	INSTRUCTIONS:																				
Fill out th	Fill out the hazard analysis and risk assessment below.																				
	lane departure warning function as																				
a-002 should be for the lane keeping assistance function as discussed in the lecture.																					
,	nd hazards for the lane assistance sy		04 rows.																		
nished, export your sp	readsheet as a pdf file so that a revi	ewer can easily see your work.																			
Hazard ID	Situational Analysis						Hazard Identification						Hazardous Event Classification					Determination of ASIL and Safety Goals			
	Operational Mode	Operational Scenario	Environmental Details	Situation Details	Other Details (optional)	Item Usage (function)	Situation Description	Function Deviation	n Deviation Details	Hazardous Event (resulting effect)	Event Details	Hazardous Event Description	Exposure (of situation)	Rationale (for exposure)	Severity (of potential harm)	Rationale (for severity)	Controllability (of hazardous event)	Rationale (for controllability)	ASIL Determination	Safety Goal	
HA-001	OM03 - Normal Driving	OS04 - Highway	EN06 - Rain (slippery road)	SD02 - High speed		IU01 - Correctly used	Normal Driving on a Highway during rain with high speed a correctly used system	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback	torque with a very high torque (i.e. above	e EV00 Collision with other vehic	High haptic feedback can affect drivers ability to steer as intended. The driver could loose control of the vehicle and collide with another vehicle or with road infrastructure.	Loss of steering	E3 - Medium Probability	High country road driving is part regular driving, however, rainy condition does not occur regularly	S3 - Life-threatening or fatal injuries	On country roads speed of vehicle is expected to be high	C3 - difficult to control or not controllable	Less than 90 % of all drivers or other traffic participants are usually able, or barely able, to avoid harm	ASIL C	The oscillating torque from the lane departure warning function shall be limited	
HA-002	OM03 - Normal Driving	OS03 - Country Road	EN01 - Normal Conditions	SD02 - High speed		IU02 - Incorrectly used	Normal Driving on a country road during normal conditions whigh speed and incorrectly used system	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane DV03-Function activated		EV00 Collision with other vehic	Continous torque application especially when the driver is not holding the steering wheel could lead to vehicle drift away from the lane and collide with other vehicles	Driving on country road at high speed a misusing the system.	E2- Low probability	High country road driving is part regular driving, however, incorrectly used system is rare	S3 - Life-threatening or fatal injuries	S On country roads speed of vehicle is expected to be high	C3 - difficult to control or not controllable	Less than 90 % of all drivers or other traffic participants are usually able, or barely able, to avoid harm	ASIL B	The lane keeping assistance function shall be time limited and the additional steering torque shall end after a given time interval so that the driver cannot misuse the system for autonomous driving.	
HA-003	OM03 -Normal Driving	OS02 - City Road	EN01 - Normal conditions	SD01 - Low speed		IU01 - Correctly used	Normal Driving on City Road during Normal conditions with I speed.		The lane departure warning function unexpectedly activates and starts oscillating the steering wheel during normal city driving.	EV-05 - Front collision with ahea traffic	Vehicle crashes into the ahead traffic with injury to driver	Driving on city road at low speed and par loss of steering	ial E4 - High probability	driving on city road is a regular activity	S1 - Light and moderate injuries	In city traffiic, speed of vehicle is expected to be low	C0 - Controllable in general	At city speed, most drivers will be able to control the situation by applying brakes. We will label this hazardous situation as C0.	QM	The camera sensor ECU shall check the LA on/off, active/ inactive and malfunction warning status before sending torque requests to the lane departure warning system	
HA-004	OM03 - Normal Driving	OS03 - Country Road	EN06 - Rain (slippery road)	SD02 - High speed		IU02 - Correctly used	Normal Driving on a country road during rainy conditions w high speed and correctly used system	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane	· ·	EV00 Collision with other vehic	The application of torque in the wrong direction will cause vehicle to drift away further from the Ego lane. This could lead to collision with other vehicles	Driving on country road at high speed and of steering.	OSS E3 - Medium Probability	High country road driving is part regular driving, however, rainy condition does not occur regularly	S3 - Life-threatening or fatal injuries	S On country roads speed of vehicle is expected to be high	C3 - difficult to control or not controllable	Less than 90 % of all drivers or other traffic participants are usually able, or barely able, to avoid harm	ASIL C	The lane keeping assistance function shall apply torque in the correct direction to bring back the vehicle to the ego lane center	