

# SYLLABUS<sub>1</sub>

## 1. Information about the program

1.1 Higher education institution	<b>Universitatea Politehnica Timișoara</b>
1.2 Faculty <sub>2</sub> / Departments <sub>3</sub>	Electronica si Telecomunicatii/Masurari si Electronica Optica
1.3 Chair	—
1.4 Field of study (name/code <sub>4</sub> )	Inginerie electronică și telecomunicații/ <b>100</b>
1.5 Study cycle	Licență
1.6 Study program (name/code)/Qualification	TEHNOLOGII SI SISTEME DE TELECOMUNICATII/020/Tehnologii si sisteme de telecomunicatii

## 2. Information about the discipline

2.1 Name of discipline	<b>Electrical and Electronic Measurements</b>						
2.2 Coordinator (holder) of course activities	Prof. dr. ing. Dan STOICIU						
2.3 Coordinator (holder) of applied activities <sub>5</sub>	Prof. dr. ing. Dan STOICIU, s.l. dr. ing. Cora IFTODE						
2.4 Year of study <sub>6</sub>	II	2.5 Semester	3	2.6 Type of evaluation	E	2.7 Type of discipline	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	1/1/0
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					14
Additional documentation in the library, on specialized electronic platforms and on the field					7
Preparation for seminars / laboratories, homeworks, assignments, portfolios, and essays					7
Tutoring					
Examinations					
Other activities					
<b>Total hrs. of individual activities</b>					<b>28</b>
3.8 Total hrs. / semester <sub>7</sub>	84				
3.9 No. of credits	4				

## 4. Prerequisites (where applicable)

<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.

4.1 Curriculum	<ul style="list-style-type: none"> <li>Mathematics, Physics, Electric Circuits</li> </ul>
4.2 Competencies	<ul style="list-style-type: none"> <li></li> </ul>

## 5. Conditions (where applicable)

5.1 of the course	<ul style="list-style-type: none"> <li>Sala de curs dotata cu videoprojector</li> </ul>
5.2 to conduct practical activities	<ul style="list-style-type: none"> <li>In conformitate cu fisa laboratorului</li> </ul>

## 6. Specific competencies acquired

Professional competencies <sup>§</sup>	<ul style="list-style-type: none"> <li>Utilizarea elementelor fundamentale referitoare la dispozitivele, circuitele, sistemele, instrumentația și tehnologia electronica.</li> <li>Aplicarea metodelor de baza pentru achiziția și prelucrarea semnalelor</li> </ul>
Transversal competencies	<ul style="list-style-type: none"> <li>Adaptarea la noile tehnologii, dezvoltarea profesională și personală, prin formare continuă folosind surse de documentare tipărite, software specializat și resurse electronice în limba română și, cel puțin, într-o limbă de circulație internațională</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>Familiarizarea cu mijloacele si metodele de masurare.</li> </ul>
7.2 Specific objectives	<ul style="list-style-type: none"> <li>Acumularea de cunostinte si obtinerea de deprinderi practice in domeniul masurarilor electrice si electronice.</li> </ul>

## 8. Content

8.1 Course	No. of hours	Teaching methods
Module 1: Basic knowledge on metrology	4	The course is organized as exposure based on Power Point material available for students on Intranet.
Module 2: Measuring devices, measuring methods. Characteristics of measuring instruments	6	Students are involved through questions and
Module 3: Electronic circuits in measuring instruments. Signal conditioning. Amplifiers. Digital to analog converters. Analog to digital converters	6	discussions.

<sup>§</sup> The professional competencies and the transversal competencies will be treated according to the Methodology of OMCETS 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.rncis.ro/portal/page?\\_pageid=117\\_70218&\\_dad=portal&\\_schema=PORTAL](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.

Module 4: Measurement errors and uncertainties. Random errors, bias, outliers. Grubbs' test for outliers. Expanded uncertainty. Confidence interval and confidence level. Error propagation	6	
Module 5: Current and voltage measurement	3	
Module 6: Power and energy measurement	1	
Module 7: Temperature measurement	2	
Bibliography <sup>9</sup> J. G. Webster (Editor in chief) – Measurement, instrumentation and sensors handbook, CRCnetBase 1999 Joseph Mc Ghee – Scientific Metrology, ISBN 83-904299-9-3, 1996 D. Stoiciu - <a href="https://intranet.etc.upt.ro/~EEM/">https://intranet.etc.upt.ro/~EEM/</a>		
<b>8.2 Applied activities<sup>10</sup></b>	<b>No. of hours</b>	<b>Teaching methods</b>
Lab I: Introduction to measuring methods and instruments	2	The practical laboratory
Lab II: Calibration of measuring instruments	2	work is followed by
Lab III: Introduction to LabVIEW	2	discussions and analysis of results.
Lab IV: VOLTcraft 3650CR Digital Multimeter	2	
Lab V: Power and resistance measurement	2	
Lab VI: Temperature measurement	2	
Lab VII: Final test	2	
Bibliography <sup>11</sup> C. Iftode - <a href="https://intranet.etc.upt.ro/~EEM/">https://intranet.etc.upt.ro/~EEM/</a>		

<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.

**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**

- Course content was determined through discussions with representatives of employers in order to provide theoretical and practical understanding of the subject.

**10. Evaluation**

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share of the final grade
10.4 Course	Degree of understanding the basic knowledge in the field.	Written exam; date and place planned and announced in advance. The exam consists of applications and theoretical subjects covering course topics.	50%
10.5 Applied activities	S: Quality of written tests.	Written tests	25%
	L: Quality of reports on experimental results and personal observations.	Written reports	25%
	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)			
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Date of completion

24.05.2016

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.