SYLLABUS[1]

1. Information about the program

1.1 Higher education institution	Politehnica University of Timişoara
1.2 Faculty[2] / Department[3]	Mechanical Engineering / Materials and Manufacturing Engineering
1.3 Chair	—
1.4 Field of study (name/code[4])	Industrial Engineering/10
1.5 Study cycle	Master
1.6 Study program (name/code/qualification)	Integrated Engineering

2. Information about the discipline

2.1 Name of discipline			Integrated Conception of Products				
2.2 Coordinator (holder) of course activities			Lect. Ph D. Eng. Banciu Felicia Veronica				
2.3 Coordinator (holder) of applied activities [5]			Lect. Ph D. Eng. Banciu Felicia Veronica				
2.4 Year of study[6]	I	**2.5** Semester	1	**2.6** Type of evaluation	E	**2.7** Type of discipline	DCA/ compulsory

3. Total estimated time (hours / semester of didactic activities)

3.1 No. of hrs. / week	4 , of which:	**3.2** course	2	**3.3** seminar/laboratory/ project/training	2
3.4 Total no. of hrs. in the education curricula	56 , of which:	**3.5** course	28	**3.6** applied activities	28

3.7 Distribution of time for individual activities related to the discipline	hrs.
Study using a manual, course materials, bibliography and lecture notes	50
Additional documentation in the library, on specialized electronic platforms and on the field	50
Preparation for seminars / laboratories, homeworks, assignments, portfolios, and essays	50
Tutoring	10
Examinations	8
Other activities	
Total hrs. of individual activities	168

3.8 Total hrs. / semester[7]	224
3.9 No. of credits	9

4. Prerequisites (where applicable)

4.1 Curriculum	•
4.2 Competencies	•

5. Conditions (where applicable)

5.1 of the course	• Classroom equipped with video and board
5.2 to conduct practical activities	• Classroom laboratory with various discipline-specific equipment

6. Specific competencies acquired

[1] The form corresponds to the Syllabus promoted by OMECTS 5703/18.12.2011 (Annex3).
[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 GD no. 493/17.07.2013.
[5] The applied activities refer to: seminar (S) / laboratory (L) / project (P) / practice/training (Pr).
[6] The year of study to which the discipline is provided in the curriculum.
[7] It is obtained by summing up the number of hrs. from 3.4 and 3.7.

Professional competencies[8]	• Necessary Knowledge for integrated, collaborative products design, processes and project management • Develop the capacity and ability to implement methods to improve product quality and manufacturing processes, ensuring maintenance and reliability • Develop the capacity planning, management and optimized process management and production systems
Transversal competencies	•Responsibly Application of the principles, norms and values of professional ethics in performing the professional tasks and their aims to be achieved, the resources available, work flow, run time, deadlines and risks related to their achievement; •Identify roles and responsibilities within a multidisciplinary team and application of techniques and effective work relationships within the team; • •Identify continuous training opportunities and efficiency for their development, sources of information and communication resources and training to assist them (Internet portals, specialized software applications, databases, online courses etc.) in Romanian and in a foreign language

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

7.1 General objective of the discipline	• • Discipline forms necessary knowledge of integrated collaborative products concept that meet the requirements in terms of the need to ensure deadlines imposed and quality.
7.2 Specific objectives	• Assimilation and development of capacity to implement methods to improve product design quality • • Know the concepts of integrated engineering and industrial environment (industrial typologies, organization and management of the company), product life cycle (life cycle analysis and modeling, different approaches of lifecycle management) • Knowledge of methods / means of: Value Analysis (AV), Quality Function Deployment (QFD), the Theory of Inventive Problem Solving (TRIZ), Axiomatic Design and Systematic Design, Failure Modes and Effects Analysis (FMEA), product's models correlated with the phases product lifecycle (PLM) • Know the roles and responsibilities within a multidisciplinary team and application of techniques for effective work relationships within the team • Personalized Work team using specialized software

8. Content

8.1 Course	No. of hours	Teaching methods
Integrated engineering and industrial environment: types, organization and management of the company	4	Presentation, explanation, exemplification, demonstration, conversation, case study
Product life cycle: analysis and modeling of lifecycle approach, sequential approach, simultaneously approach, lifecycle management	2	Presentation, explanation, exemplification, demonstration, conversation, case study
Systematic and axiomatic product's design models	6	Presentation, explanation, exemplification, demonstration, conversation, case study
Product design methods: QFD, Value Analysis, FMEA, TRIZ	12	Presentation,

[8] The professional competencies and the transversal competencies will be treated according to the Methodology of OMECTS 5703/18.12.2011. The competencies listed in the National Register of Qualifications in Higher Education [Registrul Naţional al Calificărilor din Învăţământul Superior RNCIS] (http://www.rncis.ro/portal/page?_pageid=117,70218&_dad=portal&_schema=PORTAL) will be used for the field of study from 1.4 and the program of study from 1.6 of this form, involving the discipline.

		explanation, exemplification, demonstration, conversation, case study
Product Modeling: product models and knowledge integration	4	Presentation, explanation, exemplification, demonstration, conversation, case study

Bibliography[9]

