

## I. IDENTIFICATION DATA

<b>Thesis title:</b>	<b>Design of rear wheel suspension for a city car sharing vehicle</b>
<b>Author's name:</b>	<b>Bc. Petr Vácha</b>
<b>Type of thesis :</b>	master
<b>Faculty/Institute:</b>	Faculty of Mechanical Engineering (FME)
<b>Department:</b>	U12120
<b>Thesis reviewer:</b>	Ing. Michal Vašíček, Ph.D.
<b>Reviewer's department:</b>	U12120

## II. EVALUATION OF INDIVIDUAL CRITERIA

<b>Assignment</b> <i>How demanding was the assigned project?</i>	<b>ordinarily challenging</b>
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<b>Fulfilment of assignment</b> <i>How well does the thesis fulfil the assigned task? Have the primary goals been achieved? Which assigned tasks have been incompletely covered, and which parts of the thesis are overextended? Justify your answer.</i>	<b>fulfilled with minor objections</b>
Assignment of the thesis is generally fulfilled. I do have objection to different quality of individual parts/chapters.	

<b>Methodology</b> <i>Comment on the correctness of the approach and/or the solution methods.</i>	<b>partially applicable</b>
Presented topics are individually solved with correct approach, but there is no common approach that would keep process clear. There is no discussion about estimations and simplifications made, about inputs and outputs. Analysis of lateral dynamics is missing (while longitudinal and vertical are present). Regulations regarding selected category of vehicles shall be presented complete.	

<b>Technical level</b> <i>Is the thesis technically sound? How well did the student employ expertise in the field of his/her field of study? Does the student explain clearly what he/she has done?</i>	<b>C - good.</b>
<p>There is quite high discrepancy between levels of quality and complexity of topics discussed (suspension design vs. frame/subframe design, assessment of basic dimensional properties and suspension kinematics vs. vehicle dynamics simulations). Design of every vehicle begins with packaging of passengers, aggregates and individual components incl. mass concept. It is unclear why it hasn't been done and what is conceptual design of vehicle, what loads must suspension withstand. None of the components was analyzed in terms of stiffness, strength and durability.</p> <p>Chapter 4.1 Design and calculation of the folding mechanism provides only initial concept of folding mechanism. Due to the fact, folding mechanism seems to be key for thesis, it would deserve more attention.</p> <p>Requirements on kinematics of suspension are not set. Presented characteristics of wheel travel over toe/camber angle shows very limited amount of target fulfilment.</p> <p>Assignment of the thesis requires to create design concept. That means all functional requirements shall be explained and concept of their design presented. That is done in a poor way and reader miss discussion of the subframe structure design, blocking of the folding mechanism and idea of the folding mechanism integration.</p>	

<b>Formal and language level, scope of thesis</b> <i>Are formalisms and notations used properly? Is the thesis organized in a logical way? Is the thesis sufficiently extensive? Is the thesis well-presented? Is the language clear and understandable? Is the English satisfactory?</i>	<b>C - good.</b>
Formal level of the thesis is average, language level is mediocre.	

<b>Selection of sources, citation correctness</b>	<b>B - very good.</b>
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*Does the thesis make adequate reference to earlier work on the topic? Was the selection of sources adequate? Is the student's original work clearly distinguished from earlier work in the field? Do the bibliographic citations meet the standards?*

Citations are performed well and taken from valid sources.

### **Additional commentary and evaluation (optional)**

*Comment on the overall quality of the thesis, its novelty and its impact on the field, its strengths and weaknesses, the utility of the solution that is presented, the theoretical/formal level, the student's skillfulness, etc.*

Thesis doesn't provide anything new in terms of idea or approach, presented results are fragmented and at different level of completeness and quality.

### **III. OVERALL EVALUATION, QUESTIONS FOR THE PRESENTATION AND DEFENSE OF THE THESIS, SUGGESTED GRADE**

*Summarize your opinion on the thesis and explain your final grading. Pose questions that should be answered during the presentation and defense of the student's work.*

The grade that I award for the thesis is **D - satisfactory**.

Can you explain the brake system concept (scheme of circuits, valves, bias valves, etc.)?

Can you estimate magnitudes of forces loading foldable suspension?

What is a tire model used in the CarMaker?

What is the front suspension design? How does it affect results obtained in the CarMaker?

Is the resulting oversteering tendency acceptable for vehicle's purpose?

Date: **22.8.2019**

Signature: Michal Vašíček