

SYLLABUS ¹

THIS COURSE UNIT IS TAUGHT IN ROMANIAN LANGUAGE

1. Information about the program

1.1 Higher education institution	Politehnica University Timisoara
1.2 Faculty ² / Department ³	Mechanical Faculty/Dep.of Materials and Manufacturing Engineering
1.3 Chair	—
1.4 Field of study (name/code ⁴)	Industrial Engineering/20.70.10 (HG185/2018 și HG 158/2018)
1.5 Study cycle	Master
1.6 Study program (name/code/qualification)	Inginerie Integrată /421

2. Information about discipline

2.1 Name of discipline/The educational classe ⁵	Total productive maintenance / Specialized discipline						
2.2 Coordinator (holder) of course activities	Ș.L.dr.ing. Felicia BANCIU						
2.3 Coordinator (holder) of applied activities ⁶	Ș.L.dr.ing. Felicia BANCIU						
2.4 Year of study ⁷	1	2.5 Semester	2	2.6 Type of evaluation	E	2.7 Type of discipline ⁸	DS

3. Total estimated time (direct activities (fully assisted), partially assisted activities and unassisted activities⁹)

3.1 Number of hours fully assisted/week	3 ,of which:	3.2 course	1.5	3.3 seminar/laboratory/project	0/0/1.5
3.1* Total number of hours fully assisted/sem.	42 ,of which:	3.2* course	21	3.3* seminar/laboratory/project	0/0/21
3.4 Number of hours partially assisted/week	,of which:	3.5 project, research		3.6 training	3.7 hours designing M.A. dizertation
3.4* Number of hours partially assisted/ semester	,of which:	3.5* project of research		3.6* training	3.7* hours designing M.A. dizertation
3.8 Number of hours of unassisted activities/ week	2 ,of which:	Additional documentation in the library, on specialized electronic platforms, and on the field			0.5
		Study using a manual, course materials, bibliography and lecture notes			1
		Preparation of seminars/ laboratories, homework, assignments, portfolios, and essays			0.5
3.8* Total number of hours of unassisted activities/ semester	28 ,of which:	Additional documentation in the library, on specialized electronic platforms, and on the field			7
		Study using a manual, course materials, bibliography and lecture notes			14
		Preparation of seminars/ laboratories, homework, assignments, portfolios, and essays			7
3.9 Total hrs./week ¹⁰	5				
3.9* Total hrs./semester	70				
3.10 No. of credits	5				

4. Prerequisites (where applicable)

¹ The form corresponds to the Syllabus promoted by OMECTS 5703/18.12.2011 (Annex 3), updated based on the Specific Standards ARACIS of December 2016.

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 Fill in the code provided in HG no. 376/18.05.2016 or in HG similars annually updated.

⁵ The educational classes of disciplines (ARACIS – specific standards, art./paragraph 4.1.2.a) are: fundamental disciplines, field disciplines, majoring/specialization disciplines.

⁶ The applied activities refer to: seminar (S) / laboratory (L) / project (P) / practice/training (Pr).

⁷ The year of study to which the discipline is provided in the curriculum .

⁸ The types of disciplines (ARACIS – specific standards, art./paragraph 4.1.2.a) are: extended knowledge discipline / advanced knowledge discipline and synthetic discipline (DA / DCAV and DS) or art./paragraph 4.1.2 b) complementary discipline (DC)).

⁹ Within UPT, the number of hours from 3.1*, 3.2*,...,3.9* are obtained by multiplying by 14 (weeks) the number of hours from 3.1, 3.2,..., 3.9.

¹⁰ The total number of hours/week is obtained by summing up the number of hours from 3.1, 3.4 și 3.8.

4.1 Curriculum	<ul style="list-style-type: none"> • , Materials Science, Materials Strength, Machine Parts, Mechanisms, Product manufacturing, CNC Machine Tools, Maintenance
4.2 Competencies	<ul style="list-style-type: none"> • Identifying and knowing a wide range of concepts, principles, theorems and methods in basic engineering sciences
5. Conditions (where applicable)	
5.1 of the course	<ul style="list-style-type: none"> • Classroom, laptop, projector, blackboard, internet connection
5.2 to conduct practical activities	<ul style="list-style-type: none"> • Classroom, laptop, projector, blackboard, internet connection, Classic and NC cutting machine tools

