SYLLABUS

1. Program Data

1.1 Higher education institution	**UNIVERSITY OF ORADEA**
1.2 Faculty	**ENERGY ENGINEERING AND INDUSTRIAL MANAGEMENT**
1.3 Department	**TEXTILES, LEATHER AND INDUSTRIAL MANAGEMENT**
1.4 Field of study	**INDUSTRIAL ENGINEERING**
1.5 Cycle of studies	**LICENSE**
1.6 Study Programme/Qualification	**KNITTING AND GARMENT TECHNOLOGY /ENGINEER**

2. Data about the discipline

2.1 Name of the discipline	**MECHANISMS AND MACHINE PARTS**						
2.2 Course Activity Holder	Assoc. Prof. Rațiu Mariana, Ph.D.						
2.3 Seminar Activity Holder	Assoc. Prof. Rațiu Mariana, Ph.D.						
2.4 Year of study	**I**	2.5 Semester	**II**	2.6 Type of assessment	**Ex**	2.7 Discipline regime	**I**

(I) Imposed; (o) optional; (F) Optional

3. Total estimated time (hours per semester of teaching activities)

3.1 Number of hours per week	2	of which: 3.2 course	1	3.3 Seminar	1
3.4 Total hours in the curriculum	28	of which: 3.5 course	14	3.6 Seminar	14

Distribution of the time fund	Hours
Study by textbook, course material, bibliography and notes	27
Additional documentation in the library, on specialized electronic platforms and in the field	6
Preparation of seminars/laboratories, assignments, papers, portfolios and essays	6
Tutorials	2
Examination	6
Other activities.....	-

3.7 Total hours of individual study	**47**
3.9 Total hours per semester	**75**
3.10 Number of credits	**3**

4. Preconditions (where applicable)

4.1 Curriculum	(Conditional)
4.2 Competences	

5. Conditions (where applicable)

5.1. Course	**Conditions provided by the education provider:** • Classroom with adequate infrastructure, equipped with sheet metal. • Student access to online learning platforms. **Conditions imposed on participants in the educational process (students):** • Participation in teaching activities, online or onsite.
5.2. Seminar	**Conditions provided by the education provider:** • Seminar room with adequate infrastructure, equipped with sheet metal. • Student access to online learning platforms. **Conditions imposed on participants in the educational process (students):** • Participation in teaching activities, online or onsite.

6.1. Specific competences acquired

Professional skills	The discipline mainly contributes to the consolidation of the C1, C2 and C3 professional competences of the study program, by ensuring the following specific competences: - the ability to know, understand, define and apply the basic notions and methods related to mechanisms and machine parts - the ability to perform calculations, demonstrations and specific applications for the mechanisms and parts of machines more often found in the composition of machines and equipment in the textile-leather field
Transversal competences	- the ability to make interdisciplinary connections, as well as the transfer of knowledge specific to mechanisms and machine parts within future specialized technical disciplines

6.2. Expected learning outcomes

Knowledge	The student explains theoretical results, experimental results and technical documentation associated with industrial products, phenomena and processes. The student classifies and compares the principles and methods of design of industrial products, equipment and technologies used in professional projects.
Skills	The student performs sizing and strength calculations for mechanical parts/assemblies. The student develops technical documentation, interprets technical conditions and verifies the concordance between the prescribed characteristics and the functional role of the industrial landmarks/products. The student selects and uses software systems for the design and simulation of industrial products, equipment and technologies. The student develops professional projects for which he/she selects and uses software applications and digital technologies associated with industrial products and processes.
Responsibility and autonomy	The student selects and uses bibliographic sources specific to the field. The student demonstrates autonomy in learning on issues specific to industrial products, phenomena and processes.

7. Objectives of the discipline (resulting from the grid of specific competences acquired)

7.1 General objective of the discipline	The discipline is part of the disciplines of general technical culture, which are defining for the training of the engineer and aims to make the transition from purely theoretical to applied disciplines, through the study of the phenomenon of mechanical motion transmission, as well as through the study of machine parts from the constructive point of view, their calculation and design. Within the discipline, knowledge acquired in the disciplines of mathematics, technical drawing, mechanics and material resistance is used, preparing the theoretical basis for approaching future specialized disciplines.
7.2 Specific objectives	The course "Mechanisms and Machine Parts" aims to bring more theoretical knowledge specific to the students, such as: identifying the methods of structural, kinematic and dynamic analysis of the mechanisms; the possibility of identifying the mechanisms in the structure of complex machines and equipment; acquiring knowledge regarding the constructive types of machine parts, the component subassemblies of machines and equipment in the textile-leather field. It also aims to develop students a series of practical skills and attitudinal competences that lead to awareness of the need to acquire basic knowledge regarding mechanisms and machine parts, to make interdisciplinary connections, to transfer knowledge specific to machine mechanisms and components within future specialized technical disciplines, as well as in the subsequent professional activity, to the awareness of the need for continuous professional training, in order to develop personally and professionally.

