate-school/master/course-offerings/sustainability-science.html>

<http://www.leuphana.de/en/college/first-semester.html>

<http://www.leuphana.de/college/studienstart/konferenzwoche.html>

<http://www.leuphana.de/zentren/cgsc.html>

<http://www.leuphana.de/graduate-school/master/studienangebot/global-sustainability-science.html>

<http://www.leuphana.de/zentren/cgsc.html>

#### Lund University

<https://www.facebook.com/iiieemooc>

<https://www.coursera.org/learn/greening-the-economy/>

#### Maastricht University

<http://www.maastrichtuniversity.nl/web/Schools/ICIS/TargetGroup/MScSustainabilityScience-AndPolicy/SustainabilityScienceAndPolicy.htm>

#### Nottingham University Business School

<http://www.nottingham.ac.uk/business/ICCSR/teaching.php>

<http://www.nottingham.ac.uk/business/programmes/msc/index.aspx>

#### Oikos

<http://oikos-international.org/programmes/conferences/futurelab/>

#### Plymouth University

<http://www1.plymouth.ac.uk/research/ourresearch/themes/Pages/environment.aspx>

<http://www1.plymouth.ac.uk/research/issr/centres/Pages/default.aspx>

<https://www.plymouth.ac.uk/your-university/sustainability/sustainability-education>

#### Rotterdam School of Management

<http://www.rsm.nl/master/msc-programmes/msc-global-business-sustainability/overview/>

<http://www.rsm.nl/about-rsm/news/detail/4819-centre-for-resolving-wicked-problems-opens-in-the-hague/>

Royal Holloway, University of London

<https://www.royalholloway.ac.uk/Management/Cris/documents/CRIS-Annual-Report-2013-14.pdf>

<https://www.royalholloway.ac.uk/management/aboutus/whymanagement.aspx>

Stockholm University

<https://www.sdsnedu.org/learn/planetary-boundaries-and-human-opportunities-fall-2014>

<https://www.sdsnedu.org/learn/planetary-boundaries-and-human-opportunities-september-2015>

<http://www.stockholmresilience.org/21/education.html>

Tampere University of Technology

<http://www.tut.fi/en/about-tut/departments/chemistry-and-bioengineering/index.htm>

<https://uni.lut.fi/en/web/lut.fi-eng/study-guides9>

Technische Universität Kaiserslautern

<http://www.zfuw.uni-kl.de/en/distance-learning-courses/management-law/sustainable-development-cooperation/>

University of Bath

<http://www.bath.ac.uk/study/moocs/>

University of Eastern Finland

<http://www2.uef.fi/en/lyy/about-us>

University of Edinburgh

<http://www.ed.ac.uk/studying/postgraduate/degree-guide/online-learning/programmes>

University of Exeter

<http://admin.exeter.ac.uk/academic/tls/tqa/Part%2013/13CQF.pdf>

<http://www.exeter.ac.uk/postgraduate/degrees/distance/>

University of Gothenburg

<http://gmv.gu.se/samverkan/samverkan-inom-utbildning/fallstudiekurs-i-hallbar-utveckling>

[http://gmv.gu.se/digitalAssets/1447/1447740\\_rapport\\_fallst\\_2012\\_hisingen\\_2050\\_12-05-26.pdf](http://gmv.gu.se/digitalAssets/1447/1447740_rapport_fallst_2012_hisingen_2050_12-05-26.pdf)

<http://utbildning.gu.se/kurser/hitta-kursplan/kursplan/?courseId=ES2415>

<http://utbildning.gu.se/kurser/hallbarutveckling>

<http://libguides.ub.gu.se/ESDverktyg>

University of Helsinki

<http://www.helsinki.fi/henvi/opetus/johdantokurssi.htm>

[http://www.helsinki.fi/henvi/news/150109\\_sustainabilityScienceFellow.html](http://www.helsinki.fi/henvi/news/150109_sustainabilityScienceFellow.html)

<http://www.helsinki.fi/henvi/denvi/index.html>

[http://www.helsinki.fi/henvi/uutiset/150924\\_keke\\_opetuksessa\\_kurssi.html](http://www.helsinki.fi/henvi/uutiset/150924_keke_opetuksessa_kurssi.html)

<https://kekeop.wordpress.com/>

University of Jyväskylä

<https://www.jyu.fi/jsbe/en/cem>

<https://www.jyu.fi/jsbe/en/research/groups/leadership/ethos/projects>

University of Lapland  
<http://www.arcticcentre.org/EN/ABOUT-US>

University of Oslo  
<http://www.uio.no/english/studies/programmes/ces-master/>  
<http://www.sum.uio.no/english/research/>

University of Oulu  
<http://www.oulu.fi/blogs/node/29750>  
[http://www.maigbe.com/martti\\_ahtisaari\\_institute](http://www.maigbe.com/martti_ahtisaari_institute)

University of Tampere  
<http://www.uta.fi/jkk/en/research/themes/respman/introduction.html>

University of Turku  
<http://www.utu.fi/fi/sivustot/kestava-kehitys-ja-vastuullinen-liiketoiminta/Sivut/home.aspx>

University of Uppsala, Uppsala Center for Sustainable Development, CSD Uppsala  
[http://www.cemus.uu.se/dokument/sustainable\\_dev\\_uppsala.pdf](http://www.cemus.uu.se/dokument/sustainable_dev_uppsala.pdf)  
<http://www.csduppsala.uu.se/education/>  
<http://cemusstudent.se/wp-content/uploads/2012/02/141210-Lakin-Anderson-Why-Sustainability-Needs-Fiction.pdf>

## **International Networks related to Education and Research of Sustainable Development and Responsible Business/Corporate Social Responsibility:**

AASHE Association for the Advancement of Sustainability in Higher Education  
<http://www.aashe.org/>

ABIS The Academy of Business in Society  
<http://www.abis-global.org/>

The Aspen Institute Centre for Business Education. Beyond Grey Pinstripes – an Aspen CBE Initiative.  
<http://www.beyondgreypinstripes.org/content/corporate-environmental-strategy-and-marketing>

BUP The Baltic University Programme  
<http://www.balticuniv.uu.se/>

COPERNICUS Alliance – European Network on Higher Education for Sustainable Development  
<http://www.copernicus-alliance.org/>

GRLI Globally Responsible Leadership Initiative  
<http://www.grli.org/>

HESD The Higher Education for Sustainable Development  
<http://www.iau-hesd.net/en>

ISCN International Sustainable Campus Network  
<http://www.international-sustainable-campus-network.org/>

ISSS International Society for Sustainability Science  
<http://sussci.org/>

ISDRS International Sustainable Development Research Society

<http://isdrrs.org/>

NBS Network for Business Sustainability

<http://nbs.net/>

NSCN Nordic Sustainable Campus Network

<http://nordicsustainablecampusnetwork.wordpress.com/>

PRME Principles for Responsible Management Education

<http://www.unprme.org/index.php>

UE4SD University Educators for Sustainable Development

<http://www.ue4sd.eu/>

ULSF University Leaders for a Sustainable Future

<http://www.ulsf.org/about.html>

## APPENDIXES

**Appendix 1.** The minor and major studies on sustainable development or responsible business in Finnish universities. [Page 46](#)

**Appendix 2.** The international case examples of major and one minor studies on sustainable development in Sweden and Norway. [Page 58](#)

**Appendix 3.** The international case examples of minor and major studies on sustainable development in United Kingdom, Germany, the Netherlands and one Joint programme. [Page 63](#)

**Appendix 4.** The International case examples of minor and major studies in CSR/responsible business in Denmark, the Netherlands and the United Kingdom. [Page 67](#)

## Appendix 1. The minor and major studies on sustainable development or responsible business in Finnish universities.

### MINORS 1.

	Aalto University	Hanken School of Economics	University of Tampere School of Management	University of Turku Turku School of Economics	UniPID
<i>Faculty or school where the education is organized?</i>	Joint programme of the three Aalto University schools: School of Business, School of Arts, Design and Architecture and School of Engineering. <a href="http://acs.aalto.fi/minor-study/">http://acs.aalto.fi/minor-study/</a>	Administered by the department for Supply Chain Management and Social Responsibility <a href="http://www.hanken.fi/en/node/34518">http://www.hanken.fi/en/node/34518</a>	School of Management, Specializing studies in responsible management <a href="http://www.uta.fi/jkk">http://www.uta.fi/jkk</a> <a href="https://www10.uta.fi/opas/opintoKonaisuus.htm?rid=7211&amp;lang=en&amp;uiLang=en&amp;lvv=2014">https://www10.uta.fi/opas/opintoKonaisuus.htm?rid=7211&amp;lang=en&amp;uiLang=en&amp;lvv=2014</a>	Administered by Management and Organization discipline <a href="http://www.utu.fi/fi/sivustot/kestava-kehitys-ja-vastuullinen-liiketoiminta/vastuullinen-liiketoiminta/Sivut/home.aspx">http://www.utu.fi/fi/sivustot/kestava-kehitys-ja-vastuullinen-liiketoiminta/vastuullinen-liiketoiminta/Sivut/home.aspx</a>	the Finnish University Partnership for International Development - UniPID, a partnership network between 10 Finnish universities, coordinated by University of Jyväskylä <a href="http://www.unipid.fi/en/page/262/unipid_minor_sustainability_in_development/">http://www.unipid.fi/en/page/262/unipid_minor_sustainability_in_development/</a>
<i>Type of education: Study module/Minor subject or Bachelor/Master's programme?</i>	<b>Minor: The Creative Sustainability (CS) Programme</b> 15-25 ECTS Offered to all master's student in Aalto University in order to help broaden sustainability knowledge and get acquainted with multidisciplinary approach during one's own master degree studies.	<b>Minor: Corporate Responsibility (CR)</b> minimum 25 cr. 25 students who are not degree students at Hanken are offered the opportunity to complete the Corporate Responsibility study module, targeted mainly to students at the University of Helsinki, popular among students.	<b>Responsible Business</b> 15 ECTS, Open for degree programme students, other students, doctoral students and exchange students	<b>Minor: Responsible Business</b> , 25 cr	<b>Virtual Minor: Sustainability in Development</b> , 25 ECTS The registration for the Minor is continuous and the programme is free of charge for all students at member universities.
<i>Any research group/institute/centre in the background?</i>	Collaborates with NODUS and CESR in teaching and research. <a href="http://acs.aalto.fi/research/">http://acs.aalto.fi/research/</a>	-	RESPMAN Research Group <a href="http://www.uta.fi/jkk/en/research/themes/respman/introduction.html">http://www.uta.fi/jkk/en/research/themes/respman/introduction.html</a>	-	-