6. Specific competencies acquired through this discipline

Specific competencies	<ul style="list-style-type: none"> • C2.2. Extrapolating the application of optimization, simulation and modeling methods to new manufacturing processes • C4.5. Development of case studies on the redesign of some industrial products and analysis of the increase of economic efficiency • C5.1. Identify a wide range of theories, methods and principles for the design of modern manufacturing systems. • C5.4. Evaluating and establishing the optimal design variants and establishing the management of the manufacturing systems • C5.5. Development of professional and / or research projects, which include aspects related to the design of manufacturing systems, improving their accuracy and management of manufacturing processes
Professional competencies ascribed to the specific competencies	<ul style="list-style-type: none"> • C1. Solving complex tasks, specific to Industrial Engineering, using advanced knowledge in engineering sciences • C2. Realization of applications for modeling, simulation, analysis and optimization of materials, products and manufacturing processes • C3. Integrated use of software applications for computer-aided design, design and manufacturing • C4. Conception and design of products for competitive manufacturing • C5. Design and management of new or improved manufacturing systems • C6. The concept integrated in the product manufacturing process.
Transversal competencies ascribed to the specific competencies	<ul style="list-style-type: none"> • CT1. Applying the values and ethics of the engineering profession and responsible execution of complex professional tasks in conditions of professional autonomy and independence; promoting logical, convergent and divergent reasoning, practical applicability, evaluation and self-evaluation in decision making. (Responsible execution of complex professional tasks). • CT2. Carrying out activities with the exercise of specific roles of teamwork on different hierarchical levels and with the assumption of leadership roles; promoting the spirit of initiative, dialogue, cooperation, positive attitude and respect for others, diversity and multiculturalism and the continuous improvement of one's activity. (Communication, teamwork and leadership). • CT3. Objective self-assessment and diagnosis of the need for continuous professional training in order to enter the labor market and adapt to the dynamics of its requirements and for personal and professional development. Self-control of learning and efficient use of language skills and knowledge of information and communication technology. (Manager of your own continuous training)

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

7.1 The general objective of the discipline	<ul style="list-style-type: none"> • Application in professional and / or research projects of the concept of integrated engineering for the process of industrial products development
7.2 Specific objectives	<ul style="list-style-type: none"> • Development of professional and / or research projects, which include the concept integrated in the process of product development and implementation of modern concepts of total productive maintenance

8. Content

8.1 Course	Number of hours	Teaching methods
Total Productive Maintenance in Industrial Engineering context. Introduction to MTP	1	Oral academic presentation; - Deductive logic - Blackboard demonstration; - Interactive debate; .- ICT and Video Animation tools
MTP targets and reasons for which MTP should be addressed as a method	2	
Direct, immediate and indirect benefits obtained from the implementation of MTP	2	
Overall equipment efficiency (GEE)	2	
Realization and follow-up of technical projects.	1	
The structure of the MTP organization	1	
Pillar 1 - measures 5 S	2	
Pillar 2 - Jishu Hozen (Autonomous Maintenance - MA)t	1	

Pillar 3 – KAIZEN: Policy, Targets, Tools and Production Losses	2	
Pillar 4 - Planned Maintenance (PM); Pillar 5 - Quality of Maintenance (QM); Pillar 6 - Staff training	3	
. Pillar 7 - MTP applied to office activities (Office TPM)	1	
Pillar 8 - Safety, Health and Environment and Difficulties in Implementing MTP	1	
Working tools in TPM; indicators; Actions in support of achieving the expected indicators	2	

- Bibliography¹¹
 - [1] Pămîntaş, E., *Mentenanța total productivă*, Curs în format electronic ppt. și pdf. http://www.eng.upt.ro/personal/pamintas/cursuri_2013_11_15.rar
 - [2] Nakajima, S. *TPM Development Program : Implementing Total Productive Maintenance.*, Cambridge, Productive Press, 1989.
 - [3] Tahan, A.: *Maintenance Productive Totale, Paris, 1998*
- [4] Grigoraș, Ștefan *Ingineria fiabilității*, Vol. I și Vol.II, Editura Junimea, Iași, 2003 ISBN 973-37-0836-4

