

# SYLLABUS<sup>1</sup>

## 1. Information about the program

1.1 Higher education institution	POLITEHNICA UNIVERSITY TIMIȘOARA
1.2 Faculty <sup>2</sup> / Department <sup>3</sup>	MECHANICAL ENGINEERING /MCTR
1.3 Chair	—
1.4 Field of study (name/code <sup>4</sup> )	Mechatronics and robotics/390-469
1.5 Study cycle	Master
1.6 Study program (name/code/qualification)	Ergoengineering in mechatronics/441/Engineer

## 2. Information about the discipline

2.1 Name of discipline	HUMAN FACTORS AND ERGONOMIC POSTURE						
2.2 Coordinator (holder) of course activities	Assoc. Prof. Dr. Eng. Veronica ARGESANU						
2.3 Coordinator (holder) of applied activities <sup>5</sup>	Assoc. Prof. Dr. Eng. Veronica ARGESANU						
2.4 Year of study <sup>6</sup>	1	2.5 Semester	2	2.6 Type of evaluation	E	2.7 Type of discipline	DCA

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

3.1 No. of hrs. / week	5 , of which:	3.2 course	2	3.3 seminar/laboratory/ project/training	3
3.4 Total no. of hrs. in the education curricula	5 , of which:	3.5 course	2	3.6 applied activities	3
3.7 Distribution of time for individual activities related to the discipline					hrs.
Study using a manual, course materials, bibliography and lecture notes					12
Additional documentation in the library, on specialized electronic platforms and on the field					12
Preparation for seminars / laboratories, homeworks, assignments, portfolios, and essays					15
Tutoring					15
Examinations					8
Other activities					7
<b>Total hrs. of individual activities</b>					<b>61</b>
3.8 Total hrs. / semester <sup>7</sup>	70				
3.9 No. of credits	8				

## 4. Prerequisites (where applicable)

4.1 Curriculum	•
4.2 Competencies	•

## 5. Conditions (where applicable)

5.1 of the course	•
5.2 to conduct practical activities	•

## 6. Specific competencies acquired

<sup>1</sup> The form corresponds to the Syllabus promoted by OMECTS 5703/18.12.2011 (Annex3).

<sup>2</sup> The name of the faculty which manages the educational curriculum to which the discipline belongs.

<sup>3</sup> The name of the department entrusted with the discipline, and to which the course coordinator / holder belongs.

<sup>4</sup> Fill in the code provided in GD no. 493/17.07.2013.

<sup>5</sup> The applied activities refer to: seminar (S) / laboratory (L) / project (P) / practice/training (Pr).

<sup>6</sup> The year of study to which the discipline is provided in the curriculum.

<sup>7</sup> It is obtained by summing up the number of hrs. from 3.4 and 3.7.

Professional competencies <sup>8</sup>	<ul style="list-style-type: none"> <li>• Hardware ergonomics. Human –machine relation</li> <li>• Workplace ergonomics. Human involved in work process</li> <li>• Environment ergonomic. Human-environment relation</li> <li>• Cognitive ergonomics. in scientific research</li> </ul>
Transversal competencies	<ul style="list-style-type: none"> <li>• Completing ergoengineering tasks, with previsions of the design process and the problems encountered and choosing and recognizing the useful information in order to solve those problems</li> </ul>

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

7.1 General objective of the discipline	<ul style="list-style-type: none"> <li>• <i>Understanding The Human Factors and Ergonomic Posture combining knowledge and methods from the fields of human factors, ergonomics, and environmental psychology</i></li> </ul>
7.2 Specific objectives	<ul style="list-style-type: none"> <li>• <i>Understand the principles of human factors and the relationship to ergonomic design. Define a system framework which will be utilized, emphasizing feedback on interrelationships among system components, including the human operator. Analysis and improvement the design of work processes, workplaces, instrumentation and human communication.</i></li> </ul>

### 8. Content

8.1 Course	No. of hours	Teaching methods
Ergonomics definition. Human factor and ergonomic posture definition	2	Lecture, High-tech classroom, Student-lecturer interactivity, available bibliography
Human characteristics. Anthropometrical data	4	Lecture, High-tech classroom, Student-lecturer interactivity, available bibliography
Team management and team competences	2	Lecture, High-tech classroom, Student-lecturer interactivity, available bibliography
Postural elements. Orthostatic activities Static posture	2	Lecture, High-tech classroom, Student-lecturer interactivity, available bibliography
Visual field. Visual accuracy. Noise and vibrations	2	Lecture, High-tech classroom, Student-lecturer interactivity, available bibliography
Muscular and skeletal systems. Physical abilities and characteristics	6	Lecture, High-tech classroom, Student-lecturer interactivity, available bibliography

<sup>8</sup> 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 Național al Calificărilor din Învățământul Superior RNCIS] ([http://www.ncis.ro/portal/page?\\_pageid=117,70218&\\_dad=portal&\\_schema=PORTAL](http://www.ncis.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.