<p><b>Core elements</b></p>	<p><b>A course palette</b> from which students choose relevant courses to make an individual study plan. <a href="http://acs.aalto.fi/minor-study/course-list/">http://acs.aalto.fi/minor-study/course-list/</a> CS brings together students from different fields to study in multidisciplinary teams that increases understanding of different disciplines and enables adapting a holistic approach.</p> <p>The pedagogical approach is based on integrating teaching and research, problem-based learning, blended learning and strong connection to practical outcomes.</p> <p>Studies combine insights and courses from systems thinking, sustainable urban and building design, responsible business, sustainable product and service design, environmental impact assessment of landscape planning, real estate and global development issues.</p>	<p><b>Study plan for Study Module in Corporate Social Responsibility 2014-2015: at least 25 credits among the following:</b>  The Corporation and its Employees 6-8 ECTS  Gender, Management and Organisation 8 ECTS  Business Ethics 8 ECTS  Literature Course 8 ECTS  Business, Government and Society 8 ECTS  Work and Industrial Relations 8 ECTS  Literature course 8 ECTS  Corporate Social Responsibility: From Principles to Practice 8 ECTS  Humanitarian Logistics 8 ECTS  Sustainable Supply Chain Management 8 ECTS  Project Course in Societal and Environmental Responsibility 8 ECTS  Corporate Sustainability 8 ECTS  Introduction to Corporate Responsibility 1 ECTS, students external to Hanken.</p>	<p>Business Ethics 5 ECTS  Corporate Responsibility and Accounting 5 ECTS  CSR in Different Business Models and Contexts 5 ECTS</p> <p>This table represents studies in study year 2014-2015, it has been partly renewed for years 2015-2018. The new Responsible business and sustainability study module is larger (20-35 ECTS) and it can be seen here: <a href="http://www.uta.fi/jkk/kat/otintosuunnat/vlt/eteneminen.html">http://www.uta.fi/jkk/kat/otintosuunnat/vlt/eteneminen.html</a>  You can check the differences in this pdf: <a href="http://www.uta.fi/jkk/kat/otintosuunnat/vlt/eteneminen/VLT_sirtym%C3%A4s%C3%A4%C3%A4nn%C3%B6kset_2015.pdf_1">http://www.uta.fi/jkk/kat/otintosuunnat/vlt/eteneminen/VLT_sirtym%C3%A4s%C3%A4%C3%A4nn%C3%B6kset_2015.pdf_1</a></p>	<p>Responsible Business Introduction Course 6 cr  Selection of optional courses in the School of Economics, together 19 cr  Examples of optional courses:  Corporate Responsibility Reporting 2 cr  Ethical Issues in Finance and Responsible Investing 3 cr  New Challenges of Global Business 6 cr  Globalisation and Corporate Responsibility 5 cr  Global responsible business 6cr  Information Technology and Ethics 5 cr  Trade and Transport Facilitation 2-6 cr  Global Challenges and Sustainable Futures 6 cr</p>	<p>The Minor is comprised of at least five (5) courses (worth 5 ECTS credits each) for a minimum total of twenty-five (25) ECTS credits. Students are free to choose courses from the list of courses offered to tailor an individual study programme but at least two courses should be general level. <a href="http://www.unipid.fi/en/courses/">http://www.unipid.fi/en/courses/</a></p>
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<i>The role of multidisciplinary in teaching?</i>	Multidisciplinary is in the core of studies.	A cross-disciplinary approach	-	-	Teaching is given by many disciplines in several universities
<i>Additional information</i>	-	-	Courses offered also in open university teaching for restricted number of students	-	-

## MINORS 2.

	Lappeenranta University of Technology	Åbo Akademi University	Swedish School of Social Science	University of Vaasa	University of Helsinki
<i>Faculty or school where the education is organized?</i>	The module of Sustainability is coordinated by the Degree Programme in Environmental Technology.	Faculty of Science and Engineering <a href="http://www.abo.fi/fakultet/miljokunskap">http://www.abo.fi/fakultet/miljokunskap</a>	Swedish School of Social Science <a href="https://weboodi.helsinki.fi/hy/vlkehys.jsp?MD5avain=&amp;Kieli=2&amp;Org=75334693&amp;vl_tila=1&amp;Opas=4489">https://weboodi.helsinki.fi/hy/vlkehys.jsp?MD5avain=&amp;Kieli=2&amp;Org=75334693&amp;vl_tila=1&amp;Opas=4489</a>	Joint minor organized by regional studies, public law, marketing, economics, commercial law, industrial management, accounting and financing <a href="http://www.uva.fi/fi/for/student/studies/study/minor/philosophy/">http://www.uva.fi/fi/for/student/studies/study/minor/philosophy/</a>	Minor is administered by Faculty of Agriculture and Forestry <a href="http://www.helsinki.fi/henvi/opetus/vaatumukset.htm">http://www.helsinki.fi/henvi/opetus/vaatumukset.htm</a> <a href="http://www.helsinki.fi/henvi/opetus/johdantokurssi.htm">http://www.helsinki.fi/henvi/opetus/johdantokurssi.htm</a>
<i>Type of education: Study module/Minor subject or Bachelor/Master's programme?</i>	<b>Minor: Sustainability</b> , targeted for third-year Bachelor's students and Master's students in all degree programmes.	<b>Minor in Environmental knowledge</b> , 25-60 cr, open to all students, some courses offered in cooperation with the open university of ÅA	<b>Minor in Environment 25</b> open to all students in Swedish S. of SS and University of Helsinki.	<b>Minor in Environment</b> , 26 cr, open to all students in University of Vaasa	<b>Multidisciplinary minor in Environment (YMS)</b> 25 cr, started 2006. Open to all students, with the Flexible Study Rights Scheme (JOO) to other students as well.
<i>Any research group/centre in the background?</i>	-	-	-	-	HENVI = Helsinki University Centre for Environment



<p><b>Core elements</b></p>	<p>The minor subject consists of elective courses in sustainable development and the compulsory course Introduction to Sustainability. The degree programmes will adapt the module to their own curriculum. <a href="http://www.lut.fi/web/en/green-campus/measures/sustainability-minor-subject">http://www.lut.fi/web/en/green-campus/measures/sustainability-minor-subject</a></p> <p>Minor is a joint multidisciplinary module that consists of courses from the three different Schools.</p> <p>See Master's Programme MSIS for description of Sustainability minor courses adapted by the School of Business</p>	<p><b>Mandatory course:</b> Project Work 5 cr or Ecology and conservation 5 cr</p> <p><b>Elective courses</b> can be chosen from 25 different courses and from three different faculties, e.g. Environment and ethics 5 cr Environmental Law and Administrative Structure 10 cr Basics of Environmental economics 5 cr Cultural Ecology 5 cr</p>	<p>Focus on environmental governance and regional policy. Small minor consists of 5 electives. Large minor can include also courses outside the Swedish S. of SS. Minor strengthens the skills and employability of those students who study environment from natural sciences perspective.</p>	<p>The aim of the study module is to give students comprehensive view of the interaction between man, nature, and business both in global and local level seen from the scientific framework of University of Vaasa.</p> <p>Comprises of mandatory study courses that are offered by different faculties:</p> <ol style="list-style-type: none"> <li>1. Nature, society and environmental protection 5 cr</li> <li>2. Environmental philosophy 5 cr</li> <li>3. Energy Economics 5 cr</li> <li>4. Sustainable energy business 5 cr</li> <li>5. Environmental law 6 cr</li> </ol>	<p><b>Mandatory introduction course (5 cr)</b> and elective courses which are chosen freely from a selection of study courses in different disciplines. <a href="http://www.helsinki.fi/henvi/opetus/valinnaisetopinnot.htm">http://www.helsinki.fi/henvi/opetus/valinnaisetopinnot.htm</a></p> <p>Introduction to multidisciplinary environmental studies introduces students to environmental studies and teachers in different faculties, includes lectures and a <b>multidisciplinary group work</b> that deals with some phenomenon related to environment, panel discussion with visiting experts open to larger audience in the end of the course. Former panel discussion themes have been e.g. Use of oil shale and shale gas and their environmental effects, plastic waste in oceans. Students' feedback from former courses: <a href="http://www.helsinki.fi/henvi/opetus/2012_palaute_JMY12.pdf">http://www.helsinki.fi/henvi/opetus/2012_palaute_JMY12.pdf</a>; <a href="http://www.helsinki.fi/henvi/opetus/2011_palaute.pdf">http://www.helsinki.fi/henvi/opetus/2011_palaute.pdf</a></p>
<p><b>The role of multidisciplinary in teaching?</b></p>	<p>-</p>	<p>Multidisciplinarity is in the core as the learning target is to give better ability to consider sustainability issues multidisciplinary</p>	<p>Minor includes studies from different sciences in order to add knowledge of different perspectives, interdisciplinarity is not emphasized</p>	<p>The module is defined as multidisciplinary as it gives an overview of environment from several disciplines perspective.</p>	<p>The aim of the minor is to make it easier to study courses that go beyond one's own faculty. Multidisciplinarity feeds the understanding of the multifaceted nature of environmental questions.</p>
<p><b>Additional information</b></p>	<p>-</p>	<p>-</p>	<p>-</p>	<p>-</p>	<p>-</p>

