SYLLABUS

1. Program data

1.1 Higher education institution	Technical University of Cluj-Napoca
1.2 Faculty	Road Vehicles, Mechatronics and Mechanics
1.3 Department	Road Vehicles and Transport
1.4 Field of study	Automotive Engineering
1.5 Study cycle	Master's Degree
1.6 Study program / Qualification	Advanced Techniques in Automotive Engineering (English) /Engineer
1.7 Form of education	IF – full-time education

2. Data about the discipline

2.1 Name of the discipline	Dissertation Project Work			Code of Discipline	20.00
2.2 Course holder					
2.3 Head of seminar/laboratory/project/practical activities					
2.4 Year of study	2	2.5 Semester	2	2.6 Type of Assessment	V
2.7 Discipline regime	Formative category				DA
	Optionality				DOB

3. Total estimated time

3.1 Number of hours per week	7	of which:	3.2 Lecture	0	3.3 Seminary	0	3.3 Laboratory	0	3.3 Project	7	3.3 Practice	0
3.4 Number of hours per semester	98	of which:	3.5 Lecture	0	3.6 Seminary	0	3.6 Laboratory	0	3.6 Project	98	3.3 Practice	0

3.7 Distribution of time (hours per semester) for individual study and assessment:	
(a) Assessment	2
(b) Studying according to the textbook, course material, bibliography and notes	-
(c) Additional documentation in the library, on specialized electronic platforms and in the field	150
(d) Preparation of seminars / laboratories, assignments, papers, portfolios and essays	-
(e) Tutoring	-
(f) Other activities	-
3.8 Total hours of individual study and assessment (sum of (3.7(a)…3.7(f))	152
3.9 Total hours per semester (3.4+3.8)	250
3.10 Number of credits	10

4. Preconditions (where applicable)

4.1 Curriculum	
4.2 Skills	

5. Conditions (where applicable)

5.1. Lecture delivery	
5.2. Seminar / laboratory / project delivery	

6. Specific skills acquired

Professional skills	Expression by written and oral communication in technical language of the theoretical foundations underlying the elaboration of a technical project; Knowledge of the general principles and stages of the drafting of a project; Formulation and application of methods and techniques / principles studied for the design of equipment for motor vehicles; Explaining and interpreting specific projects, using theoretical concepts and graphical tools; Adoption of criteria and methods for evaluation of concepts, theories and programs for the design of motor vehicle equipment; The comparative analysis of the data and its evaluation based on the theories and the methods used in the applicative research specific to the motor vehicles; Appropriate use of standard assessment criteria and methods to objectively assess the theoretical and practical elements related to technologies related to the design, construction and operation of motor vehicles; Elaboration of projects, models and prototypes, using principles and methods established in the field;
Transversal skills	Respecting the principles, norms and values of the professional ethics code by addressing a rigorous, efficient and responsible work strategy for problem solving and decision-making. Applying the techniques of multidisciplinary teamwork and multidisciplinary work, on different hierarchical levels, within the working team - specific project management. Appropriate use of effective lifelong learning methods and techniques; adequate use of information and oral and written communication in a European language.

7. Expected learning outcomes

Knowledge	The student/graduate demonstrates advanced knowledge of the scientific and engineering principles relevant to the selected dissertation topic, integrating theoretical concepts, research methodologies, and modern automotive engineering technologies. The student/graduate understands the structure, methodology, and academic requirements for preparing a high-quality Master's dissertation based on original engineering research.
Skills	The student/graduate independently develops, validates, and documents an original engineering project by integrating theoretical knowledge, experimental investigations, simulation methods, and engineering analysis. The student/graduate critically analyzes research findings, formulates scientifically supported conclusions, and prepares the dissertation manuscript in accordance with academic, scientific, and professional standards.
Responsibility and autonomy	The student/graduate independently plans, organizes, and completes the dissertation project, demonstrating responsibility for the originality, quality, and scientific validity of the research outcomes. The student/graduate applies academic integrity principles, manages research activities autonomously, communicates technical results effectively, and demonstrates professional responsibility throughout the preparation of the Master's dissertation.

8. The objectives of the discipline (based on the grid of specific competencies acquired)

8.1 General objective of the discipline	Application of advanced methods in the design, construction, maintenance, repair and operation of vehicles.
8.2 Specific objectives	Identification of advanced analysis methods used in maintenance, repair and operation of vehicles. Identifying and designing solutions for vehicle equipment. The technical, economic and financial basis of the modernization decisions for vehicles.

9. Content

9.1 Thesis contents	Hrs.	Teaching methods	Observation
1. Analysing the need for the project and the current state of the art. 2. Conceptual development of the project and analysis of the variants. 3. Establish the design solution and specify the initial data. 4. Elaboration of the project (elements of detail, choice of materials, setting of features, graphic representation, simulations, research / development elements, including practical achievements). 5. Project evaluation from an economic point of view and implementation. 6. Evaluation of the project in terms of its environmental impact in the context of sustainable mobility.			

9.2 Individual study	Hrs.	Teaching methods	Observation
1. Study of the literature for the current state of the art achievements and research in the field of the topic addressed 2. Standards for materials, graphics, machine parts, quality assurance, etc. 3. Analysis of existing variants of projects and synthesis materials 4. The study of the existing online / online literature			

9.3 Strategies and methods to elaborate the paper	Hrs.	Teaching methods	Observation
1. At the department level, the graduates present the basic elements regarding the elaboration of the diploma project; 2. Leaders of diploma projects support the graduate for the elaboration of the structure / content, the schedule with the elaboration schedule and the weekly consultation hours; 3. The project leader verifies during the elaboration stage the realization of the prologue and the correctness of the solved elements, constantly orienting the candidate; 4. The graduate must carry out a period of documentation on the project in economic units.			

10. Correlating the content of the discipline with the expectations of representatives of the epistemic community, professional associations and representative employers in the field related to the program

Synthesis and interpretation of advanced methods of analysis of specific processes in the field of machines and installations in agriculture and food industry. Using basic principles and methods for project management and ensuring quality of services according to market requirements.

11. Evaluation

Activity	11.1 Assessment criteria	11.2 Assessment methods	11.3 Weight of final grade
11.4 Lecture	-	-	-
11.5 Seminar/Laboratory /Project / Practice	Systematic preparation of activities provided in the project Acquiring the theoretical and practical knowledge specific to the project theme; Knowledge of assisted design methods	Periodic assessment of the semester The grade (A / R) is proposed by the coordinating teacher of the dissertation thesis	100%
11.6 Minimum Performance Standard The ability to identify optimal methods in the field. The ability to identify the itinerary and organize the processes specific to the field. The ability to identify and design optimal solutions.			

Date of completion	Responsible	Grade, Title, Second name First NAME	Signature
09.07.2026	Lecture		
	Teachers in charge of application (masters program responsible)	*Prof. PhD. Eng. Bogdan VARGA*	

Date of approval in the ART Department Council 24.07.2026 _____	ART Department Director Prof.dr.ing. Barabás István
Date of approval in the ARMM Faculty Council _16.09.2026	Dean, Prof.dr.ing. Filip Nicolae