

Course syllabus for

PM4: Engineering Design Research Methodology

Syllabus adopted 2019-11-25 by Professor Bengt-Göran Rosén, Produktion2030 Head of Education



Credits	7.5 hec
Grading scale	Satisfactory/not satisfactory
Education cycle	Third-cycle
Examiner	Tobias Larsson and Alessandro Bertoni, Blekinge Institute of Technology
Eligibility equivalent	A Master's degree in production/mechanical engineering or
Aim	<p>The aim of the course is to prepare doctoral students researching and working on topics in the engineering design area to conduct research work of high scientific quality. The course will also:</p> <ul style="list-style-type: none"> • give the students insights into existing design research theories and models in order to choose an appropriate theoretical background, • provide an overview of the methods applied in design research in order to enable the students to select and develop the approach most suited for their own research challenge, • give the opportunity to meet and confront with researchers working in the product and service systems design.

Intended learning outcomes	<p>After completion of the course the course participant should be able to</p> <ul style="list-style-type: none"> • Know how design research is carried out • Understand the nature and use of research theories • Understand the scientific relevance of published literature • Choose suitable qualitative and quantitative methods in design research • Formulate research questions and hypotheses • Determine his/her own theoretical areas of contribution • Determine measurable success criteria for his/her research • Define a plan for his/her own research • Assess the of the validity of research done in engineering design • Reflect on ethical implications of research and publishing
Course content	<p>The contents of the course are the following:</p> <ul style="list-style-type: none"> • History and background of design research • Frame design research in the Scientific Method • How to define a research question and hypotheses • Literature Review methods and analysis • The Design Research Methodology: studies and support methods • Publishing academic results • Presenting academic results • Research ethics and code of conduct.
Course organisation	<p>The course features 2 physical meetings to kick-off and concludes the course and four online lectures with possibility to attend physically for the doctoral students located at Blekinge Institute of Technology</p>
Examination	<p>A successful completion of this course will be judged on the successful submission and approval of the following assignments:</p> <ul style="list-style-type: none"> • Assignment #1: Analysis of research questions and research hypothesis • Assignment #1b: Analysis of literature reviews • Assignment #2: Research Plan write-up including presentation

Literature

Blessing, L.T.M., Chakrabarti, A., 2009. DRM, a Design Research Methodology. Springer. Plus compendium, articles, and presentation material.