### MINORS 3.

	University of Tampere	University of Turku	University of Lapland	University of Eastern Finland	University of Jyväskylä
<i>Faculty or school where the education is organized?</i>	Coordinated by the School of Social Sciences and Humanities <a href="http://www.uta.fi/yky/opiskelu/valinnaisetopinnot/kestava_kehitys.html">http://www.uta.fi/yky/opiskelu/valinnaisetopinnot/kestava_kehitys.html</a>	Coordinated through Finland Futures Research Centre <a href="http://www.utu.fi/fi/sivustot/kestava-kehitys-ja-vastuullinen-liiketoiminta/sustainable-development-studies/Sivut/home.aspx">http://www.utu.fi/fi/sivustot/kestava-kehitys-ja-vastuullinen-liiketoiminta/sustainable-development-studies/Sivut/home.aspx</a>	Organized by the Faculty of Social Sciences <a href="http://www.ulapland.fi/Suomeksi/Yksikot/Yhteiskuntatieteiden-tiedekunta/Opiskelu/Opiaineet-ja-maisteriohjelmatoimintat/Sivuaineet/Ymparistoopinnot">http://www.ulapland.fi/Suomeksi/Yksikot/Yhteiskuntatieteiden-tiedekunta/Opiskelu/Opiaineet-ja-maisteriohjelmatoimintat/Sivuaineet/Ymparistoopinnot</a>	Organized in the campus of Joensuu, teaching from all faculties <a href="http://www2.uef.fi/fi/ymparisto">http://www2.uef.fi/fi/ymparisto</a>	Organized by Faculty of Social Sciences
<i>Type of education: Study module/Minor subject or Bachelor/Master's programme?</i>	<b>Minor: Sustainable Development Study Programme</b> , 25-35 ECTS, open for all students, offered also in the open university	<b>Minor: Sustainable Development Studies</b> , 25 cr	<b>Environmental Studies</b> , basic and intermediate module 25-60 cr, open for all students	<b>Multidisciplinary Environmental Studies</b> , free to all students in U. of Eastern Finland Basic studies 25 cr and intermediate level 35 cr	<b>Environment and Society study module</b> 25-40 cr, free to all students
<i>Any research institute/centre?</i>	-	Coordinated through Finland Futures Research Centre	-	-	-
<i>Core elements</i>	Choose at least 25 ECTS, at least from two different themes: <b>Sustainable development study module, theme 1</b> Global Risks and Environmental Security 5 ECTS Ecosocial Dynamics 5 ECTS Climate Change and Health 5 ECTS Health & Illness in a Global Context 5 ECTS	KEKO1: Implementing the principles of sustainable development 10 cr KEKO2 Selection of optional courses of sustainable development, together 15 cr Optional courses are chosen from the selection offered by different faculties of University of Turku. Also some online courses are available e.g. from UniPID offerings. The studies cover a broad variety of issues relating to the	Basic module mandatory course: Introduction to Environmental Studies 3 ECTS cr Other courses selected from: Natural Resources and Environmental Economics 5 cr Sustainability in Tourism 5 cr Ecology and Nature Conservation 4 cr Society and Environment 4 cr Environmental Philosophy I 2-6 cr Environmental Studies Theory 3 cr	Mandatory courses in basic studies: Introduction to environmental sciences 3 cr Basics of Ecology 4 cr Basics of Environmental policy 3 cr Introduction to Environmental history 3 cr Rest of the study modules in basic studies can be chosen freely. The aim is to consider environmental problems and	Kestävä Kehitys (Sustainable development) 5 cr Ympäristösosiologia (Environmental Sociology) I 5 cr Ympäristösosiologia II 5 cr Ruoka (Food) 5 cr Energia (Energy) 5 cr Ympäristöetiikka (Environmental Ethics) 5 cr

	<p>Human Mobility and Health 5 ECTS  <b>Sustainable development study module, theme 2</b>  History of Modern World 5 ECTS  Sociology of Globalization 5 ECTS  International Society 5 ECTS  Political Institutions &amp; Processes 5 ECTS  Consumption and the Market 5 ECTS  Critical Perspectives on Accounting 5 ECTS  Peace, Security and International Institutions 5 ECTS  <b>Sustainable development study module, theme 3</b>  Current Issues in Social Sciences 5 ECTS  Introduction to the Politics of Environment and Regions 5 ECTS  Comparative European Politics and the Finnish Political System 5 ECTS  Citizenship &amp; Social Movements 5 ECTS  Russian Society 5 ECTS  <b>Sustainable development study module, theme 4</b></p>	<p>four dimensions of sustainable development: ecological, social, cultural and economic.  Examples of course offerings:  Ethical Thinking and Society  Introduction to Population  Culture in East and Southeast Asia (online course)  Religions of East and Southeast Asia (online course)  Resources of the Earth  Environment and Development  Sustainable urban development and living  What Food Crisis (online course)  Public Health Challenges and Scenarios in South Asia (online course)  Corporate Responsibility Reporting  Responsible Business: an introduction  Globalisation and corporate responsibility  Information and Ethics  Foundation of Futures Studies  Systems thinking</p>	<p>Environmental Movements 3cr  Northern Environmental Questions 3 cr  <b>Intermediate module</b> selection:  Environmental Politics 10cr  Current Trends of Environmental Studies 5cr  Nature and Culture 5cr  Seminar 5cr  Environmental Philosophy II 3cr  Art, Environment and Aesthetics 3cr  Environmental Law 6cr  Environmental Conflicts 3cr  Environmental Economy 3cr  Environmental Impacts and Sustainable Development of Tourist Destinations 3cr</p>	<p>conservation from multidisciplinary perspective as a process of interaction between man and nature. The target is to produce new knowledge through interaction between different disciplines and multidisciplinary cooperation.</p>	<p>Sociology of Consumption and Lifestyles 5 cr  Kulutuksen ja elämäntavan sosiologia II 5 cr   <a href="https://www.jyu.fi/yt/tyo/opsit/ma-2017/ytk-sivuaineet/opintokokonaisuudet/ymy">https://www.jyu.fi/yt/tyo/opsit/ma-2017/ytk-sivuaineet/opintokokonaisuudet/ymy</a></p>
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	Agency & Relationships with Media 5 ECTS Multicultural Relationships with Media and Citizenship 5 ECTS Classics of Translation Studies 5 ECTS Information Systems and Society 5 ECTS <b>Sustainable development study module, theme 5</b> Ethics and Social Philosophy 5 ECTS Business Ethics 5 ECTS				
<b><i>The role of multidisciplinary in teaching?</i></b>	Minor is multidisciplinary by character, dimensions of social and cultural sustainability are stressed	Interdisciplinarity is in the core of the KEKO1 course	Multidisciplinary approach	Multidisciplinary is mentioned to be central element of studies	-
<b><i>Additional information</i></b>	-	-	Even a multidisciplinary doctoral programme Northern cultures and sustainable natural resource politics is available <a href="http://www.ulapland.fi/InEnglish/Research/Graduate-School/Doctoral-programmes/Northern-cultures-and-natural-resource-politics">http://www.ulapland.fi/InEnglish/Research/Graduate-School/Doctoral-programmes/Northern-cultures-and-natural-resource-politics</a>	-	-

## MASTERS 1.

	Aalto University	Lappeenranta University of Technology, School of Business	University of Jyväskylä	University of Tampere, School of Management
<i>Faculty or school where the education is organized?</i>	Joint programme of the three Aalto University Schools: School of Business, School of Arts, Design and Architecture and School of Engineering <a href="http://acs.aalto.fi/masters-programme/">http://acs.aalto.fi/masters-programme/</a>	The School of Business <a href="http://www.lut.fi/web/en/admissions/masters-studies/msc-in-business-administration/strategy-innovation-and-sustainability-msis">http://www.lut.fi/web/en/admissions/masters-studies/msc-in-business-administration/strategy-innovation-and-sustainability-msis</a>	The School of Business and Economics of the University of Jyväskylä <a href="https://www.jyu.fi/en/studywithus/programmes/cem">https://www.jyu.fi/en/studywithus/programmes/cem</a>	School of Management <a href="http://www.uta.fi/jkk/en/research/themes/respman/teaching.html">http://www.uta.fi/jkk/en/research/themes/respman/teaching.html</a>
<i>Type of education: Study module/Minor subject or Bachelor/ Master's programme?</i>	<b>International Master's Programme in Creative Sustainability (CS)</b> , two years, 120 ECTS, number of students varies, intake in 2014 8 and 2015 16. MA, MSc in Architecture, MSc in Technology or MSc in Economics. The Creative Sustainability programme is a <b>multidisciplinary learning platform</b> in the fields of architecture, business, design, landscape planning, real estate, and urban planning.	<b>International Master's Degree Programme in Strategy, Innovation and Sustainability (MSIS)</b> , MSc in Economics and Business Administration, 120 ECTS, two years full time, 20 new students through the separate selection, programme is also one of the six Master's Programmes open to the School's own Bachelor students. The MSIS Program was previously called Master in International Technology and Innovation Management (MITIM). In October 2012 the name was changed, and the students currently enrolled in the MITIM program may choose whether they graduate from MITIM or MSIS program. The graduation from MSIS program requires that student has completed the course A350A0500 - Sustainable Strategy and Business Ethics.	<b>International Master's Degree Programme in Corporate Environmental Management (CEM)</b> 2 years full-time, 120 ECTS Jyväskylä was the first university in the Nordic region to offer a complete master's and doctoral programme in Corporate Environmental Management.	<b>Master's Degree Programme in Business Studies - Specialization Responsible Business</b> , 120 ECTS, two years, MSc, 10 students, the programme is organised in Finnish, but some of the courses are lectured in English and open for international students as well.

