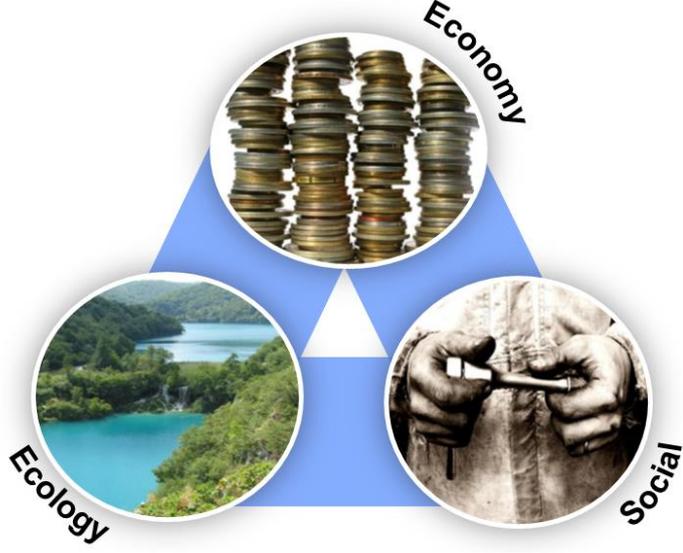


<b>Course name</b>	<b>Sustainable Development</b>
1-2 Images describing the course subject	
Examiner	Björn Johansson, Chalmers, <a href="mailto:bjorn.johansson@chalmers.se">bjorn.johansson@chalmers.se</a>
More info, contact person	Björn Johansson, Product and Production Development, Chalmers University of Technology, Hörsalsvägen 7A, 41296 Göteborg, 031-772 38 09 <a href="mailto:bjorn.johansson@chalmers.se">bjorn.johansson@chalmers.se</a>
Course site and dates ( <i>Town and dates</i> )	Proposed days for first course 2014: Gothenburg, June 18-19. Stockholm, Late August / Beginning of September. Linköping, Late August / Beginning of September
Teachers /Tutors ( <i>incl. about 100 words short CV</i> )	<p>Björn Johansson is an assistant professor at Product and Production Development, Chalmers University of Technology. One of his main responsibilities at Chalmers within the area of advance Production is to increase the awareness of about 200 researchers on sustainability over a lifecycle perspective of their own research field by coaching them. He is also teaching sustainable development on bachelor and master level courses. His research also aims at utilizing virtual applications to achieve more sustainable manufacturing industries. In specific methodologies and tools for analyzing flows throughout a product lifecycle, addressing social environmental and economic key performance indicators to improve the real world performance.</p> <p>Erik Sundin is an associate professor at Manufacturing Engineering, Linköping University. He has performed research and teaching within the areas of remanufacturing, recycling, design for remanufacturing, design for the environment since year 2000. Currently he holds a</p>

course on master level called Sustainable Manufacturing. Erik is now leading two remanufacturing research projects where one is including in Production 2020 called RemProLife. In addition he is also leading a sustainable manufacturing project dealing with sustainable industrial cleaning.

Elisabeth Ekener Petersen, is a researcher at KTH and holds a PhD degree in Social Lifecycle Assessment. She is a pioneer in this brand new field of research and her doctoral thesis is one of only a handful in this area globally. She has a background in the business sector as a sustainability consultant and has specialized in social sustainability. In 2005-2010 she was an international delegate in the development of the ISO 26000, an ISO guidance standard for social responsibility. She is teaching in Social LCA as well as in sustainability and ICT at KTH.

Jutta Hildenbrand, Chalmers, Environmental Lifecycle Assessment  
Jutta Hildenbrand is an assistant professor at Environmental Systems Analysis, Chalmers University of Technology. She is currently researching opportunities and obstacles for applying insights for assessing the environmental impacts of products in the area of product and production development. She has been actively teaching and doing research on LCA with a special focus on application in industry for the last twelve years on bachelor and master level. Her research aims at collecting and utilizing information on material and energy flows to support environmental and economic assessments as a basis for decision making. Specific methodologies used include life cycle assessment and life cycle costing as well as their combination in a life cycle sustainability assessment.

