## Allegato 3

**1ST YEAR**
**Curriculum "Electronic and Communication System" (ECS)**
(Place of teaching: University of Bologna)

| Period | Mandatory courses | SSD | ECTS (CFU) |
|---|---|---|---|
| 1st semester | **Advanced automotive sensors** | ING-INF/07 | **6** |
| Annual course | **Hardware-software design of embedded systems I.C.**<br>Architectures and firmware M<br>Real time OS | <br>ING-INF/01<br>ING-INF/05 | **12**<br>6<br>6 |
| 2nd semester | **Automatic control** | ING-INF/04 | **6** |
| 1st semester | **Signals and systems for vehicular communications** | ING-INF/03 | **6** |
| Annual course | **Wired and wireless interconnections** | ING-INF/02 | **9** |

| Period | Elective courses | SSD | ECTS (CFU) |
|---|---|---|---|
| | **Elective complementary courses (pick 2/3)(*)** | | |
| 1st semester | **Power electronics for automotive** | ING-INF/01 | **6** |
| 1st semester | **Test, diagnosis and reliability** | ING-INF/01 | **6** |
| 2nd semester | **Statistical signal processing** | ING-INF/01 | **6** |
| | **Elective complementary courses (pick 1/2)(†)** | | |
| 2nd semester | **Dynamics and compliant design of road vehicles** | ING-IND/32 | **6** |
| 2nd semester | **Deep learning for engineering applications** | ING-INF/05 | **6** |

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| | **Elective complementary courses (pick 1/2)(†)** | | |
|---|---|---|---|
| 1st semester | **Ground vehicle dynamics** | NN | **3** |
| 2nd semester | **Connected vehicles** | NN | **3** |

**1ST YEAR**
**Curriculum "Autonomous Driving Engineering" (ADE)**
(Place of teaching: University of Bologna)

| Period | Mandatory courses | SSD | ECTS (CFU) |
|---|---|---|---|
| 1st semester | **Advanced automotive sensors** | ING-INF/07 | **6** |
| Annual course | **Hardware-software design of embedded systems I.C.**<br>Architectures and firmware M<br>Real time OS | <br><br>ING-INF/01 | **12**<br><br>6 |

| | | | |
|---|---|---|---|
| | | ING-INF/05 | 6 |
| 2nd semester | **Automatic control** | ING-INF/04 | **6** |
| 1st semester | **Image processing and computer vision** | ING-INF/05 | **6** |
| Annual course | **Vehicular radio propagation** | ING-INF/02 | **9** |
| 2nd semester | **Deep learning for engineering applications** | ING-INF/05 | **6** |

| **Period** | **Elective courses** | **SSD** | **ECTS (CFU)** |
|---|---|---|---|
| | **Elective complementary courses (pick 2/3)(*)** | | |
| 1st semester | **Power electronics for automotive** | ING-INF/01 | **6** |
| 1st semester | **Test, diagnosis and reliability** | ING-INF/01 | **6** |
| 2nd semester | **Statistical signal processing** | ING-INF/01 | **6** |

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**2ND YEAR**
**Curriculum "Electronic and Communication System (ECS)**
(Place of teaching: University of Modena and Reggio Emilia)

| **Period** | **Mandatory courses** | **SSD** | **ECTS (CFU)** |
|---|---|---|---|
| 1st semester | **Applied topics in automotive electronics**<br>Electronic systems design<br>Automotive technologies for ranging, vision, and connectivity | <br>ING-INF/01<br>ING-INF/02 | **12**<br>6<br>6 |

| **Period** | **Elective courses** | **SSD** | **ECTS (CFU)** |
|---|---|---|---|
| | **Elective complementary courses (pick 2/6)(*)** | | |
| 1st semester | **Artificial intelligence for automotive** | ING-INF/05 | **6** |
| 1st semester | **Industrial co-teaching** | ING-ND/32 | **6** |
| 1st semester | **Automotive connectivity** | ING-INF/03 | **6** |
| 1st semester | **Automotive cyber security** | ING-INF/05 | **6** |
| 1st semester | **Modeling and control of electromechanical systems** | ING-INF/04 | **6** |
| 1st semester | **Platforms and algorithms for autonomous driving** | ING-INF/05 | **6** |
| | **ELECTIVE FREE-CHOICE COURSES *** | | **12** |
| **Other activities** | **Final examination** or<br>**Final examination+ internship** | | **24**<br>**3+21** |

**2ND YEAR**
**Curriculum "Autonomous Driving Engineering" (ADE)**
(Place of teaching: University of Parma)

| Period | Mandatory courses | SSD | ECTS (CFU) |
|---|---|---|---|
| 1st semester | **Electronics and lighting technologies for automotive**<br>Electronics for Automotive systems<br>Automotive lighting and ranging technologies | <br>ING-NF/01<br>ING-NF/02 | **12**<br>6<br>6 |
| 1st semester | **Computer engineering laboratory** | NN | **3** |

| Period | Elective courses | SSD | ECTS (CFU) |
|---|---|---|---|
| | **Elective complementary courses (pick 2/6)(*)** | | |
| 1st semester | **3D perception, learning-based data fusion** | ING-NF/05 | **6** |
| 1st semester | **Autonomous driving and adas technologies** | ING-NF/05 | **6** |
| 1st semester | **Visual perception for self-driving cars** | ING-NF/05 | **6** |
| 1st semester | **Virtual systems and human machine interface** | ING-NF/05 | **6** |
| 1st semester | **Path and trajectory planning** | ING-NF/04 | **6** |
| 1st semester | **Vehicular communications** | ING-NF/03 | **6** |
| | **ELECTIVE FREE-CHOICE COURSES *** | | **12** |
| **Other activities** | **Final examination** or<br>**Final examination+ internship** | | **24**<br>**3+21** |

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**Elective free-choice courses 12 CFU**
(Place of teaching: University of Modena and Reggio Emilia)

| Period | Elective free-choice courses | SSD | ECTS (CFU) |
|---|---|---|---|
| 2nd YEAR 1st semester | **Training for automotive companies creation I** | ING-INF/07 | **6** |
| 2nd YEAR 2nd semester | **Training for automotive companies creation I** | ING-INF/07 | **6** |
| 2nd YEAR 1st semester | **Product safety, product liability and automotive M** | IUS/01 | **6** |

**Instructions:** To complete your study plan, you must pick:

1. 2 courses (>= 12 CFU) from each "Elective Complementary Courses" menu labeled with (‡)
2. 1 course (>= 6 CFU) from each "Elective Complementary Courses" menu labeled with (†)
3. 2 courses (>= 12 CFU) from "Elective Free-Choice Courses" menu. Elective free-choice courses can also be selected from the list of Elective Complementary Courses with no need of further approval. Other courses can be chosen from those offered within Second Cycle Degrees (Lauree Magistrali) of the four Universities of Emilia Romagna, subject to approval by the course Program Committee.