<p><b>Any research group/institute/centre in the background?</b></p>	<p>No own research group, collaborates with NODUS and CESR in both teaching and research. <a href="http://acs.aalto.fi/research/">http://acs.aalto.fi/research/</a></p>	<p>-</p>	<p><b>Research group of Corporate Environmental Management (CEM)</b> is proactive in integrating sustainability issues in its research and curriculum <a href="https://www.jyu.fi/jsbe/en/research/groups/cem">https://www.jyu.fi/jsbe/en/research/groups/cem</a></p>	<p><b>RESPMAN Research Group</b>, organizes and gives teaching <a href="http://www.uta.fi/jkk/en/research/themes/respman/teaching.html">http://www.uta.fi/jkk/en/research/themes/respman/teaching.html</a></p>
<p><b>Core elements</b></p>	<p>Programme studies 84 cr <b>Mandatory studies at the School of Business 48 cr:</b> Doing Qualitative Research 6 cr Capstone in Creative Sustainability 6 cr Master's Thesis 30 ECTS Master's Thesis Seminar 6 ECTS <b>Compulsory Joint Studies in CS 10 cr:</b> Creative Teamwork 2 cr Creating the Mindset of Sustainable Societies 2 cr Continuous Transformation 2 cr Systems Thinking 1, 2 cr Systems Thinking 2, 2 cr <b>Elective CS-courses from the School of Business, together 18 cr:</b> How to Change the World: Innovation toward Sustainability 6 cr Corporate Responsibility in Global Economy 6 cr Sustainability Politics and CSR – Reading Seminar 6 cr Sustainable Business and Consumption 6 cr <b>Elective courses in CS 8 cr</b>, may be chosen freely from different schools</p>	<p><b>Core studies 48 ECTS</b> of which compulsory 33 ECTS and electives 15 ECTS: here only compulsory courses: Empirical Strategy Research 6 ECTS Business Models &amp; Strategy 6 ECTS Technology and Innovation Management 6 ECTS Contemporary Issues in Strategic Management &amp; Innovation 3 ECTS Sustainable Strategy and Business Ethics 3 ECTS Corporate Responsibility and Management 1, 3 ECTS Master's Transferable Skills 3 ECTS Master's Thesis Seminar 3 ECTS <b>Specialisation Studies 42 ECTS compulsory:</b> Strategy Consulting 6 ECTS Knowledge-based Networks 6 ECTS Master's Thesis 30 ECTS <b>Minor studies 24 ECTS, here only Sustainability minor:</b> Compulsory courses 13 ECTS</p>	<p><b>Compulsory major studies 72 ECTS</b> Orientation to JSBW Master's Programmes 1 ECTS Material Flow Management 5 ECTS Material Flow Management, Computer Demonstrations 3 ECTS Managing a Green Organisation 5 ECTS Corporate Environmental Management, Project Work or Internship 5 ECTS Corporate Environmental Strategy and Marketing 5 ECTS Environmental Management in Networks 5 ECTS Climate Business 5 ECTS Master Level Research Tutorial 3 ECTS Master's Thesis 35 ECTS <b>Optional major studies 10 ECTS</b>, e.g.: Introduction to International Environmental Law 4 ECTS Motivating Sustainable Consumption 4 ECTS Stakeholder Management 6 ECTS Environmental Economics 6 ECTS Social and Environmental Accounting 6 ECTS</p>	<p><b>Responsible Management, 10–15 ECTS:</b> Ethical Leadership 5 ECTS Stakeholder Theory and Management 5 ECTS Management Communication 5 ECTS <b>Social and Environmental accounting, 10–15 ECTS :</b> Social and Environmental Accounting and Reporting 10 ECTS Critical Perspectives on Accounting 5 ECTS <b>Business Law, 5 ECTS:</b> Applied Law and Economics 5 ECTS <b>Insurance and risk management, 5–10 ECTS:</b> Current Issues in Social Security 5 ECTS Enterprise Risk Management 5 ECTS <b>Research seminar and master's thesis, 40 ECTS</b> Optional Studies 15-30 ECTS Language studies 10 ECTS</p>

	<p><b>Minor Studies 24 cr</b>  <b>Aalto Elective Courses 12 cr</b>  <a href="http://study-guides.aalto.fi/biz/2014-13/en/master-of-science-degree-studies/study-programmes/creative-sustainability.html">http://study-guides.aalto.fi/biz/2014-13/en/master-of-science-degree-studies/study-programmes/creative-sustainability.html</a>  Study structure varies according to each CS discipline: Architecture, Business, Design, and Real Estate. Study structure in CS in Business</p>	<p>Introduction to Sustainability 3 ECTS  Cleaner Technologies and Markets 5 ECTS  Social Responsibility 5 ECTS  Electives, choose at least 11 ECTS:  Sustainable Strategy &amp; Business Ethics 3 ECTS  Corporate Responsibility Management 1, 3 ECTS  Wind Power and Solar Energy Technology and Business 5 ECTS  Basic Course on Environmental Management and Economics 5 ECTS  Independent Study in English 1-4 ECTS  <a href="https://uni.lut.fi/en/web/lut.fi-eng/study-guides9">https://uni.lut.fi/en/web/lut.fi-eng/study-guides9</a></p>	<p>Course descriptions:  <a href="https://www.jyu.fi/en/studywithus/programmes/cem/course-descriptions">https://www.jyu.fi/en/studywithus/programmes/cem/course-descriptions</a></p>	
<p><i>The role of multidisciplinary in teaching?</i></p>	<p>Multidisciplinary is in the core of studies. Competence areas covered in CS programme are: multidisciplinary approach, systems thinking, business management, design thinking and project management.</p>	<p>Multidisciplinary is in the selection of courses. Students can include maximum of <b>12 ECTS of MOOCs</b> in the MSIS degree, but they must be agreed beforehand with the Academic Director by submitting an informal application letter (course details and ECTS, suitability to the programme). These courses can be located to <b>replace elective courses in core studies</b> (strategy, innovation or sustainability)</p>	<p>An integrated and interdisciplinary approach to environmental issues. Students also do some compulsory basic studies in environmental science and technology.</p>	-
<p><i>Additional information</i></p>	-	<p>The MSIS programme offers a double degree option with the Graduate School of Management</p>	<p>In the Beyond Grey Pinstripes survey of 2011 the School of Business and Economics was positioned</p>	<p>This table represents studies in study year 2014-2015, it has been partly renewed for years</p>

		(GSOM) of St. Petersburg State University for students interested in Russian markets.	among the top "Global 100" business schools leading the way in integrating issues of social and environmental stewardship into business school curricula and research.	2015-2018 and the differences can be checked in this pdf: <a href="http://www.uta.fi/jkk/kat/opintosuunnat/vlt/eteneminen/VLT_sirtym%C3%A4s%C3%A4%C3%A4nn%C3%B6kset_2015.pdf">http://www.uta.fi/jkk/kat/opintosuunnat/vlt/eteneminen/VLT_sirtym%C3%A4s%C3%A4%C3%A4nn%C3%B6kset_2015.pdf</a> _1
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## MASTERS 2.

