COURSE SYLLABUS

University | Alexandru Ioan Cuza University of Iaşi | Course title
Faculty | Physics | VIRTUAL INSTRUMENTATION
Department | Physics |
Domain | Physics |
Level | Postgraduate (MA) |
Course category (FC/SC/CC$^1$): FC | Term (1-4): 2
Course type (Co/El/F$^2$): Co |

I. Course structure

<table>
<thead>
<tr>
<th>Number of hours/week</th>
<th>Credits</th>
<th>Total class hours/semester</th>
<th>Total hours of individual activity</th>
<th>Examination type (C/Ex/CE$^3$)</th>
<th>Teaching language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course</td>
<td>Seminar</td>
<td>Lab.</td>
<td>Project</td>
<td>6</td>
<td>56</td>
</tr>
</tbody>
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II. Instructors

<table>
<thead>
<tr>
<th>Academic degree$^4$</th>
<th>Scientific degree</th>
<th>Name and surname</th>
<th>Faculty position (tenure/associate - organization)</th>
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<tbody>
<tr>
<td>Course Lecturer</td>
<td>PhD</td>
<td>Catalin AGHEORGHIESEI</td>
<td>tenure</td>
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<tr>
<td>Laboratory Assistant professor</td>
<td>PhD</td>
<td>Bogdanel-Silvestru MUNTEANU</td>
<td>tenure</td>
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III. Prerequisites

Electricity, electronics, programming languages

IV. Course objectives

1. Analogic and digital measurements principles
2. Data Acquisition operation - basics skills
3. Understanding Virtual Instrument concepts
4. Creating Virtual Instruments for practical works

V. Course content

Course

I. MEASUREMENT SYSTEMS
   – analogic systems
   – digital systems

II. DATA ACQUISITION
   – Data acquisition boards
   – Serial ports: RS-232, USB
   – Parallel ports: IEEE-1284
   – GPIB standard IEEE-488.2

III. VIRTUAL INSTRUMENTATION IN LABVIEW
   – Introduction (Front Panel, Block Diagram)
   – Data Types, Operators
   – Instructions
   – Graphics
   – Virtual Instrument projects

Laboratory

1. Introduction in LabVIEW (front panel, diagram block)
2. Programming structures
3. Data Structures
4. Strings, files, nodes
5. Creating Virtual Instruments
6. Analogic Signals acquisition
7. Signals generation
8. Graphics

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$^1$ FC – fundamental course, SC – specialty course, CC – complementary course
$^2$ Co – compulsory, El – elective, F – facultative
$^3$ C – colloquium, Ex – exam, CE – colloquium AND exam
$^4$ Professor / Associate professor / Lecturer / Assistant professor / Teaching assistant
VI. Minimal required references
2. LabVIEW. Basics Course Manual, National Instruments Corp., USA, 1998-2010

VII. Didactic methods
Computer based lecture, step by step programming tutorials, experiments, personal projects

VIII. Assessment

<table>
<thead>
<tr>
<th>Pre-conditions</th>
<th>60% of lectures attendance, 100% practical works attendance Obtaining minimal running Virtual Instrument for personal practical work</th>
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<tbody>
<tr>
<td>Exam dates</td>
<td>1st Assessment</td>
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<tr>
<td></td>
<td>2nd Assessment</td>
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<thead>
<tr>
<th>Assessment means and methods</th>
<th>Percentage of the final grade</th>
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<tr>
<td>Exam/Colloquium</td>
<td>Written Test</td>
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<tr>
<td>Laboratory</td>
<td>Project</td>
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