SYLLABUS [1]

THIS COURSE UNIT IS TAUGHT IN ROMANIAN LANGUAGE

1. Information about the program

1.1 Higher education institution	Politehnica University Timișoara
1.2 Faculty[2]/ Department [3]	Mechanical Engineering/ Mechanical Machines, Equipment and Transportation
1.3 Chair	—
1.4 Field of study (name/code[4])	Mechanical Engineering/20 70 180
1.5 Study cycle	Bachelor
1.6 Study program (name/code/qualification)	Common curs units

2. Information about the discipline

2.1 Name of discipline/ formative category[5]			Manufacturing technology, Maintenance and Recovery/DD				
2.2 Coordinator (holder) of course activities			Lecturer PhD. Eng. Liliana Georgeta Tulcan				
2.3 Coordinator (holder) of applied activities[6]			Lecturer PhD. Eng. Liliana Georgeta Tulcan				
2.4 Year of study[7]	III	**2.5** Semester	5	**2.6** Type of evaluation	D	**2.7** Type of discipline[8]	DI

3. Total estimated time – hours / semester: direct teaching activities (fully assisted or partly assisted) and individual training activities (unassisted) [9]

3.1 Number of fully assisted hours / week	3 of which:	**3.2** course	2	**3.3** seminar / laboratory / project	1
3.1* Total number of fully assisted hours / semester	42 of which:	**3.2*** course	28	**3.3*** seminar / laboratory / project	14
3.4 Number of hours partially assisted / week	of which:	**3.5** training		**3.6** hours for diploma project elaboration	
3.4* Total number of hours partially assisted / semester	of which:	**3.5*** training		**3.6*** hours for diploma project elaboration	
3.7 Number of hours of unassisted activities / week	3,2 of which:	additional documentary hours in the library, on the specialized electronic platforms and on the field			0,2
		hours of individual study after manual, course support, bibliography and notes			2
		training seminars / laboratories, homework and papers, portfolios and essays			1
3.7* Number of hours of unassisted activities / semester	45 of which:	additional documentary hours in the library, on the specialized electronic platforms and on the field			3
		hours of individual study after manual, course support, bibliography and notes			28
		training seminars / laboratories, homework and papers, portfolios and essays			14
3.8 Total hours / week [10]	6,2				
3.8* Total hours /semester	87				
3.9 Number of credits	3				

4. **Prerequisites** (where applicable)

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[1] The form corresponds to the Discipline File promoted by OMECTS 5703 / 18.12.2011 and to the requirements of the ARACIS Specific Standards valid from 01.10.2017.
[2] The name of the faculty which manages the educational curriculum to which the discipline belongs
[3] The name of the department entrusted with the discipline, and to which the course coordinator/holder belongs.
[4] The code provided in HG no.140 / 16.03.2017 or similar HGs updated annually shall be entered.
[5] Discipline falls under the educational curriculum in one of the following formative disciplines: Basic Discipline (DF), Domain Discipline (DD), Specialist Discipline (DS) or Complementary Discipline (DC).
[6] Application activities refer to: seminar (S) / laboratory (L) / project (P) / practice/training (Pr).
[7] Year of studies in which the discipline is provided in the curriculum.
[8] Discipline may have one of the following regimes: imposed discipline (DI), optional discipline (DO) or optional discipline (Df).
[9] The number of hours in the headings 3.1 *, 3.2 *, ..., 3.8 * is obtained by multiplying by 14 (weeks) the number of hours in headings 3.1, 3.2, ..., 3.8. The information in sections 3.1, 3.4 and 3.7 is the verification keys used by ARACIS as: (3.1) + (3.4) ≥ 28 hours / wk. and (3.8) ≤ 40 hours / wk.
[10] The total number of hours / week is obtained by summing up the number of hours in points 3.1, 3.4 and 3.7.