	Hanken School of Economics	Aalto University	University of Eastern Finland
<i>Faculty or school where the education is organized?</i>	Department of Management and Organisation <a href="http://www.hanken.fi/en/studies/apply-hanken/apply-masters-degree-programmes/masters-degree-programmes/masters-business-and">http://www.hanken.fi/en/studies/apply-hanken/apply-masters-degree-programmes/masters-degree-programmes/masters-business-and</a>	Department of Management Studies <a href="http://www.aalto.fi/en/studies/education/programme/management_international_business_master/">http://www.aalto.fi/en/studies/education/programme/management_international_business_master/</a>	Administred through the UEF Law School, organized between two disciplines: <b>environmental law and environmental policy.</b> <a href="http://www.uef.fi/en/envlawandpolicy/home">http://www.uef.fi/en/envlawandpolicy/home</a>
<i>Type of education: Study module/Minor subject or Bachelor/ Master's programme?</i>	<b>Master's programme in Business Management</b> with the specialisation track in <b>International Strategy and Sustainability</b> , 2 years full-time, 120 cr, 10-15 students	<b>Master's Programme in Management and International Business (M&amp;IB)</b> , two years, 120 ECTS	<b>The Master's Degree Programme in Environmental Policy and Law</b> , multidisciplinary, 2 years, 120 cr MSocSc / <i>Master of International and Comparative Law (MICL)</i> , 20 students
<i>Any research group/institute/centre in the background?</i>	-	-	<b>Centre for Climate Change, Energy and Environmental Law (CCEEL)</b> , established in 2013. <a href="http://www.uef.fi/en/cceel">http://www.uef.fi/en/cceel</a> Also connection to the <b>Institute for Natural Resources, Environment and Society (LYY)</b> <a href="http://www.uef.fi/en/lyy">http://www.uef.fi/en/lyy</a>
<i>Core elements</i>	<b>Integrated compulsory studies</b> 30 ECTS: Corporate Sustainability 8 ECTS Academic writing 6 ECTS Strategic Management 8 ECTS Service and Relationship marketing 8 ECTS	In the M&IB Master's Programme one can specialise in one or two of the following fields: Human Resource Management, International Business, Strategy Work and <b>Sustainability Management</b> . The studies on sustainability management give insight	<b>Courses related to Sustainability and CSR:</b> Sustainability and Natural Resources 5 cp, Corporate Social Responsibility in Natural Resources Management 5 cp. Eligible for students holding a Bachelor's degree in environmental sciences, social-scientific nvironmental studies, natural sciences, environmental engineering, social



	<p><b>Obligatory core courses in track specialisation</b> 24 ECTS: Sustainability or International Strategy</p> <p><b>Elective studies</b>, at Hanken or on an exchange abroad 24 ECTS</p> <p>Research Seminar part1,6ECTS</p> <p>Research Seminar,part2 6ECTS</p> <p>Master´s Thesis (30 ECTS)</p> <p>Programme helps the student to identify and manage the challenges related to running an organization that spans multiple economic, social, environmental, geographic, institutional, cultural and linguistic contexts.</p> <p>Studies during 2015-2016</p> <p><a href="https://hanken-weboodi.it.helsinki.fi/hanken/">https://hanken-weboodi.it.helsinki.fi/hanken/</a></p>	<p>into responsible management of global businesses.</p> <p><b>Common studies</b> 54 cr</p> <p><b>Specialisation studies</b> 30 cr:</p> <p>Capstone: Management and International Business 6 cr</p> <p>Alternative mandatory course duo 12 cr includes Creative sustainability option: Sustainable Business and Consumption 6 cr + one other from following: How to Change the World: Innovation toward Sustainability 6 cr</p> <p>Corporate Responsibility in Global Economy 6 cr</p> <p>Sustainability Politics and CSR - Reading Seminar 6 cr</p> <p>Sustainable Business and Consumption 6 cr</p> <p>Responsibility Management, book exam 6 cr</p> <p>Elective studies 12 cr</p> <p><b>Minor studies</b> 24 cr</p> <p><b>Other electives</b> 12 cr <a href="http://study-guides.aalto.fi/biz/2014-13/en/master-of-science-degree-studies/study-programmes/management-and-international-business.html">http://study-guides.aalto.fi/biz/2014-13/en/master-of-science-degree-studies/study-programmes/management-and-international-business.html</a></p>	<p>sciences or law. Programme combines group teaching and independent research with the objective of providing participants with professional skills in environmental law and policy. The programme consists of advanced study of law and policy in relation to the environment, climate change and natural resources.</p> <p><b>Two alternative majors: Natural Resources Governance or Environmental and Climate Change Law.</b></p> <p><a href="http://www.uef.fi/en/web/envlawandpolicy/structure-of-the-programme-2014-2016">http://www.uef.fi/en/web/envlawandpolicy/structure-of-the-programme-2014-2016</a></p>
<i>The role of multidisciplinary in teaching?</i>	Multidisciplinarity is integrated into some Corporate Sustainability courses	Encourages students to cross disciplinary boundaries and promotes interdisciplinarity	Multidisciplinary programme
<i>Additional information</i>	Students applying for the specialisation track International Strategy and Sustainability within the Master's Degree Programme in Business and Management have the option to apply for a <b>Double Degree with EM Lyon Business School</b> .	-	-

## Appendix 2. The international case examples of major and one minor studies on sustainable development in Sweden and Norway

Theme	Lund University	Stockholm University, Stockholm Resilience Centre	Uppsala University & the Swedish Univ. of Agricultural Sciences	University of Oslo
<i>Under which faculty or school is the education organized?</i>	Lund University, Faculty of Social Sciences, teaching is situated within the Lund University Centre for Sustainability Studies, LUCSUS <a href="http://www.lumes.lu.se/home">http://www.lumes.lu.se/home</a>	BIG – Department of Biology Education, Stockholm University <a href="http://www.big.su.se/_html/utbildningar/master/index_master_egg.shtml#serds">http://www.big.su.se/_html/utbildningar/master/index_master_egg.shtml#serds</a>	The master programme is hosted by the Department of Earth Sciences at Uppsala University in collaboration with the Swedish University of Agricultural Sciences, SLU <a href="http://www.geo.uu.se/education/programmes/programmepage?pKod=THU2M&amp;lasar=15/16">http://www.geo.uu.se/education/programmes/programmepage?pKod=THU2M&amp;lasar=15/16</a>	Teaching is given by Centre for Development and the Environment (SUM) <a href="http://www.uio.no/english/studies/programmes/ces-master/">http://www.uio.no/english/studies/programmes/ces-master/</a>
<i>Type of education: Study module/Minor subject or Bachelor/ Master's programme?</i>	International Master's Programme in Environmental Studies and Sustainability Science (LUMES), 40 students, two years, 120 ECTS, MSc The programme began in 1997 and was then one of the first interdisciplinary programs of its kind in Sweden, graduation rate 90%.	Master's Programme Social-Ecological Resilience for Sustainable Development (SERSD), 2 years, 120 ECTS, 15 students	International Master's Programme in Sustainable Development Master of Science, two years, 120 cr (one year option 60 cr), 60 students. Smaller units by CEMUS (7,5-30 credits) in undergraduate and master's level	Master's Programme Development, Environment and Cultural Change (DEC) (formerly Culture, Environment and Sustainability CES), MA in Philosophy, 2 years, 20 students, 120 credits: 30 cr compulsory courses, 30 cr electives, 60 cr thesis
<i>Does there exist a research institute or centre in the background?</i>	the Lund University Centre for Sustainability Studies, LUCSUS ( <a href="http://www.lucsus.lu.se">www.lucsus.lu.se</a> ) LUCSUS is a multidisciplinary centre that works together with all seven faculties at the university and is a platform for education, research and cooperation with the society outside the academia, in questions related to environment and sustainable development.	Stockholm Resilience Centre Courses are firmly embedded in the research at the centre. <a href="http://www.stockholmresilience.org/21/education.html">http://www.stockholmresilience.org/21/education.html</a>	Uppsala Centre for Sustainable Development (CSD Uppsala), an interdisciplinary centre, consists of CEMUS, the Baltic University Programme and Uppsala Water Centre <a href="http://www.csduppsala.uu.se/">http://www.csduppsala.uu.se/</a> CEMUS, Center for Environment and Development Studies, began as an initiative by stu-	Centre for Development and the Environment (SUM), an interdisciplinary research centre at UiO <a href="http://www.sum.uio.no/english/">http://www.sum.uio.no/english/</a>

			dents in the 90's to promote interdisciplinary research & education, most courses still run by students. <a href="http://www.csdupp-sala.uu.se/cemus/">http://www.csdupp-sala.uu.se/cemus/</a>	
<b>Core elements</b>	<p><b>The first term:</b> 3 compulsory full-time courses: Earth System Science 10 cr Social Theory &amp; Sustainability 10cr Sustainability Science, 10 cr</p> <p><b>The second term:</b> 4 compulsory full-time courses: Governance of Sustainability 7.5 cr Urban and Rural Systems and Sustainability 10 cr Economy and Sustainability 7.5 cr Knowledge to Action 5 cr</p> <p><b>The third term</b> elective courses totalling 30 credits, the students choose two 7,5 credits courses from each block, courses offered are closely connected to the research conducted by the staff at LUCSUS and may vary yearly:</p> <p><i>Block 1:</i> Water and Sustainability Health Systems, Community Resilience and Sustainability Gender and Sustainability in Theory and Everyday Life Societal Resilience</p> <p><i>Block 2:</i> Social Movements and Sustainability Energy and Sustainability Capacity Development</p>	<p><b>First year:</b> Social-Ecological Systems: Challenges &amp; Approaches 15 ECTS Systems Theory and Resilience Thinking 15 ECTS Governance and Management of Social-Ecological Systems 15 ECTS Resilience Reflections and Applications 7.5 ECTS Optional courses or a traineeship 7.5 ECTS</p> <p><b>Second year:</b> Master's thesis 60 ECTS.</p> <p>Trains students to conduct problem-driven transdisciplinary environmental research. The 4 mandatory courses are designed with an emphasis on <b>resilience</b> - the ability to deal with change and continue to develop. Programme aims to enhance students' knowledge of the complex interactions between ecological and social systems. Theses are mainly incorporated in on-going research projects and are all related to one of the research themes at the Stockholm Resilience Centre. Graduates are encouraged to publish their research in peer-reviewed journals.</p>	<p><b>Semester 1:</b> Our Natural Resources 10 cr Sustainable Development – Worldviews and Visions – Seminar Series 5 cr Introduction to Interdisciplinary Science 5 cr Man, society and the environment 10 cr (in Swedish university of agricultural sciences SLU)</p> <p><b>Semester 2:</b> Environmental Assessment 5 cr Sustainable Development – Worldviews and Discourses – a Seminar Series 5 cr Systems analysis for sustainable development 5 cr (at SLU) Interdisciplinary Practice 15 cr (at SLU) Degree Project D in Sustainable Development 15 cr for those who wish to do a one year masters</p> <p><b>Semester 3 variety of options:</b> Advanced courses in special fields 15–30 cr Courses at lower level outside your special field, 15–30 cr Practical experience for sustainable development 15-30 cr</p> <p><b>Semester 4:</b> Degree Project E in Sustainable Development 30 credits</p>	<p><b>Compulsory courses:</b> Research Methods and Project Design 15 cr Key Issues in Development and Environment 15 cr</p> <p><b>Electives:</b> Consumption, Sustainability and Social Change 10 cr What Works? Success Stories in International Development 10cr Food, Health and Sustainability 10 cr Emerging Economies and Challenges to Sustainability 10cr Global Governance for Sustainable Development 10 cr</p> <p><b>Master's Thesis</b> 60 cr Students will get advanced knowledge within the interdisciplinary academic field of sustainable development, with a particularly thorough knowledge of political, anthropological, socio-economic and cultural-historical perspectives. Programme takes up a number of important topics related to sustainability, including ethics, culture, development theory, poverty, business and consumption.</p>

