

## I. IDENTIFICATION DATA

<b>Thesis title:</b>	<b>Rotor Balancing Machine</b>
<b>Author's name:</b>	<b>Matouš Hrubý</b>
<b>Type of thesis :</b>	bachelor
<b>Faculty/Institute:</b>	Faculty of Mechanical Engineering (FME)
<b>Department:</b>	Department of Instrumentation and Control Engineering
<b>Thesis reviewer:</b>	Ing. Milan Navrátil, Ph.D.
<b>Reviewer's department:</b>	Tomas Bata University in Zlín, Faculty of Applied Informatics, Department of Electronics and Measurement

## II. EVALUATION OF INDIVIDUAL CRITERIA

<b>Assignment</b>	<b>challenging</b>
<i>How demanding was the assigned project?</i>	
The assigned project required designing and building a small, cost-effective rotor balancing machine using 3D printing and basic electronic components. The project included mechanical design, sensor selection and integration, electronics development, and software programming for data acquisition and user interface.	

<b>Fulfilment of assignment</b>	<b>fulfilled</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>	
The thesis fulfills the assigned tasks comprehensively. The primary goals have been achieved, including the mechanical design and construction of the machine, integration of sensors, development of electronic circuitry, and programming of the user interface. The thesis presents a well-rounded solution with practical demonstrations and test results. However, the complexity of achieving precise data for complex balancing tasks indicates some areas could benefit from further refinement.	

<b>Methodology</b>	<b>correct</b>
<i>Comment on the correctness of the approach and/or the solution methods.</i>	
The approach to solving the problem was methodical and well-documented. The use of 3D printing for mechanical parts, combined with standard electronic components and microcontrollers, is innovative and cost-effective. The methodology for sensor integration and data acquisition using Arduino Mega 2560 is reasonable and aligns well with the educational purpose of the project.	

<b>Technical level</b>	<b>B - very good.</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>	
The student demonstrated a strong grasp of mechanical and electronic design principles, sensor technology, and programming. The technical execution of the project reflects a high level of competence in the field of mechanical engineering.	

<b>Formal and language level, scope of thesis</b>	<b>A - excellent.</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>	
The formal structure of the thesis is logical and well-organized. Formalisms and notations are used appropriately throughout the document. The language is clear and comprehensible, making the thesis accessible to readers. The scope is adequately extensive, covering all necessary aspects of the project from concept to implementation and testing.	

<b>Selection of sources, citation correctness</b>	<b>A - excellent.</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?*

The thesis references relevant sources appropriately, indicating a solid understanding of the existing literature. The selection of sources is adequate, and citations are correctly formatted.

### **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.*

Overall, the thesis presents a novel and practical solution for rotor balancing using accessible technology. Its strengths lie in the innovative use of 3D printing and the clear demonstration of sensor applications in a mechanical engineering context. The main weakness is the precision of data for more complex balancing, suggesting an area for future improvement.

### **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.*

In conclusion, Matouš Hrubý's thesis on the rotor balancing machine demonstrates a high level of technical skill, innovative use of resources, and clear documentation, making it a commendable contribution to the field of mechanical engineering.

Additional questions:

1. How could the precision of data acquisition be improved for more complex balancing tasks?
2. What were the main challenges encountered during the integration of sensors and how were they addressed?
3. Can you discuss potential future enhancements to increase the machine's applicability in an industrial setting?

The grade that I award for the thesis is **A - excellent**.

Date: **5.6.2024**

Signature: