Evaluation Robot Design

***FIRST*® LEGO® League 2019/20**

CITY SHAPER

Team number

Team name

HANDS ON TECHNOLOGY

Please mark <u>one</u> field per row.		exemplary	accomplished	developing	beginning
Construction	**Sturdiness** Resistance of the robot including its tools	Solid construction, tools and robots are durable	Sturdy construction, only few parts can fall off during the competition	Lack of stability, many parts can fall off during the competition	Fragile, unsuitable for competition
	Efficiency of the tools Ability of the robot to solve the tasks repetitively in the same way		Tasks are solved reproducibly, high efficiency of the tools	Tasks are mostly solved reproducibly, appropriate effectiveness of tools	Tasks are rarely solved, lack of reproducibility
	Simplicity Solving tasks with appropriate complexity		Tasks are solved strikingly simply	Tasks are solved with appropriate complexity	Tasks are solved in an unnecessarily complex manner
	Tool change/modularity Speed of tool change, functionality of the interface to the motor		Fast or no tool change, hardly any time spent	Intuitive tool change, reasonable time spent	Tedious tool change and/or to much time spent
Programming	**Development philosophy** Clear strategy from conception to use of the software	Sophisticated development process, clear justification of the choice of programming language	Clear development process, careful choice of programming language	Appropriate development process	No development process evident
	Concepts used Meaningfull use of programming concepts		Meaningfull use of complex programming concepts (e.g. line followers, menus, sensor calibration)	Meaningfull use of simple programming concepts (e.g. loops, switches)	No use of programming concepts
	Explanation of the concepts The team is able to explain the functions used and to name their added value		Clear explanation of the concepts used, transfer knowledge available	Clear explanation of the concepts used	Used concepts cannot be explained
	Sensor usage Ability of the robot to capture information about the environment appropriately		Versatile and meaningful use of the sensors	Meaningfull use of the sensors	No/senseless use of sensors
	Autonomy Ability of the robot to move autonomously on the field based on sensor information		Robot acts autonomously at any time, no intervention needed	Robot mainly acts autonomously, rare intervention needed	Very frequent intervention
	Navigation Ability to accomplish tasks with appropriate precision & interaction with the field to determine the position		High precision, sophisticated navigation due to good position determination	Appropriate precision, rare position determination	Lack of precision and no position determination
Strategy & Design	**Design process** Ability to systematically explain the origin of the robot/programs	Systematically, comprehensibly reported and documented	Reported systematically and comprehensibly	Unclear organization OR unclear reporting	Unclear organisation AND unclear reporting
	Design of the robot Efficient design (e.g. protection against jamming, sophisticated sensor placement, cable management)		Efficient and elegant design	Efficient design	Design not efficient
	Strategy for tasks Procedure for the selection of tasks and the development of a solution strategy		Sophisticated strategy to select tasks for point maximization	Clear strategy for the selection of tasks and good solution strategy	Unclear choice of tasks and lack of strategy
	Innovation Design of new, unique functions (e.g. within the program, the solution strategy or the mechanics)		Unique, well-implemented functions with recognizably high added value	Partially implemented new functions	No recognisable added value of individual functions
<u>Number</u> of crosses per column					

Bonus points (max. 5)	

Comments of the judges