	<p><b>Fourth semester:</b> Master's thesis 30 credits <a href="http://www.lumes.lu.se/about/programme-outline">http://www.lumes.lu.se/about/programme-outline</a></p>			
<i>Special features</i>	<p>The Lund University offers MOOCs that are open to anyone with an interest, the courses are free of charge and are taught in English. Attendants receive a certificate upon completion of a course. However, MOOC course cannot be included as a part of a degree or receive university credits for it. The International Institute for Industrial Environmental Economics (IIIEE) at Lund University offers MOOC: Greening the Economy: Lessons and Experiences from Scandinavia (starting 19.1.2015) <a href="https://www.coursera.org/course/greeningtheeconomy">https://www.coursera.org/course/greeningtheeconomy</a></p>	<p>Stockholm Resilience Centre has offered fall 2014 <b>MOOC</b> "Planetary Boundaries and Human Opportunities: The Quest for Safe and Just Development on a Resilient Planet" together with the Sustainable Development Solutions Network (SDSN). <a href="https://www.sds-nerdu.org/learn/planetary-boundaries-and-human-opportunities-fall-2014">https://www.sds-nerdu.org/learn/planetary-boundaries-and-human-opportunities-fall-2014</a></p>	Active and versatile student-led teaching by CEMUS	-
<i>The role of multi-disciplinarity in teaching?</i>	<p>LUMES emphasizes knowledge integration, strives to make international and national connections. The programme is based on systems analysis as a unifying and common means of communication between disciplines. The programme uses <b>critical and system thinking approaches</b>, rather than focusing expertise in particular methods or tools. Attention is also placed on students' understanding of both natural and social dynamics of complex sustainability challenges, the theoretical underpin-</p>	<p>SRC wants to attract top international and Swedish students and ensure that they are embedded in the research life at the Centre. Integrating students, post docs and senior researchers is important as this provides professional role models, develops students' practical research skills and builds important social networks.</p>	<p>Aim for a highly interdisciplinary approach, where classes are focused around problems and solutions rather than classical subject areas. The core idea is that environmental issues are best discussed with a multidisciplinary approach.</p>	<p>An important objective of the program is to introduce students to the complexities of interdisciplinary research.</p>

	nings of how we perceive the challenges, and a fundamental understanding of the multitude of tools and approaches available when attempting to assess and solve them.			
<b>Additional information</b>	Cooperation between Lund University Centre for Sustainability Studies (LUCSUS), Stockholm Resilience Center (SRC) and University of Tokyo Graduate Program in Sustainability Science – Global Leadership Initiative (GPSS-GLI)	There is also LEAD - Resilience thinking, exponential technologies and sustainable leadership programme <a href="http://www.stockholmresilience.org/21/education/leadership-programme.html">http://www.stockholmresilience.org/21/education/leadership-programme.html</a>	The Uppsala Transdisciplinary Seminar in Education and Sustainable Development (TRUST) is arranged in collaboration by researchers at SWEDES and the Faculty of Education at Uppsala University. The seminar invites researchers and PhD-students from all faculties. <a href="http://swedesd.uu.se/forskning/trust/?languageId=1">http://swedesd.uu.se/forskning/trust/?languageId=1</a>	SUM includes Culture, Ethics and Sustainability research group that focuses on social perceptions of - and attitudes to - nature and the way these are created and changed in various cultural, political and institutional contexts. <a href="http://www.sum.uio.no/english/research/groups/culture-ethics-and-sustainability/index.html">http://www.sum.uio.no/english/research/groups/culture-ethics-and-sustainability/index.html</a>

Theme	BTH Blekinge Institute of Technology (in Karlskrona)	University of Gothenburg
<b>Under which faculty or school is the education organized?</b>	Faculty of Engineering, Department of Strategic Sustainable Development, BTH has profiled in applied IT and sustainable development <a href="http://www.bth.se/ste/tmslm.nsf/pages/mssl_home">http://www.bth.se/ste/tmslm.nsf/pages/mssl_home</a>	Faculty of science, cooperation with Chalmers and Centre for the Development and the Environment (GMV) <a href="http://utbildning.gu.se/kurser/kurs_information/?courseId=ES2415#moreInfoAnchor">http://utbildning.gu.se/kurser/kurs_information/?courseId=ES2415#moreInfoAnchor</a>
<b>Type of education: Study module/Minor subject or Bachelor/ Master's programme?</b>	International <b>Master's in Strategic Leadership towards Sustainability</b> (MSLS), 10 months duration (4 study periods), 60 ECTS credits. Entry is competitive, preference is given to degrees related to natural science, engineering, business or the environment.	Separate course in masters level: <b>Management for Sustainable Development 15 cr</b> , offered to students both in University of Gothenburg and Chalmers University of Technology since 2002.
<b>Any research institute/ centre in the background?</b>	-	<b>Centre for the Development and the Environment GMV</b> <a href="http://www.gmv.gu.se/">http://www.gmv.gu.se/</a>

<p><b>Core elements</b></p>	<p>Strategic Sustainable Development 12,5 ECTS          Innovation for Sustainability 5 ECTS          Research Methodology for Sustainability 5 ECTS          Strategic Management for Sustainability 7,5 ECTS          Leadership in Complexity 10 ECTS          The Master's Thesis in Strategic Leadership towards Sustainability 20 ECTS          Focus on Complexity, a systems thinking approach, leadership in complexity, diversity and cross-system connection.          Programme starts with assessing and understanding society's current sustainability challenges. Curriculum then introduces complementary skills in strategic management, organizational learning and change, economics, engineering, and effective collaboration.          A Spiral learning approach, beginning with an overview of core concepts and followed by application of the concepts later on through a self-directed learning approach. The programme is structured to provide leadership opportunities as year progresses. Periods 3 and 4 are devoted to a major project, where students work in small groups and produce a final thesis.          The programme is delivered in a non-traditional educational setting with experiential and holistic learning methods.          A couple of field trips include the programme and they are mandatory. Their aim is for students to learn about applications of SD.</p>	<p>An interdisciplinary course with large project task done in groups, includes field work in nearby region, the course proceeds through seven phases that are:</p> <ol style="list-style-type: none"> <li>1. Planning phase</li> <li>2. Mapping phase</li> <li>3. Modeling phase</li> <li>4. Scenario identification and formulation phase</li> <li>5. Indicator identification and formulation phase</li> <li>6. Evaluation phase</li> <li>7. Report and presentation phase</li> </ol>
<p><b>Special features</b></p>	<p><b>The Framework for Strategic Sustainable Development FSSD</b> (also known The Natural Step Framework) and its application is introduced to build a shared and comprehensive understanding of sustainability.</p>	<p>This is description of one separate course, other instruction related to Sustainable Development in Gothenburg and Chalmers is not explored in this table.</p>
<p><b>The role of interdisciplinarity in teaching?</b></p>	<p>The programme is founded on the basic premise that a "whole-system", transdisciplinary approach is needed to deal with the sustainability challenge of meeting our society's needs today and into the future.          2 intergrated themes: strategic sustainable development (SSD) and organizational learning and leadership. From these principles, one can "backcast" to the present and begin to take action.</p>	<p>Interdisciplinarity is part of the project course as participants represent different disciplines</p>
<p><b>Additional information</b></p>	<p>-</p>	<p>Some former years project reports are found through GMV's web pages: <a href="http://gmv.gu.se/samverkan/samverkan-inom-utbildning/fallstudiekurs-i-hallbar-utveckling">http://gmv.gu.se/samverkan/samverkan-inom-utbildning/fallstudiekurs-i-hallbar-utveckling</a>          The library of Gothenburg University has a study guide related to Education for Sustainable Development issues: <a href="http://libguides.ub.gu.se/ESD">http://libguides.ub.gu.se/ESD</a></p>

**Appendix 3. The international case examples of minor and major studies on sustainable development in United Kingdom, Germany, the Netherlands and one Joint programme.**