8. Contents

8.1 Course	Teaching methods	No. of hours
1. Generalities: introductory notions; the object of the study of mechanisms; constructive and kinematic schemes of the mechanisms; classification of mechanisms.	- Method of conversation - Cooperative learning -Modelling	1
2. Structural analysis of mechanisms: kinematic elements; kinematic pairs; kinematic chains; mechanisms.		2
3. Kinematic analysis of mechanisms: introductory notions; graphical and graphical-analytical methods.		1
4. Kinetostatic analysis of mechanisms: types of forces and moments in planar mechanisms; determination of the inertial forces in the planar mechanisms; determination of reactions in pairs.		1
5. Dynamic analysis of mechanisms: balancing mechanisms and machines; dynamic models of mechanisms and machines; phases of motion of mechanisms; the equation of motion of an aggregate.		1
6. Cam mechanisms: generalities; analysis of cam mechanisms.		1
7. General information regarding machine parts: definition; classification; general conditions imposed on machine parts; calculation of machine parts – fundamental notions; materials used in the construction of machine parts; notions of tolerances, adjustments and deviations of shape and position.		2
8. Assemblies and fasteners: non-removable assemblies (riveting, welding, gluing, gluing joints); demountable assemblies (screw assemblies; assemblies between hubs and shafts: wedge assemblies, grooves, polygonal profiles, with truncated conical rings, with elastic bracelet, by self-tightening; elastic assemblies).		3
9. Mechanical transmissions and mechanical transmission parts: direct transmissions (geared transmissions; friction wheel transmissions); indirect transmissions (belt, chain, cable transmissions); auxiliary parts of mechanical transmissions (axles and shafts, bearings, couplings).		2

Bibliography
1. Rațiu M. – Machine mechanisms and organs – lecture notes, 2023, https://e.uoradea.ro/course/view.php?id=66015
2. Rațiu M. – Support for the study of remedial activity Machine Mechanisms and Organs, ROSE Project, IEMI Faculty, 2019
3. Rus, A. – Support for individual study in the discipline: Mechanisms, University of Oradea 2012
4.Scurtu I.C. – Course on Organs of Machines and Mechanisms (Student version), DOI: 10.13140/RG.2.2.34035.40485, https://www.researchgate.net, 2022
5. Ţarcă I. - Machine Organs, University of Oradea Publishing House, 2014.

8.2 Seminar	Teaching methods	No. of hours
1. Structural analysis of the mechanisms.	- learning through discovery - analysis and problem solving - the small group learning method - the method of working with the manual and STAS	2
2. Constructive, functional and structural analysis of the usual mechanisms encountered in the construction of machines and equipment used in the textile-leather branch.		2
3. Determination of the family and the degree of mobility of the usual mechanisms encountered in the construction of machines and equipment used in the textile-leather branch.		2
4. Structural and kinematic analysis of the needle mechanism of the simple sewing machine.		2
5. Study on the representation of tolerances, adjustments,		2

deviations of shape and position.		
6. Study on the graphic representation of non-removable assemblies.		2
7. Study on the graphic representation of removable assemblies.		2

Bibliography
1. Pop F. et al. –Mechanisms. Laboratory work supervisor and seminar problem collection, Polytechnic University of Timisoara, 2017
2. Rațiu M. – Machine Mechanisms and Parts - Seminar Applications, 2023, https://e.uoradea.ro/course/view.php?id=66015
3. Rațiu M. – Support for the study of remedial activity Machine Mechanisms and Organs, ROSE Project, IEMI Faculty, 2019
4. Educational software - 3D modelling, animations Machine parts and mechanisms, http://www.softedu.eu/organe-de-masini.html

9. Corroboration of the contents of the discipline with the expectations of the representatives of the epistemic community, professional associations and employers representative in the field related to the program

The content of the subject is in accordance with that of similar subjects taught at other universities in the country and abroad.

10. Assessment

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Weight in the final grade
10.4 Course	- for grade 5 the student must obtain at least grade 6 in the grid test - For a grade of 10, the student must obtain a grade of 10 in the grid test and have 100% attendance at the teaching activities.	Knowledge assessment grid test.	- 80% - test result - 20% - attendance and active participation in classes
10.5 Seminar			

10.6 Minimum Performance Standard

After passing the discipline, the student must have the ability to:
- recognises the terms and concepts specific to the discipline
- reproduces the main concepts studied, as well as the related graphic representations
- solve specific theoretical and applied problems
- select and use the necessary manuals and STAS
- design, carry out and interpret, individually or in teams, experiments that highlight the phenomena studied
- to achieve interdisciplinary connections, as well as the transfer of knowledge specific to mechanisms and machine parts within future specialized technical disciplines, as well as in subsequent professional activity.

Completion date:	**Course holder:**	**Seminar holder:**
20.09.2025	Assoc. Prof. Rațiu Mariana, Ph.D. Email: mratiu@uoradea.ro Signature:.....	Assoc. Prof. Rațiu Mariana, Ph.D. Email: mratiu@uoradea.ro Signature:.....

The department that provides the hours:	
	Director

Date of approval in the department: 21.09.2025	Department of Mechanical Engineering and Vehicles Assoc. Prof. Mitran Tudor-Adrian, Ph.D. E-mail: tudor_mitran@uoradea.ro Signature:.....
The department benefiting from the Syllabus:	
Date of approval in the department: 24.09.2025	Director Department of Textiles, Leather and Industrial Management Assoc. Prof. Gherghel Sabina, Ph.D. Email: sgherghel@uoradea.ro Signature:.....
Date of approval in IMT Faculty Council: 23.09.2025	Dean Faculty of Managerial and Technological Engineering Assoc. Prof. HuleVoichița-Ionela, Ph.D. Email: vhule@uoradea.ro Signature:.....
Date of approval in IEMI Faculty Council: 29.09.2025	Dean Faculty of Energy Engineering and Industrial Management Assoc. Prof. Hora Cristina, Ph.D. E-mail: chora@uoradea.ro Signature:.....