4.1 Curriculum	• Science of Materials, Materials Technology, Production Machine and Systems,Tolerance and Dimensional Control, Technical Drawing
4.2 Competencies	• Acquired at the fundamental disciplines

5. Conditions (where applicable)

5.1 of the course	• laptop, video projector
5.2 to conduct practical activities	• laptop, video projector, computers

6. Specific competencies acquired through this discipline

Specific competencies	• conception, design, construction, operation and development of mechanical equipments • expertise, technical advice and service for mechanical equipments • quality assurance and maintenance of mechanical systems
Professional competencies ascribed to the specific competencies	• Selection, installation, operation, maintenance of systems in the field of mechanical engineering
Transversal competencies ascribed to the specific competencies	•

7. Objectives of the discipline (based on the grid of specific competencies acquired - pct.6)

7.1 The general objective of the discipline	• Development of design skills, elaboration of execution, technological documentation, evaluation, rehabilitation of the technical state, respectively of the components of the technical systems. Orientation towards technically and economically optimized actions.
7.2 Specific objectives	• Development of manufacturing technology for specific parts. Maintenance activity of technical systems. Knowledge of reconditioning technology for degraded components.

8. Content [11]

8.1 Course	Number of hours	Teaching methods [12]
Part 1 Basics of manufacturing technology development: The structure of manufacturing systems. Principles and concepts in the design and manufacture of technical systems. Standard parts in the construction of technological equipment. Engineering and quality management.	8	lecture, the presentation with multimedia means, explanation, presentation, to comment on specific films
Part 2 Specific manufacturing technologies: Cutting processing technologies: exterior, interior, flat, profiled, complex surfaces, non-abrasive processing technologies with	12	

[11] It details all the didactic activities foreseen in the curriculum (lectures and seminar themes, the list of laboratory works, the content of the stages of project preparation, the theme of each practice stage). The titles of the laboratory work carried out on the stands shall be accompanied by the notation "(*)".
[12] Presentation of the teaching methods will include the use of new technologies (e-mail, personalized web page, electronic resources etc.).

tools made of extra-hard materials. Plastic deformation and separation technologies with associated edges applied to flat semi-finished products. Technologies of plastic parts. Assembly and assembly technology. Non-removable joint technologies.		
Part 3 Maintenance and rehabilitation of technical systems: Degradation, risk and safety in the operation of technical systems. Maintenance strategies. Rehabilitation/recovery of mechanical components.	8	

Bibliography [13]

1. Fleşer, T.: Fabricarea sistemelor tehnice mecanice. Procese tehnologice de baza. Ed. SUDURA, Timişoara, 2008;
2. Fleşer, T.: Mentenanta şi reabilitarea sistemelor tehnice şi a componentelor mecanice. Ed. SUDURA, Timişoara, 2008;
3. Fleser, T., Tulcan, Liliana: Tehnologii de fabricatie, mentenanta si recuperare. Aplicatii practice de laborator. Editura MIRTON Timişoara, 2008;
4. Buzatu, C.: Elemente de proiectare tehnologica si management în fabricaţia produselor din construcţia de maşini, Editura MATRIX, 2012
5. Minca, E.: Elemente de productică, Editura MATRIX, 2012
6. Drăghici, G.: Conceptia proceselor de prelucrare mecanică, Editura POLITEHNICA, Timişoara, 2005;
7. Gladcov, P., ş.a.: Pregatirea fabricaţiei, Editura MATRIX, 2004
8. Iclanzan, T.: Tehnologia prelucrarii materialelor plastice si compozite. Editura POLITEHNICA, Timişoara, 2006;
9. Tulcan, Liliana: Curs TFMR - format electronic, 2019.
10. Vasilescu, M.D. : Tehnologia de prelucrare a autovehiculelor. Aplicații practice. Editura Eurostampa, 2020

8.2 Applied activities [14]	Number of hours	Teaching methods
Laboratory: 1. Constructive and functional analysis of the shape of the parts 2. The influence of the technological itinerary on the precision of the machined part; 3. The influence of the clamping forces of the semi-finished product on the precision of the mechanical processing; 4. The influence of thermal deformations of the technological system on the quality of the parts made; 5. Study of the construction and mode of action of pressing tools; 6. Nonconventional procedures for joining materials; 7. Repair and reconditioning of metal parts by welding loading.	7	multimedia exposure, explanation and demonstration
Project: Elaboration of the manufacturing technology of the mechanical components (part ..., drawing ..., from the composition of the machine ... ... number of parts) 1 The functional role of the piece; 2 The stress description to which the operating part is subjected; 3 Constructive-technological analysis of the drawing; 4 Characterization of the basic material; 5 Establishing the volume of production; 6 Choosing the semi-finished product and calculating the degree of use of the basic material; 7 Elaboration of the technological itinerary; 8 Specification of technological equipment; 9 Calculation of the elements of the processing regime for technological operations;	7	

[13] At least one title must belong to the discipline team and at least one title should refer to a reference work for discipline, national and international circulation, existing in the UPT library.