Question	Leuphana University of Lüneburg	University of Exeter	Joint Master of 6 universities	Leiden University
<i>Under which faculty or school is the education organized?</i>	Faculty of Sustainability Science <a href="http://www.leuphana.de/en/graduate-school/master/course-offerings/sustainability-science.html">http://www.leuphana.de/en/graduate-school/master/course-offerings/sustainability-science.html</a>	College of Life and Environmental Sciences, Disciplines: Geography, Development & Social Policy, Sustainable Management, Policy and Governance <a href="http://www.exeter.ac.uk/postgraduate/taught/geography/sustdev/">http://www.exeter.ac.uk/postgraduate/taught/geography/sustdev/</a>	Universities of Graz, Leipzig, Utrecht, Basel and Hiroshima and Ca' Foscari University of Venice; additional mobility partners University of Stellenbosch (South-Africa) and TERI University in New Delhi <a href="http://www.jointdegree.eu/sd/">http://www.jointdegree.eu/sd/</a>	Faculty of Science, Minor taught by CML but contributions from many others at Leiden University. <a href="http://www.cml.leiden.edu/education/minor/minor-overview.html">http://www.cml.leiden.edu/education/minor/minor-overview.html</a> <a href="https://www.facebook.com/minorduurzameontwikkeling">https://www.facebook.com/minorduurzameontwikkeling</a>
<i>Type of education: Study module/Minor subject or Bachelor/ Master's programme?</i>	<b>Master's in Sustainability Sciences (MSc)</b> 120 ECTS, 4 semesters (two years), 48 students	<b>MSc Sustainable Development</b> , 1 year full time or 2 years part time, 180 credits. When converted, 180 credits is equivalent to 90 ECTS and that is completed in 12 months. <a href="http://admin.exeter.ac.uk/academic/tls/tqa/Part%2013/13CQF.pdf">http://admin.exeter.ac.uk/academic/tls/tqa/Part%2013/13CQF.pdf</a>	<b>International Joint Master's Programme in Sustainable Development</b> , 120 ECTS, two years, MSc joint or multiple degree, number of students vary annually	<b>Minor in Sustainable Development (30 EC) during Bachelor programme</b> , half year full-time intensive programme (usually 3 days per week 9.30-16.30), started fall 2014 for the 6 <sup>th</sup> time: 35 students, 19 different major degree studies represented), taught in English
<i>Does there exist a research institute or centre in the background?</i>	Part of teaching is given by the <b>Centre for Sustainability Management (CSM)</b> <a href="http://www.leuphana.de/en/institutes/csm/teaching.html">http://www.leuphana.de/en/institutes/csm/teaching.html</a>	Programme has a close relationship with the <b>Environment and Sustainability Institute (ESI)</b> <a href="http://www.exeter.ac.uk/esi/">http://www.exeter.ac.uk/esi/</a>	<b>Institute of Systems Sciences, Innovation and Sustainability Research (ISIS)</b> in University of Graz holds the academic co-ordination and offers teaching in several modules <a href="http://isis.uni-graz.at/en/institute/">http://isis.uni-graz.at/en/institute/</a>	<b>The Institute of Environmental Sciences (CML)</b> , bringing together students from different disciplinary backgrounds is a key feature of CML's educational philosophy. <a href="https://www.universiteitleiden.nl/en/science/environmental-sciences">https://www.universiteitleiden.nl/en/science/environmental-sciences</a>

			Possible institutes in other partner universities have not been checked	
<b>Core elements</b>	<p>Interdisciplinary and transdisciplinary, research-oriented, and problem-focused.</p> <p>Optional Mandatory Modules</p> <p>1st semester</p> <p><b><i>In-depth Perspectives of Natural Sciences</i></b></p> <p>Ecosystem Responses to Chemical Pollution and Biogeochemical Processes</p> <p>Earth Systems and Climate Change</p> <p>Geochemical Aspects of Sources and Sinks of Compounds in the Environment</p> <p><b><i>In-depth Perspectives of Human Sciences</i></b></p> <p>Sustainability Communication</p> <p>Sustainability Management</p> <p>Sustainability Governance</p> <p>2nd semester</p> <p><b><i>In-depth Perspectives of Natural Sciences</i></b></p> <p>Conservation Biology</p> <p>Progress made in Ecosystem and Biodiversity Research</p> <p>Environmental Analytics</p> <p>Practical Exercise in Environmental Analytics</p> <p><b><i>In-depth Perspectives of Human Sciences</i></b></p> <p>Theories and Perspectives of Sustainability Communication</p> <p>Sustainability Performance Measurement, Management and Communication</p> <p>Sustainability Economics</p> <p>Sustainability, Digital Media, and the Information Society</p> <p>Sustainability, Governance, and Law</p> <p>3rd semester</p> <p><b><i>In-depth Perspectives of Natural Sciences</i></b></p>	<p><b>Compulsory modules</b></p> <p><b>135 cr:</b></p> <p>Key Skills 15 cr</p> <p>Dissertation 90 cr</p> <p>Understanding Environmental Change 15 cr</p> <p>Governing Sustainability 15 cr</p> <p><b>Optional modules (45cr)</b></p> <p>15cr each:</p> <p>Statistical Modelling</p> <p>Environmental Sustainability in Practice</p> <p>Independent Study or Independent Work-based learning</p> <p>Introduction to Energy Policy and Sustainability</p> <p>Climate, Hazards and Risk Assessment</p> <p>Themes in Climate Change Assessment is through a range of methods including: essays; oral, written and web presentations; project work; learning journals; and a 10,000 word dissertation. <a href="http://geography.exeter.ac.uk/current-students/postgraduate/modules_cornwall/">http://geography.exeter.ac.uk/current-students/postgraduate/modules_cornwall/</a></p> <p>Specification of intended learning outcomes (ILOs)</p>	<p>Compulsory part consists of following tracks:</p> <p>Basics in Sustainable Development</p> <p>Integration Module</p> <p>The programme consists of two general modules (1st and 3rd semester) which follow the same structure at all consortium universities, and of specialisation tracks (2nd semester). Academic year 2014-2015 the consortium offers 12 specialisation tracks:</p> <p>Energy and Materials</p> <p>Global Change and Ecosystems</p> <p>Environmental Governance</p> <p>Sustainable Business Management</p> <p>Sustainable Urban and Regional Development</p> <p>Global Environmental Change</p> <p>Environmental Technology Management</p> <p>Resources Management</p> <p>Sustainability: The Social Dimension</p> <p>Sustainable Development Science and Technology</p> <p>Sustainable Development Planning</p>	<p>Interdisciplinary, combines academic and practical skills</p> <p>Consists of 3 courses that are closely coordinated (they are not a combination of existing courses):</p> <p>Sustainable Development: Big Issues New Answers 15 EC</p> <p>Project group: Design of European Research 10 EC</p> <p>Area study: one of the two options:</p> <p>Waste not Want not: A Future without Waste 7 EC (year 2016 there will be instead an Area Study '2030: sustainable Leiden?')</p> <p>International course on water issues and water management in the Philippines 10 EC (field course)</p> <p><a href="http://www.cml.leiden.edu/education/minor/minor_overview.html#courses-and-schedules">http://www.cml.leiden.edu/education/minor/minor_overview.html#courses-and-schedules</a></p>



	<p>Status and Trends of Air Pollution in Europe Sustainable Energy Macro-ecology and Global Change Biology Model Systems in Global Change Research <b><i>In-depth Perspectives of Human Sciences</i></b> Sustainability, Social Ecology, and Infrastructural Development Sustainability, Culture, and Education Sustainability and Social Development <a href="http://www.leuphana.de/fileadmin/user_upload/grad_school/files/Infomaterial/Moduluebersichten/Moduluebersicht_Nachhaltigkeitswissenschaft.pdf">http://www.leuphana.de/fileadmin/user_upload/grad_school/files/Infomaterial/Moduluebersichten/Moduluebersicht_Nachhaltigkeitswissenschaft.pdf</a></p>	<p>and the contents of the distance learning possibility can be found here: <a href="http://geography.exeter.ac.uk/currentstudents/postgraduate/programmespecs/">http://geography.exeter.ac.uk/currentstudents/postgraduate/programmespecs/</a></p>	<p>Managing Sustainable Agriculture for Development Renewable and Sustainable Energy Sustainable Development Environmental Governance</p> <p>Each specialisation track pays attention to the theoretical background, appropriate research methodology, and intervention methods of a specialized field within the framework of sustainable development.</p>	
<b><i>Special features</i></b>	<p>Leuphana University of Lüneburg and Arizona State University have established a Joint Center for Global Sustainability and Cultural Transformation (CGSC) in 2015. <a href="http://www.leuphana.de/zentren/cgsc.html">http://www.leuphana.de/zentren/cgsc.html</a></p>	<p>Grand Challenges 2015. A week-long summer programme for <i>undergraduates</i> working together in interdisciplinary research groups, alongside some top academics, to tackle some of the greatest challenges of the 21<sup>st</sup> century. <a href="http://www.exeter.ac.uk/grandchallenges/">http://www.exeter.ac.uk/grandchallenges/</a></p>	<p>Students are required to complete at least 30 ECTS credits at one of the partner universities. 60 ECTS credits have to be earned at the home university.</p>	-
<b><i>The role of multidisciplinary in teaching?</i></b>	<p>A distinctive feature of the Sustainability Sciences program is its balance between sustainable natural sciences and sustainable humanities. The goal is to look at social-ecological systems in an academically grounded and interdisciplinary manner. The processes which form the material and energetic basis for environmental</p>	<p>Holistic and multi-disciplinary perspective, this approach is critical: sustainable development covers inter-related economic, environmental and social issues. A practical and problem-based approach to learning focused on</p>	<p>Sustainability issues are approached from an interdisciplinary perspective. The focus is set on applying the competences to the question of sustainable development and the needs and possibilities of societal transformation.</p>	<p>Minor has an interdisciplinary character and is designed for all degree programmes. Interdisciplinarity is integrated to the studies by offering it to all students and emphasizing interdisciplinary working methods and dialogue throughout the course contents</p>