Images of Teachers  
/Tutors



Björn Johansson



Erik Sundin



Elisabeth Ekener Petersen



Jutta Hildenbrand

	 <p>Elisabeth Ekener Petersen</p>  <p>Jutta Hildenbrand</p>
<p>Target group (professionals who want to .... and doctoral students who wants to ....)</p>	<p>PhD Students mainly, other applicants may be welcome if there is space.</p>
<p>Overall Course Goal</p>	<p>Increase awareness regarding sustainability aspects in general and specifically within each of the PhD students own research fields.</p>
<p>Points</p>	<p>4</p>
<p>Ingress Short Summary and aims (max. 5 lines)</p>	<p>The course sustainable development aims at addressing a life-cycle perspective of sustainability in general and in specifics from three aspects, social, environmental and economic viewpoints within the core research area of each participant.</p>
<p>cont... Summary and aims (max. 10 lines)</p>	
<p>Learning outcomes (USE ACTIVE WORDS <i>reason about, describe, handle, apply, use, conduct, explain, analyse and evaluate. Use headers and bullets if possible</i>)</p>	<p>Upon successful completion of the course, participants should be able to:</p> <ul style="list-style-type: none"> <li>• Apply and explain, with increased awareness, on how relations are important for sustainable development in general for each participant individually (will be measured!).</li> <li>• Understand and reason about, with increased awareness, on how to position the individual research area in a wider context addressing both the triple bottom line as well as the lifecycle</li> </ul>

	<p>perspective in a sound manner within the specific research field.</p> <ul style="list-style-type: none"> <li>• Explain the triple bottom line and the relation between economy/social and environmental aspects.</li> <li>• Describe their own research filed in terms of sustainability and lifecycle perspective both in writing and in a verbal discussion.</li> <li>• Reason about sustainable benefits of remanufacturing.</li> <li>• Describe how products can be designed for recycling and/or remanufacturing.</li> <li>• Describe the underlying concept of life cycle assessment and the building blocks inventory analysis, impact assessment and interpretation.</li> <li>• Explain limitations of the approach and requirements for carrying out an LCA study.</li> <li>• Describe the specific attributes of Social Lifecycle Assessment and discuss the benefits and limitations of the methodology</li> <li>• List a basic set of potential social impacts from products in a life cycle perspective and discuss possible trade-offs with environmental impacts.</li> </ul>
<p>Course content</p>	<p>The course sustainable development will address a lifecycle perspective of sustainability in general and in specifics from three aspects, social, environmental and economic viewpoints. The core area of work for each PhD student will be their own research domain while addressing sustainability over the life-cycle and in each of the three aspects of the triple bottom line approach. The societal challenges will be related to from the research fields in order to strengthen the PhD students position on sustainability aspects within the challenges and their field.</p> <p>Three physical meeting days are planned (lunch to lunch or full days), in addition to work in-between the meetings.</p>
<p>Course Structure <i>(briefly structure and main "blocks")</i></p>	<p>Three physical meetings with homework to perform in between. The physical meetings will be used to elaborate the sustainability aspects from each participants perspective on economic, environmental and social aspects in a life-cycle perspective in order to increase the awareness and decision basis for all participants.</p>
<p>Course Structure/ Class sessions <i>(structure and main "blocks" on a day and date to day and date to basis. Hours if possible on draft plan, hours definitely on final plan)</i></p>	<p><b>First meeting</b> First physical meeting is initiated with a <b>short round table</b> approach to let each person introduce themselves and (prepared in advance) a 0,5 pager with description of the research area.</p> <p><b>Lecture on sustainability in general</b> including discussions and some interesting examples for reflection in order to understand the complexity and multi-faceted problems which needs to be solved. Concepts maps conducted by all PhD students in order to measure their current position and understanding of what sustainability means for each person.</p> <p>After first meeting, feedback on the 0,5 pager and concept map. Task for 2<sup>nd</sup> meeting add sustainability aspects to the 0,5 pager.</p>

	<p><b>Second meeting</b>  Bring updated 0,5 pager (now 1 pager).  This meeting will have focus “guest lecturers” on the three different aspects of sustainability, 2 x 45minutes on each topic economy, environment, social with a lot of interaction and discussion out of the PhD students own research questions and hand ins.</p> <p>Feedback and updated 1 pager for last meeting (now 2 pages with a more solid approach on how to tackle sustainability in the specific research field.</p> <p><b>Third meeting</b>  The PhD student now has a 2 page document which will be presented for 4 others in smaller groups and discussed (15 minutes presentation, 10 minutes discussion on each).</p> <p>The last meeting will also bring up the complexity and overall dilemma with sustainability such as ethics/morals/religion/values/laws/tradeoffs etc...  A conceptual map will be done as a final exercise and the new map will be compared vs. the one made when starting the course to see/measure the progression.</p> <p>The written and presented material could be useful for papers and theses in a near future and will give a good base for sustainable development for our societies. Performing sustainable research will lead to sustainable development!</p>
<p>Expected pre-knowledge</p>	<ul style="list-style-type: none"> <li>• Have a defined research area.</li> </ul>
<p>Travelling directions incl. google map and coordinates (to be added before first lecture)</p>	<ul style="list-style-type: none"> <li>• TBD, but preferably 3 locations, Gothenburg, Stockholm, Linköping.</li> </ul>