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|--|-----------------------|--|-------------------------------------|----------------------|
| Study program: Master in Electrical and Computer Engineering-Module in Remote Control  |                       |  |                                     |                      |
| Type and level of studies: Master studies (second level of studies)  |                       |  |                                     |                      |
| <b>Course unit: Intelligent Sensors</b>  |                       |  |                                     |                      |
| <b>Teacher in charge: Sinisa Randjic, Mitrovic Nebojsa</b>   |                       |  |                                     |                      |
| Language of instruction: English   |                       |  |                                     |                      |
| ECTS: 6  |                       |  |                                     |                      |
| Prerequisites: -   |                       |  |                                     |                      |
| Semester: Winter   |                       |  |                                     |                      |
| <b>Course unit objective</b>   |                       |  |                                     |                      |
| Ability to design, analyze and implement signal conditioning circuits for sensors, data acquisition software for sensors and actuators, pattern analysis algorithms for multi-sensor systems.  |                       |  |                                     |                      |
| <b>Learning outcomes of Course unit</b>  |                       |  |                                     |                      |
| Upon successful completion of the course, students are able to design, analyze and implement as follows:   |                       |  |                                     |                      |
| <ul style="list-style-type: none"> <li>- Signal conditioning circuits for sensors</li> <li>- Hardware support for data acquisition, data processing and data communication</li> <li>- Data acquisition software for sensors and actuators</li> <li>- Pattern analysis algorithms for multi-sensor systems</li> </ul>   |                       |  |                                     |                      |
| <b>Course unit contents</b>  |                       |  |                                     |                      |
| <i>Theoretical classes</i>   |                       |  |                                     |                      |
| The students are introduced to the fundamentals of intelligent sensor systems. The primary target of the course is to provide the students with an integrative and multidisciplinary experience by building a complete multi-sensor intelligent system. Students are enabled to develop instrumentation, data acquisition and pattern analysis software using modern equipment and software tools. |                       |  |                                     |                      |
| <i>Practical classes</i>   |                       |  |                                     |                      |
| Laboratory and computer sessions, case study   |                       |  |                                     |                      |
| <b>Literature</b>  |                       |  |                                     |                      |
| 1. INTELLIGENT SENSOR DESIGN USING THE MICROCHIP dsPIC Creed Huddelston Newnes, Elsevier, Inc. 2007  |                       |  |                                     |                      |
| 2. INTELLIGENT SENSORS: Handbook of Sensors and Actuators H. Yamasaki (Editor) Elsevier Science, 2001  |                       |  |                                     |                      |
| <b>Number of active teaching hours</b>   |                       |  |                                     | <b>Other classes</b> |
| Lectures: 2  | <i>Practice:</i> 2    | <i>Other forms of classes:</i><br>Mentoring system | <i>Independent work:</i> Case study |                      |
| <b>Teaching methods:</b> consultations, independent work   |                       |  |                                     |                      |
| <b>Examination methods ( maximum 100 points)</b>   |                       |  |                                     |                      |
| <b>Exam prerequisites</b>  | <b>No. of points:</b> | <b>Final exam</b>                                  | <b>No. of points:</b>               |                      |
| Student's activity during lectures   | <b>10</b>             | oral examination                                   | <b>20</b>                           |                      |
| Practical classes  |                       | written examination                                | <b>25</b>                           |                      |
| Seminars/homework  | <b>45</b>             | .....  |                                     |                      |
| Project  |                       |  |                                     |                      |
| <b>Grading system</b>  |                       |  |                                     |                      |
| <b>Grade</b>   | <b>No. of points</b>  | <b>Description</b>                                 |                                     |                      |
| <b>10</b>  | <b>91-100</b>         | Excellent  |                                     |                      |
| <b>9</b>   | <b>81-90</b>          | Exceptionally good                                 |                                     |                      |
| <b>8</b>   | <b>71-80</b>          | Very good  |                                     |                      |
| <b>7</b>   | <b>61-70</b>          | Good   |                                     |                      |
| <b>6</b>   | <b>51-60</b>          | Passing  |                                     |                      |
| <b>5</b>   | <b>less than 50</b>   | Failing  |                                     |                      |