	<p>sustainability problems as well as potential practical solutions are examined from the perspective of sustainable natural sciences. In complex social-ecological systems these material processes are closely interconnected with economic, juridical, political, and cultural contexts as well as with strategies and practices of important social actors. These immaterial prerequisites and conditions of environmental sustainability problems and the way these problems are addressed are the subject of sustainable humanities.</p>	<p>both the study of sustainable development and its implementation in a range of professional contexts.</p>		<p><a href="http://www.cml.leiden.edu/education/minor/opening-minor-sustainable-development-2015-2016.html">http://www.cml.leiden.edu/education/minor/opening-minor-sustainable-development-2015-2016.html</a></p>
<p><b>Additional information</b></p>	<p>Centre for Sustainability Management (CSM) at Leuphana University Lüneburg offers a distance learning MBA in Sustainability Management, the first Green MBA worldwide, started 2003.  <a href="http://www.leuphana.de/en/institutes/csm/about-the-csm.html">http://www.leuphana.de/en/institutes/csm/about-the-csm.html</a>  Master's Program in Global Sustainability Science is a dual degree study programme with Arizona State University in Phoenix/USA  <a href="http://www.leuphana.de/graduate-school/master/studienangebot/global-sustainability-science.html">http://www.leuphana.de/graduate-school/master/studienangebot/global-sustainability-science.html</a></p>	<p>Offers also: <b>MSc Sustainable Development (Climate Change and Risk Management)</b>, it has a different emphasis of compulsory modules focusing more on the science of climate change and its influence on climate, environment and energy policy.  <a href="http://geography.exeter.ac.uk/postgraduate/taught/sustdevccrm/">http://geography.exeter.ac.uk/postgraduate/taught/sustdevccrm/</a></p>	<p>The contents of the studies can be found through:  <a href="http://www.jointdegree.eu/sd/index.php?option=com_content&amp;view=article&amp;id=23:outlineprogramme&amp;catid=37:catprogramme&amp;Itemid=11">http://www.jointdegree.eu/sd/index.php?option=com_content&amp;view=article&amp;id=23:outlineprogramme&amp;catid=37:catprogramme&amp;Itemid=11</a></p>	<p>CML organizes also MSc Industrial ecology concerning tools and practices for sustainable production and consumption; MSc started in September 2004 and is organised together with Delft Technical University.  <a href="http://www.cml.leiden.edu/education/master/industrial/about-master-ie.html">http://www.cml.leiden.edu/education/master/industrial/about-master-ie.html</a>.</p>

**Appendix 4. The International case examples of minor and major studies in CSR/responsible business in Denmark, the Netherlands and the United Kingdom.**

Question	Copenhagen Business School	Erasmus University in Rotterdam	Royal Holloway, University of London	Nottingham University Business School
<i>Under which faculty or school is the education organized?</i>	Centre for Corporate Social Responsibility <a href="http://www.cbs.dk/en/research/departments-and-centres/department-of-intercultural-communication-and-management/centre-corporate-social-responsibility">http://www.cbs.dk/en/research/departments-and-centres/department-of-intercultural-communication-and-management/centre-corporate-social-responsibility</a>	Department of Business- Society Management <a href="http://www.rsm.nl/master/msc-programmes/msc-global-business-stakeholder-management/">http://www.rsm.nl/master/msc-programmes/msc-global-business-stakeholder-management/</a>	Organized jointly by the School of Management and the Department of Geography <a href="https://www.royalholloway.ac.uk/Management/Cris/teaching.html">https://www.royalholloway.ac.uk/Management/Cris/teaching.html</a>	Administered as part of Nottingham University Business School, teaching by ICCSR and Haydn Green Institute for Innovation and Entrepreneurship <a href="http://www.nottingham.ac.uk/business/ICCSR/teaching.php?c=12">http://www.nottingham.ac.uk/business/ICCSR/teaching.php?c=12</a>
<i>Type of education: Study module/Minor subject or Bachelor/Master's programme?</i>	The Minor Sustainable Business 22.5 ECTS, free to all students	The RSM MSc in Global Business & Stakeholder Management (GBSM), one year, 60 credits (ECTS), 38 students	The MSc Sustainability and Management, one year full time	The MSc in CSR 180 cr, 12 months full time, intake max 20 students
<i>Does there exist a research institute or centre in the background?</i>	Centre for Corporate Social Responsibility (cbsCSR) Centre is actively involved in the teaching and supervision of numerous CSR-related elective courses and minors offered at CBS at all educational levels	Erasmus Research Institute of Management (ERIM) is in the background as RSM teaching faculty are all active researchers at ERIM, but it does not organize the Master <a href="http://www.erim.eur.nl/">http://www.erim.eur.nl/</a>	The Centre for Research into Sustainability CRIS <a href="https://www.royalholloway.ac.uk/Management/Cris/">https://www.royalholloway.ac.uk/Management/Cris/</a> <a href="https://www.royalholloway.ac.uk/Management/Cris/documents/CRIS-Annual-Report-2013-14.pdf">https://www.royalholloway.ac.uk/Management/Cris/documents/CRIS-Annual-Report-2013-14.pdf</a>	International Centre for Corporate Social Responsibility (ICCSR), founded 2002, <a href="http://www.nottingham.ac.uk/business/ICCSR/index.php">http://www.nottingham.ac.uk/business/ICCSR/index.php</a>
<i>Core elements</i>	The minor consists of three 7.5 ECTS elective courses: Corporate Social Responsibility in Global Supply Chains Sustainable Business Strategy and Innovation Creating markets for sustainable products <a href="https://e-campus.dk/studium/stud-">https://e-campus.dk/studium/stud-</a>	Mandatory courses (22 ECTS): Sustainability Leadership & Planetary boundaries Global Business Strategies Personal Narrative, Communication and Career Corporate Integrity Sustainability Grand Challenges Boot Camp Elective courses (18 ECTS): Managing NGO's	<i>Core Taught Courses</i> Sustainability and Governance (20 cr) Sustainability & Society 20cr Corporate Social Responsibility: Conceptual Foundations (20 cr) Corporate Social Responsibility: Applications and Tools (20 cr) <i>Core Research Courses</i> Community Volunteer Project (10 cr) Research Training (10cr)	<i>Semester 1</i> Introduction to Research Methods Strategies for Responsible Business Business Ethics One from: Further Quantitative Research Methods Further Qualitative Research Methods <i>Semester 2</i> Corporations, Power and Society

	<p><a href="#">iehjemmesider/kandidat/cand.merc./minors/sustainable-business</a></p> <p>Minors in CBS consist normally of 3 courses (22.5 ECTS) concluded with a certificate to be added to the Masters diploma.</p>	<p>Corporations &amp; Justice Climate Change Strategy Role-play which is a joint elective with MSc International Management/CEMS; GBSM Research Project Companies in Ecologies Cradle to Cradle Thesis 20 ECTS, includes Research Methods (4 ECTS) Programme focuses on real-world business relevance. Students take a practical and critical approach to sustainability issues and examine and understand the strategies of companies, governments and non-governmental organisations. <a href="http://www.rsm.nl/master/msc-programmes/msc-global-business-sustainability/curriculum/">http://www.rsm.nl/master/msc-programmes/msc-global-business-sustainability/curriculum/</a></p>	<p>Dissertation (60 credits) <i>Elective units (choose 1 from the following or another 20 cr course):</i> Practices of Sustainability in Developing Areas 20 cr Corporate Governance 20cr Global Business Strategy20cr <a href="https://www.royalholway.ac.uk/management/coursefinder/mscsustainabilityandmanagement.aspx">https://www.royalholway.ac.uk/management/coursefinder/mscsustainabilityandmanagement.aspx</a> The programme is characterised by blending together subject matter from the sciences, (notably environmental sustainability) and the more value driven corporate social responsibility.</p>	<p>Globalization, Business and Development Two from: Corporate Strategy Evaluating Sustainability Innovation and Policy Supply Chain and Operations Strategy and Practice Tourism and Sustainability <i>Summer</i> 12,000-15,000 word Corporate Social Responsibility dissertation <a href="http://www.nottingham.ac.uk/business/programmes/msc/courses/corporate-social-responsibility.aspx">http://www.nottingham.ac.uk/business/programmes/msc/courses/corporate-social-responsibility.aspx</a></p>
<b><i>The role of multidisciplinary in teaching?</i></b>	-	-	The programme gives an interdisciplinary education and it enables students to understand connectivities beyond the borders of just one discipline	The course is internationally focussed, multi-sectoral and multidisciplinary in approach.
<b><i>Additional information</i></b>	There are many electives in CBS related with issues of sustainability and CSR and students can incorporate them into their degree studies.	-	-	Teaching in CSR started with MBA in CSR in 2003 and with MA in 2004. <b>The MA programme was reclassified as an MSc programme in 2010.</b> In 2015, MSc offering was revamped with the launch of the MSc in Sustainability. ICCSR offers now 3 programmes: MBA in CSR, MSc in CSR and MSc in Sustainability.

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**Katariina Heikkilä**

### **SUSTAINABILITY STUDIES IN UNIVERSITIES**

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