Simple movement principles. Push and pull forces, physical adaptation	2	Lecture, High-tech classroom, Student-lecturer interactivity, available bibliography
Static and dynamic activities	2	Lecture, Up to date classroom
Movement investigations according to anthropometric data. Baropodometer examination	2	Lecture
Patient's exam. Observation	2	Lecture
Muscular-skeletal disorders	2	Lecture
Bibliography <sup>9</sup> 1. Salvendy, G. (2006). Hand book of Human Factors and ergonomics, 3rd edition, Wiley.Lang, J. (1987). 2. Pheasant, S. & Haslegrave, C. (2005) Body space: Anthropometry, Ergonomics and the Design of Work,3rd edition, CRC. 3. Neville Stanton, [et al] - Handbook of Human Factors and Ergonomics Methods, CRC Press, Danvers, MA (2005), ISBN 0-415-28700-6 4. Ben Shneiderman, Catherine Plaisant – Designing the User Interface, Addison Wesley, 2001,ISBN 0-321-26978-0 5. Jef Raskin: Humane Interface - The New Directions for Designing Interactive Systems, Addison-Wesley, ISBN 0-201-37937-6 6. DEVITO Joseph, Interpersonal Communication Book, International Edition 11th Edition - Prentice Hall, ISBN13: 9780205484294, ISBN10: 0-20548-429-8, 2006		
<b>8.2 Applied activities<sup>10</sup></b>	<b>No. of hours</b>	<b>Teaching methods</b>
Anthropometric database	4	Up to date and functional experimental benches 2009
Thermography applications	4	Up to date and functional experimental benches 2009
Baropodometer analysis	4	Up to date and functional experimental benches 2009
Static analysis	4	Up to date and functional experimental benches 2009
Dynamic analysis-	4	Up to date and functional experimental benches 2009
Vibrations description and analysis	4	Up to date and functional experimental benches 2009
Statistic results and interpretation	4	Up to date and functional experimental benches 2009
		Up to date and functional experimental benches 2009
		Up to date and functional experimental benches 2009
Bibliography <sup>11</sup> 1. Adams MA, Bogduk N, Burton K, Dolan P, Freeman BJK –The Biomechanics of Back Pain, Elsevier Churchill Livingstone Iled, 2006 2. Argesanu V.-Ergonomia Echipamentelor si Departamentelor Medicale. Ed. Eurostampa, Timisoara, 2004. 3. Anghel M. – Notiuni generale de ergonomie dentară – Ed.Orizonturi Universitare, Timisoara, 2005. 4. Anghel M, Vâlceanu A, Talpos-Niculescu C, Argesanu V - Mecanisms that lead to musculoskeletal disorders, Vol. "Al IX-lea Congres Național al U.N.A.S.", Al II-lea congres internațional de stomatologie estetică - București, 5-8oct.2005, 64. 5. Anghel M, Talpos-Niculescu C, Lungeanu D, Argesanu V - The influence of working posture on dentists' health, Timisoara Medical Journal, 2007,57:,supplement 1;62.		

<sup>9</sup> 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.

<sup>10</sup> 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:”.

<sup>11</sup> At least one title must belong to the staff teaching the discipline.

6. Auquier O., Corriat P. – L'Osteopatia, Marrapese Editore Roma, 1999
7. Bernard P.B. – Musculoskeletal Disorders (MSDs) and Workplace Factors. A critical Review of Epidemiologic Evidence for Work – Related MSD of Neck, Upper Extremity, and Low Back – NIOSH, Cincinnati, 1997.
8. Busquet L. – Le Catene Muscolari Vol. I, Marrapese Editore Roma, 2002
9. Busquet L. – Le Catene Muscolari Vol. II, Marrapese Editore Roma, 2001
10. Busquet L. – Le Catene Muscolari Vol. III, Marrapese Editore Roma, 1998
11. Busquet L. – Le Catene Muscolari Vol. IV, Marrapese Editore Roma, 1996
12. ESDE – Ergonomic requirements for dental equipments – may 2006
13. Hokwerda O. – Posture problems: risk or choice? – DPREurope, okt 2007, 33-35.
14. Karwowski W. – International Encyclopedia of Ergonomics and Human Factors, CRC Press, 2006
15. Massara G., Pacini T., Vella G. – Ergonomia del Sistema Posturale, Marrapese Editore Roma, 2008
16. Mossi E. – Trattato teorico/pratico di Posturologia osteopatica, Marrapese Editore Roma, 2002
17. Puglisi F. – Biomeccanica Marrapese Editore Roma, 2007
18. Sergueef N. – Normalizzare la colonna senza manipolazioni vertebrali, GLM Edizioni, Roma, 2002
19. Stellman J.M. – Encyclopedia of Occupational Health and Safety, International Labour Organization, 1998
20. Valachi B., Valachi K. – Mechanisms leading to musculoskeletal disorders in dentistry – JADA, 134, 10/2003, 1344-1350

**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**

- Representative employers of conjugated fields request specialists with Ergoengineering training

**10. Evaluation**

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share of the final grade
10.4 Course	Basic knowledge of ergo engineering	Oral exam	60 %
10.5 Applied activities	S: Formative evaluation	Quantitative and quality evaluation of lecture notes. Mean values of grades throughout the course	25 %
	L: Formative evaluation	Average mean value of the grades, test, paperwork, results	15 %
	P:		
	Pr:		
10.6 Minimum performance standard (minimum amount of knowledge necessary to pass the discipline and the way in which this knowledge is verified)			
<ul style="list-style-type: none"> <li>• Use of correct expressing for notions and concepts defined. Solving and explaining problems of medium complexity. Performing applications and tasks, interpretation of medium complexity results, active participation in teamwork.</li> </ul>			

**Date of completion**

08.12.2015

**Course coordinator  
(signature)**

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**Coordinator of applied activities  
(signature)**

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**Head of Department  
(signature)**

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**Date of approval in the Faculty  
Council<sup>12</sup>**

**Dean  
(signature)**

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<sup>12</sup> Avizarea este precedată de discutarea punctului de vedere al board-ului de care aparține programul de studiu cu privire la fișa disciplinei.