[14] Types of application activities are those specified in footnote 5. If the discipline contains several types of applicative activities then they are sequentially in the lines of the table below. The type of activity will be in a distinct line as: "Seminar:", "Laboratory:", "Project:" and / or "Practice/training".

10 Calculation of the technical time norm of technological operations; 11 Establishing work safety measures and fire prevention during the processing of the part; 12 Elaboration of the execution drawing of the part; 13 The technological file; 14 Development of the operational plan.		

Bibliography [15]

1. Fleşer, T.: Elemente pentru elaborarea tehnologiilor de fabricaţie a componentelor mecanice. Editura MIRTON Timişoara, 2008;
2. Fleşer, T., Tulcan, Liliana: Tehnologii de fabricaţie, mentenanţă şi recuperare. Aplicaţii practice de laborator. Editura MIRTON Timişoara, 2008;
3. Safta V., Safta I.V.,: Defectoscopie nedistructivă industrială, Editura Sudura, Timişoara, 2001:
4.Herman, R., Safta, V., Serban V.: Tehnologii de fabricaţie pentru mecanică fină şi mecatronică şi prelucrări mecanice de precizie, Editura Orizonturi Universitare, Timişoara, 2001
5. Vasilescu, M.D. : Tehnologia de prelucrare a autovehiculelor. Aplicații practice. Editura Eurostampa, 2020

9. Corroboration of the content of the discipline with the expectations of the main representatives of the epistemic community, professional associations and employers in the field afferent to the program

- The discipline centralizes theoretical and practical aspects in order to design, implement, use components within technical systems. The approach to the targeted issue is done in a systemic, integrated manner, characteristic of the complex way of carrying out the activity of commercial companies. The orientation of the discipline is to develop the concepts of technology, reliability, technical, technological, economic efficiency, in the context of quality construction, process, product qualification correlated with current quality management systems.

10. Evaluation

Type of activity	**10.1** Evaluation criteria [16]	**10.2** Evaluation methods	**10.3** Share of the final grade
10.4 Course	Distributed assessment: The assessment of theoretical knowledge consists of 3 written tests. Each test consists of 1-2 subjects from the taught material. The evaluation is made taking into account the student's interest, understanding, ability to solve concrete situations. The exam topics contain topics from each chapter, connected to a problem. The mark for the evaluation of theoretical knowledge is calculated as the arithmetic mean of the marks of the subjects given in the tests. The average is calculated only if the marks obtained for each subject are greater than or equal to grade 5.	Summative evaluation. 2 internal examiners 3 subjects from the subject taught in the course	60
10.5 Applied activities	**S:**		
	L: Evaluation process: testing, experimentation, calculation, data	Formative assessment.	15

[15] At least one title must belong to the discipline team.
[16] Syllabus must contain the procedure for assessing the discipline, specifying the criteria, methods and forms of assessment, as well as specifying the weightings assigned to them in the final grade. The evaluation criteria shall be formulated separately for each activity foreseen in the curriculum (course, seminar, laboratory, project). They will also refer to the forms of verification (homework, papers, etc.)

	interpretation, essays, interest in laboratory work		
	P[17]**:** Individual project themes. It follows the rhythm and accuracy to solve aspects related to the manufacturing of parts analyzed.	Formative and summative evaluation.	25
	Pr:		
10.6 Minimum performance standard (minimum amount of knowledge necessary to pass the discipline and the way in which this knowledge is verified [18])			
• Grade 5 for 50% knowledge of each subject and promotion of the laboratory and the project.			

Date of completion	**Course coordinator (signature)**	**Coordinator of applied activities (signature)**
	……	……
Head of Department (signature)	**Date of approval in the Faculty Council** [19]	**Dean (signature)**
……		……

[17] In the case where the project is not a distinct discipline, this section also specifies how the outcome of the project evaluation makes the admission of the student conditional on the final assessment within the discipline.

[18] It will not explain how the promotion mark is awarded.

[19] The endorsement is preceded by the discussion of the board's view of the study program on the discipline record.