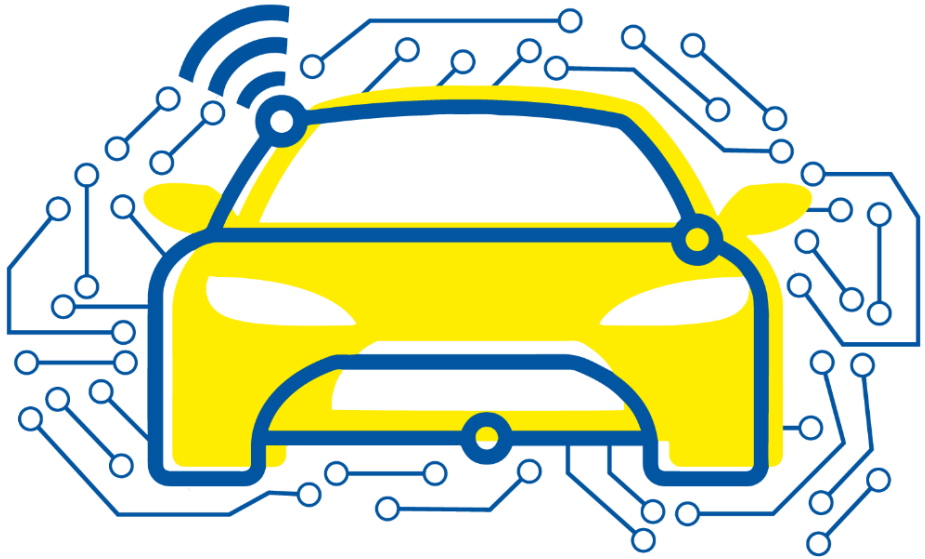
Automated and Connected Driving Challenges

Section 1 – Introduction & Tools

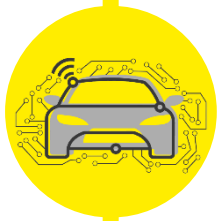
Introduction

Concept & Structure



Lutz Eckstein

Institute for Automotive Engineering



Introduction – Concept & Structure

ACDC Concept

*The **Automated and Connected Driving Challenges***

*connect elements of **Teaching**, **Research** und **Function Development***

*in the field of **connected, automated mobility***

with the goal to

*inspire students to **shape the mobility of the future** and*

*to prepare them for **interdisciplinary research und development**.*

Introduction – Concept & Structure

MOOC Structure

ACDC MOOC

ACDC – Course

- Introduction to programming ACVs
- Current methods and implementations
- Get to know open challenges

13 weeks

qualifies students

ACDC – Research Project

- Conduct own research project
- Improve current methods and implementations
- Develop new methods

optional & self-paced

- **Final exam** at the end of ACDC – Course

Verified **Certificate**

- **Project** building upon the ACDC - Course

Research **Report**

Introduction – Concept & Structure

ACDC Team

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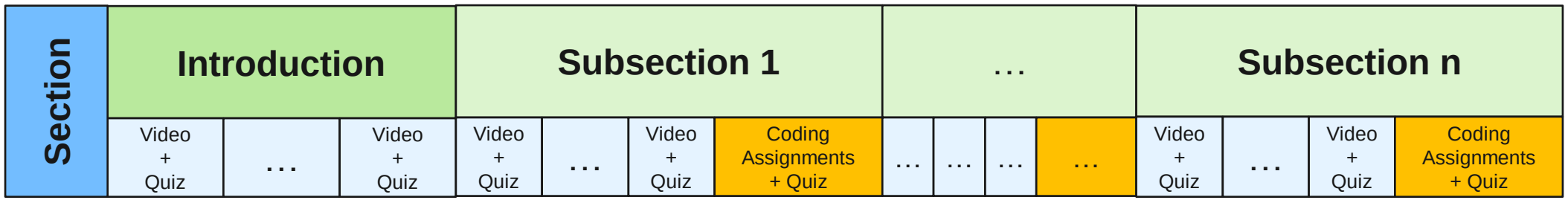
Introduction – Concept & Structure

Sections of ACDC – Course

Section 1	Section 2	Section 3	Section 4	Section 5
Introduction & Tools	**Sensor Data Processing**	**Object Fusion & Tracking**	**Vehicle Guidance**	**Connected Driving**
3 Weeks	**4 Weeks**	**2 Weeks**	**2 Weeks**	**2 Weeks**