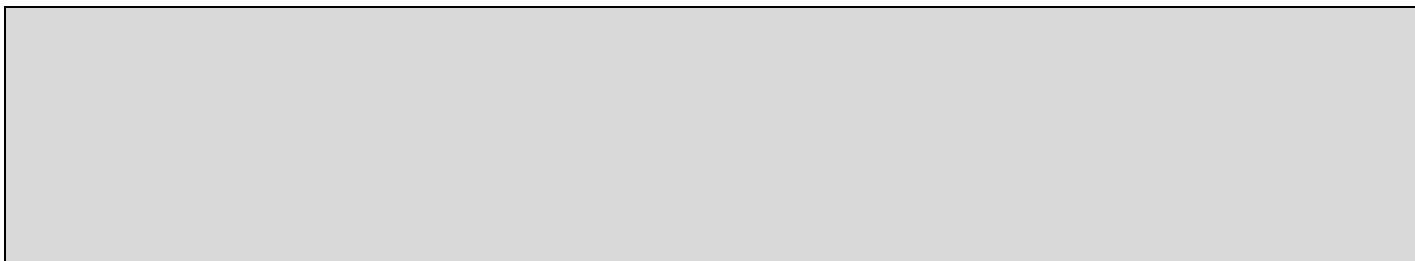
8.2 Applied activities ¹²	Number of hours	Teaching methods
Project: Implementation of MTP principles in a company (at the individual choice of the student)	21	Interactive methods. Explanatory description; - Case studies; - Role-playing games; - Interactive debate of solutions - Problematization, - Group work - Study of bibliographic documentation
t		

Bibliography ¹³		
<ul style="list-style-type: none"> • [1] Pămîntaş, E., <i>Mentenanța total productivă</i>, Curs în format electronic ppt. și pdf. pe CD și http://www.eng.upt.ro/personal/pamintas/cursuri_2013_11_15.rar • [2] Nakajima, S. <i>TPM Development Program: Implementing Total Productive Maintenance</i>, Cambridge, Productive Press, 1989. • [3] Wireman, T., <i>Total productive maintenance</i>, Edited by Industrial Press, NY USA, ISBN 0-8311-3172-1, 2004. • [4] Nicolae Drăgulănescu, <i>Ghid practic de managementul calității pentru firmele performante</i>. Trad. din l. franc., Editura NICULESCU SRL; București, 1999 		

¹¹ At least one title must belong to the department staff teaching the discipline, and at least one title must refer to a relevant work for the discipline, a national and international work that can be found in the UPT Library.

¹² The types of applied activities are those mentioned in 5. If the discipline contains more types of applied activities then they are marked, consecutively, in the table below. The type of activity will be marked distinctively under the form: „Seminar:”, „Laboratory:”, „Project:” and/or „Practice/Training:”.

¹³ At least one title must belong to the staff teaching the discipline.



9. Coroboration 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

- With few exceptions, companies with foreign or mixed capital have implemented since its establishment the principles of Total Productive Maintenance, in whole or in part.
- Knowledge of the principles on which the MTP concept is based and the organization that facilitates them is for employers, regardless of their size - such as: Drexelmayer, Dosetimpex, Dura System Engineering, Frigoglass, Hella, Autoliv, Saab Casting, Continental SA, Mahle etc. – a good achievement for their career development

10. Evaluation

Type of activity	10.1 Evaluation criteria ¹⁴	10.2 Evaluation methods	10.3 Share of the final grade
10.4 Course	knowledge of the notion and concepts associated with MTP -skills for applying the methods presented in the course The volume of knowledge and the quality of their exposure	Oral examination based on individual two distinct subjects	2/3
10.5 Applied activities	S: L: P: - Individual portfolio for MTP implementation in a real or virtual company Pr: Tc-R¹⁵:	Verification of the practical knowledge described in the portfolio and of the existence of conclusions on the advantages of MTP implementation based on the evolution of specific indicators	1/3
10.6 Minimum performance standard (minimum amount of knowledge necessary to pass the discipline and the way in which this knowledge is verified ¹⁶)			
<ul style="list-style-type: none"> • Grade 5 for 50% correct answers to each of the two subjects on the exam and the Portfolio evaluated with a minimum grade of 5 			

Date of completion

9.12.2020

**Course coordinator
(signature)**

/

**Coordinator of applied activities
(signature)**

**Head of Department
(signature)**

**Date of approval in the Faculty
Council ¹⁷**

**Dean
(signature)**

¹⁴ The Syllabus must contain the evaluation method of the discipline, specifying the criteria, the methods and the forms of evaluation, as well as mentioning the share attached to these within the final mark. The evaluation criteria must correspond to all activities stipulated in the curriculum (course, seminar, laboratory, project), as well as to the methods of continuous assessment (homework, essays etc.)

¹⁵ Tc-R= Homework-Reports

¹⁶ For this point turn to "Ghid de completare a Fişei disciplinei" found at: http://univagora.ro/m/filer_public/2012/10/21/ghid_de_completare_fisa_disciplinei.pdf

¹⁷ The approval is preceded by discussing the study program's board's point of view with regards to the syllabus.