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|--|----------------|----------------|
| <b>COURSE: Control Engineering II</b>                            |                |                |
| <b>DEGREE: Industrial Electronics and Automation Engineering</b> | <b>YEAR: 3</b> | <b>TERM: 2</b> |

*The subject is divided into 28 sessions within 14 weeks. The labs could be changed to another week (the final dates will be announced in Aula Global). There are two sessions per week except in some cases with three sessions.*

| WEEKLY PLANNING |         |  |                 |          |   |   |                                |             |                               |
|-----------------|---------|--|-----------------|----------|---|---|--------------------------------|-------------|-------------------------------|
| WEEK            | SESSION | DESCRIPTION  | GROUPS (mark X) |          | SPECIAL ROOM FOR SESSION (Computer class room, audio-visual class room) | Indicate YES/NO If the session needs 2 teachers | WEEKLY PROGRAMMING FOR STUDENT |             |                               |
|                 |         |  | LECTURES        | SEMINARS |   |   | DESCRIPTION                    | CLASS HOURS | HOMEWORK HOURS (Max. 7h week) |
| 1               | 1       | Z Transform  | X               |          |   | NO  |                                | 1,6         | 4                             |
| 1               | 2       | Problems Z Transform   |                 | X        |   |   |                                | 1,6         |                               |
| 2               | 3       | Obtaining the Transfer Function in Discrete Systems                                | X               |          |   | NO  |                                | 1,6         | 4                             |
| 2               | 4       | Problems Transfer Function in Discrete Systems.                                    |                 | X        |   |   |                                | 1,6         |                               |
| 3               | 5       | Stability Analysis   | X               |          |   | NO  |                                | 1,6         | 4                             |
| 3               | 6       | Problems Stability Analysis  |                 | X        |   |   |                                | 1,6         |                               |
| 4               | 7       | Discretization   | X               |          |   | NO  |                                | 1,6         | 4                             |
| 4               | 8       | Problems Discretization  |                 | X        |   |   |                                | 1,6         |                               |
| 5               | 9       | PID Controllers in Discrete Time   | X               |          |   | NO  |                                | 1,6         | 4                             |
| 5               | 10      | Problems PID Controllers in Discrete Time I  |                 | X        |   |   |                                | 1,6         |                               |
| 6               | 11      | PID Controllers in Discrete Time II / Design of Controllers via Direct Synthesis I | X               |          |   | NO  |                                | 1,6         | 4                             |

|  |    |  |   |   |      |     |                    |               |           |
|--|----|--|---|---|------|-----|--------------------|---------------|-----------|
| 6  | 12 | Problems PID Controllers in Discrete Time II / Problems Direct Synthesis I |   | X |      |     |                    | 1,6           |           |
| 7  | 13 | Design of Controllers via Direct Synthesis II                              | X |   |      | NO  |                    | 1,6           | 4         |
| 7  | 14 | Problems Direct Synthesis II   |   | X |      |     |                    | 1,6           |           |
| 8  | 15 | Lab Session 1: PID   |   | X | Lab. |     | Lab Session Report | 1,6           | 4         |
| 8  | 16 | Modelling and Analysis in State Space                                      | X |   |      | NO  |                    | 1,6           | 4         |
| 9  | 17 | First Partial Exam   | X |   |      | YES |                    | 1,6           | 4         |
| 9  | 18 | Problems Modelling and Analysis in State Space                             |   | X |      |     |                    | 1,6           |           |
| 10   | 19 | Lab Session 2: Direct Synthesis  |   | X | Lab. |     | Lab Session Report | 1,6           | 4         |
| 10   | 20 | Solving the State Equation   | X |   |      | NO  |                    | 1,6           | 4         |
| 11   | 21 | Problems Solving the State Equation  |   | X |      |     |                    | 1,6           |           |
| 11   | 22 | State Feedback Control   | X |   |      | NO  |                    | 1,6           | 6         |
| 12   | 23 | Problems State Feedback Control I  |   | X |      |     |                    | 1,6           |           |
| 12   | 24 | Problems State Feedback Control II   |   | X |      |     |                    | 1,6           |           |
| 13   | 25 | Lab Session 3: State Feedback  |   | X | Lab. |     | Lab Session Report | 1,6           | 4         |
| 13   | 26 | Design of State Observers  | X |   |      | NO  |                    | 1,6           | 4         |
| 14   | 27 | Problems State Observers   |   | X |      |     |                    | 1,6           |           |
| 14   | 28 | Review session   | X |   |      | NO  |                    | 1,6           | 4         |
| 15   | 29 | Second Partial Exam  | X |   |      | YES |                    | 1,6           | 4         |
| <b>Subtotal 1</b>  |    |  |   |   |      |     |                    | <b>48,14</b>  | <b>70</b> |
| <b>Total 1 (Hours of class plus student homework hours between weeks 1-14)</b> |    |  |   |   |      |     |                    | <b>118,14</b> |           |

|   |  |                            |  |  |  |  |  |           |           |
|---|--|----------------------------|--|--|--|--|--|-----------|-----------|
| 15  |  | Tutorials, handing in, etc |  |  |  |  |  | 3,6       |           |
| 16  |  | Assessment                 |  |  |  |  |  | 4         | 10        |
| 17  |  |                            |  |  |  |  |  |           |           |
| 18  |  |                            |  |  |  |  |  |           |           |
| <b>Subtotal 2</b>   |  |                            |  |  |  |  |  | <b>8</b>  | <b>10</b> |
| <b>Total 2 (Hours of class plus student homework hours between weeks 15-18)</b> |  |                            |  |  |  |  |  | <b>18</b> |           |

**TOTAL** (*Total 1 + Total 2. Maximum 180 hours*)

**136,14**