1 **Name, Scope and Level of the Course**

The course is provided by the University of Skövde and is named Sustainable Development and Innovation A1N. It comprises 6 credits and is on advanced level. The level of progression of the course is A1N.

2 **Objectives**

After completed course the student should be able to:

- explain and discuss the importance and challenges of sustainable development and its goals within industrial firms, as well as the concept of sustainable engineering,

- explain and discuss circular economy and its existing business models to support sustainability,

- explain and discuss the role of innovation to support sustainability goals, as well as sustainability as a source for innovative ideas,

- analyze and critically discuss research articles and real-world case studies within the areas of sustainable development and innovation, and

- justify how different engineering methods and tools, with special focus on digitalization and virtual engineering, can support sustainable development and be a source for innovation.

3 **Course Content**

The course provides knowledge in the areas of sustainable development and engineering, taking into account the economic, societal and environmental dimensions of sustainability. It offers a broad understanding on the existing opportunities and challenges for sustainable development within industrial firms. The close interaction between innovation and sustainability is also analyzed and discussed from an engineering perspective during the course. Special focus will be provided to how different engineering methods and tools taught during the master program can support sustainable development and be a source for innovation. Theory is combined with exercises, the analysis and group discussions of real-world cases, research articles, and seminars with guest lecturers (experts on the area) to provide a deeper understanding of the core concepts of the course.

4 **Forms of Teaching**

The teaching comprises lectures, seminars with guest lecturers, group work and presentations.

The teaching is conducted in English.

5 **Examination**

The course is graded A (Excellent), B (Very good), C (Good), D (Satisfactory), E (Sufficient) or F (Fail).

Registration of examination results:

<table>
<thead>
<tr>
<th>Name of examination</th>
<th>Credits</th>
<th>Grading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group assignment and oral presentation</td>
<td>3 credits</td>
<td>G/U</td>
</tr>
<tr>
<td>Individual assignment1</td>
<td>3 credits</td>
<td>A/B/C/D/E/F</td>
</tr>
</tbody>
</table>

1 Determines the final grade of the course.

Students with a permanent disability who have been
approved for special educational support may be offered adapted or alternative examinations.

6 Admission Requirements
The prerequisites for this course are a Bachelor degree of at least 180 higher education credits (equivalent to 180 ECTS) within the fields of integrated product development, production engineering, automation engineering, mechanical engineering, information technology or similar.

A further requirement is proof of skills in English equivalent of studies at upper secondary level in Sweden, known as English course 6 / English course B. This is normally demonstrated by means of an internationally recognized test, e.g. IELTS, TOEFL or the equivalent.

7 Subject, Main Field of Study and Disciplinary Domain
The course forms a part of the academic subject area of Virtual Product Realization. The course is a part of the main field of study in Virtual Product Realization at the University of Skövde. The disciplinary domain of the course is Technology.

Every course at the University of Skövde belongs to a subject. The division of subjects is used for follow-up and quality assurance. A main field of study is an area in which a degree can be awarded. Disciplinary domain is a division which is used by the government for the allocation of resources for studies at basic level and advanced level.

8 Approval of Course and Course Syllabus
The course was approved by the Curriculum Committee for Engineering Science on 5 March 2018. This course syllabus was approved by the Curriculum Committee for Engineering Science on 4 March 2019. It is valid from 1 July 2019.

9 Overlapping with Another Course
This course cannot constitute a part of a degree also containing a course the content of which is totally or partly equivalent to the content of this course.

10 Additional Information
Further information will be available on the university’s website before a course is given.

National and local regulations for higher education are available on the university’s website.

Upon completion of the course there will be a follow-up. The main purpose of this follow-up is to contribute to improvements of the course. The students’ experiences and views constitute one of the criteria for the follow-up and are gathered by means of course evaluations. The students will be informed of the results of the follow-up and any decisions regarding actions that are to be taken.

11 Course Literature and Other Educational Materials
Course literature as prescribed by the instructor. Relevant real-world case studies and articles published in renowned journal and conferences will be employed during the course.