1. Drăghici, G. (1999), Ingineria integrată a produselor, Editura Eurobit, Timişoara
2. Kai Yang & Basem El-Haik (2003), Design for Six Sigma - A Roadmap for Product Development, McGraw-Hil
3. Usher, J.M., Roy, U., Parsaei, H. (2005), Integrated Product and Process Development: Methods, Tools, and Technologies, John Wiley & Sons
4. G. Pahl, et al., Engineering Design - A Systematic Approach, Third Edition, Springer, ISBN 978-1-84628-318-5, e-ISBN 978-1-84628-319-2, 2007
5. S. D. Savransky, Engineering of creativity: Introduction to TRIZ Methodology of Inventive Problem Solving, ISBN 0-8493-2255-3, CRC Press, 2009, pp. 47, 49, 66
6. N. P. Suh, "Axiomatic Design-Advances and Applications", New York, Oxford University Press, ISBN - 13: 978-0-19-513466-7, 2001.
7. Quality Function Deployment How to Make QFD Work for you , Lou Cohen, Addison Wesley 2001, ISBN 0-201-63330-2
8. Axiomatic Design and Fabrication of Composite Structures, Dai Gill Lee, Nam P. Suh, Oxford university Press 2006, ISBN -13-978-0-19-517877-7
9. Development of an Innovative, Collaborative Products Design Model, Doctoral Thesis, Editura Politehnica, 2011, ISBN 978-606-554-294-5
10. Peter Scallan, Process Planning:the design/manufature Interface, ISBN 0750651296, Publisher Elsevier Science & Technology Books, December 2002

8.2 Applied activities[10]	No. of hours	Teaching methods
Collaborative Design-Delta project	10	Presentation, explanation, exemplification, demonstration, conversation, case study
Product design (Value analysis, FMEA, TRIZ, Acclaro DFSS), Product modeling (Solid Works, CATIA	18	Presentation, explanation, exemplification, demonstration, conversation, case study

[9] At least one title must belong to the department staff teaching the discipline, and at least 3 titles must refer to national and international works relevant for the discipline, and which can be found in the Politehnica University Library.

[10] The types of applied activities are those specified in footnote 5. If the discipline contains several types of applied activities, then these will be written consecutively in the lines of the table below. The type of activity will be written in a distinct line, as „Seminar:", „Laboratory:", „Project:" and/or „Practice/Training:".

Bibliography [11]

1. Quality Function Deployment How to Make QFD Work for you , Lou Cohen, Addison Wesley 2001, ISBN 0-201-63330-2
2. Axiomatic Design and Fabrication of Composite Structures, Dai Gill Lee, Nam P. Suh, Oxford university Press 2006, ISBN -13-978-0-19-517877-7
3. S. D. Savransky, Engineering of creativity: Introduction to TRIZ Methodology of Inventive Problem Solving, ISBN 0-8493-2255-3, CRC Press, 2009, pp. 47, 49, 66
4. N. P. Suh, "Axiomatic Design-Advances and Applications", New York, Oxford University Press, ISBN - 13: 978-0-19-513466-7, 2001.
5. N. Gherghel and N. Seghedin, "Design of Technological Devices Pad's", in Romanian "Proiectarea reazemelor dispozitivelor tehnologice": Tehnopress Publishing House, Iaşi, 2006, pp.121.
6. I. Grozav, "Devices for Machine Building" in Romanian "Dispozitive in constructi de masini", Politehnica Publishing House Timişoara, pp 64-67, 2008.
7. The Five Steps of Fixture Design available at http://www.carrlane.com/News.cfm, last visited 25.02.2013.
8. V. Tache and A. Brăgaru, "Devices for Machine Tools. Design of Orientation and Clamping Schemes", Technic Publishing House, Bucuresti, 1976, pp. 116-118, pp. 119-125.
9. S. V. Rosculeţ, N. Gojineţchi et al. "Devices Design", Didactic and Pedagogic Publishing House, 1982, pp. 65-75.

http://www.si.ens-cachan.fr/accueil_V2.php?page=archives.....

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 knowledge gained in this discipline facilitates understanding the integrity of all the other disciplines of the curriculum of the MSc degree program.
- Most employers in the area related to the study program need specialists who have expertise in the development of which this discipline has a good contribution: skills development, teamwork, methods and means of the innovative products' design, product development stages in context PLM

10. Evaluation

Type of activity	**10.1** Evaluation criteria	**10.2** Evaluation methods	**10.3** Share of the final grade
10.4 Course	Solving some theoretical topics related to courses	Summative assessment - examination sustained by solving of documentary evidence	2/3
10.5 Applied activities	**S:**		
	L:		
	P:		
	Pr: Solving tasks of collaborative work, analyzing the results, the application for product design of studied methods and means, argumentation of using them and their results, extraction of difficulties encountered	Formative assessment- oral examination and observation during the current semester. Summative assessment – portfolio or project presentation at the semester end	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)			
• Using expression and proper use of notions, concepts, methods and means presented. • Know the products lifecycle phases and integrated engineering design concepts • To submit portfolio / project justifying their responses to questions posed by the teacher.			

Date of completion	**Course coordinator (signature)**	**Coordinator of applied activities (signature)**
12.12.2015	……	……
Head of Department	**Date of approval in the Faculty**	**Dean**

[11] At least one title must belong to the staff teaching the discipline.

(signature)	**Council**[12]	**(signature)**
……		……

[12] Avizarea este precedată de discutarea punctului de vedere al board-ului de care aparţine programul de studiu cu privire la fişa disciplinei.