Introduction – Concept & Structure

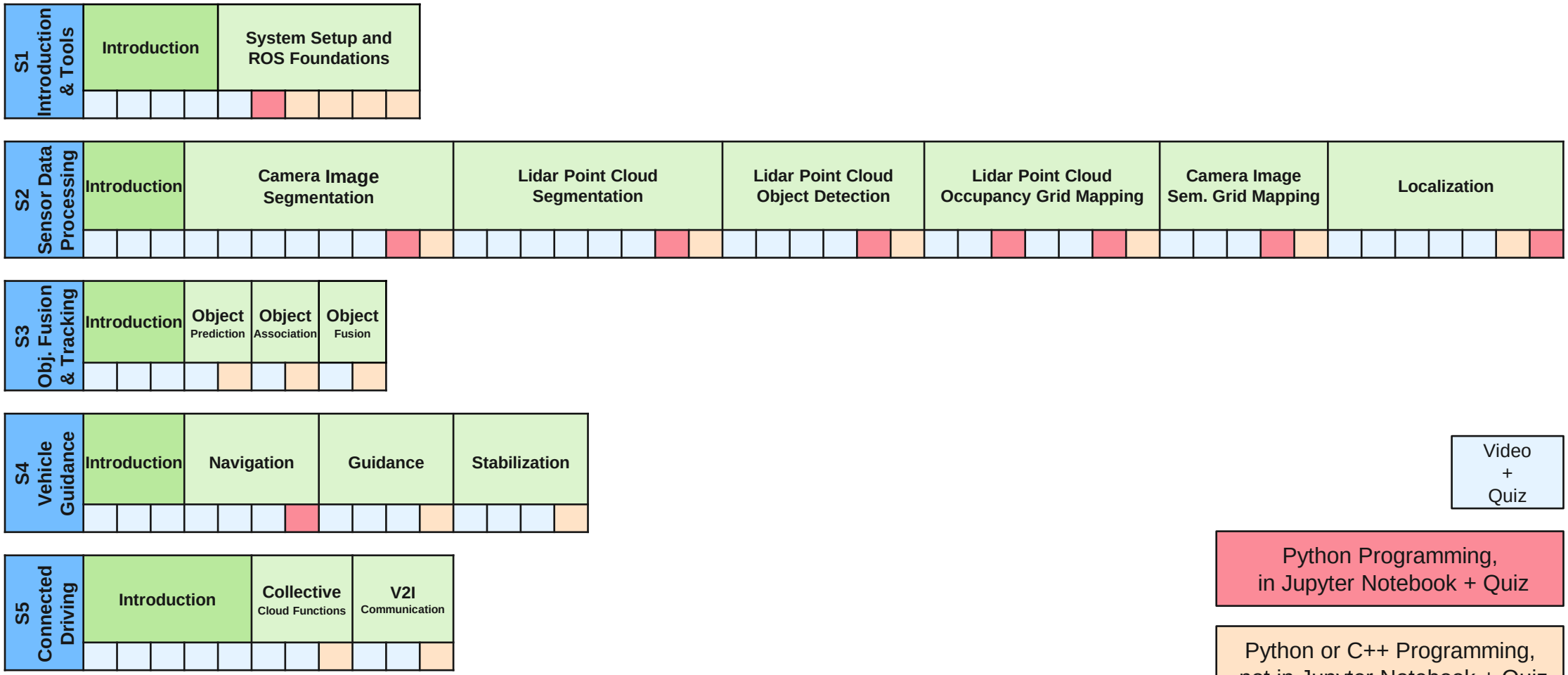
Section Structure

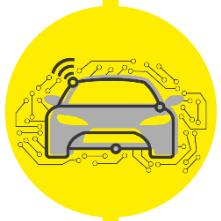


Coding Assignment + Quiz = Python Programming, in Jupyter Notebook + Quiz or Python or C++ Programming, not in Jupyter Notebook + Quiz

Introduction – Concept & Structure

ACDC – Course: Syllabus





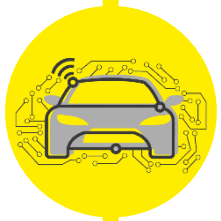
Introduction – Concept & Structure

ACDC – MOOC: Grading

	% of total grade
Self-Check Quizzes	30%
Final exam	70%

→ **Passing grade: 60%**

- **Hints for the final exam**:
  - Study the edX Self-Check quizzes;
  - Build a conceptual understanding of the practical programming tasks;
  - Be able to replicate the important steps in the programming tasks.

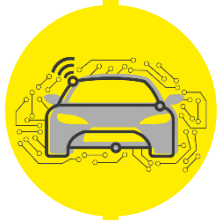


Introduction – Concept & Structure

(Optional) ACDC – Research Project

Conducting a research project means that you will …

- ***research*** literature;
- ***develop*** your own methodology of tackling a particular research problem;
- ***implement*** your methodology in the form of algorithms;
- ***evaluate*** your methodology quantitatively and qualitatively;
- ***document*** your research along steps to reproduce as an executable *Jupyter Notebook*
- ***present*** your work to the ACDC community in a presentation video / screencast



Introduction – Concept & Structure

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We help you getting started with your project:

- you are encouraged to work with and build upon the contents and **exercises of ACDC – Course**;
- you will be provided with a **template** for the final Jupyter Notebook report;
- you may **choose** from a list of **available topics** or work on a self-defined topic;
- you will be **provided data** that you can work with for the available topics.

→ Detailed instructions are presented at the end of the course!