

**CSEN701: Embedded Systems  
Project Video Checklist**

*Kindly refer to the Project Guidelines document for the submission guidelines*

**Wheels on the Road!**

**Lane Keeping Assist (LKA)**

1	Car Movement	- Show the 4 motors moving together
2	Pulse Width Modulation	- Show the connection of the H-Bridge - Show the PWM code
3	Lane Detection	- Show car moving within a lane - Push car out of the lane slightly
4	Detection Alert	- Show the visual or audible alert when the car leaves the lane
5	Returning to Lane	- Show the car returning to the lane

**Active Parking Assist (APA)**

1	Car Movement	- Show the 4 motors moving together
2	Pulse Width Modulation	- Show the connection of the H-Bridge - Show the PWM code
3	Parking	- Show the car parking between 2 parallel objects without collision
4	Obstacle Detection	- Show the ultrasonic sensor detecting stationary objects while parking
5	Audible Warning	- Change the buzzer frequency according to distance to obstacle - Frequency increases when the distance to obstacle decreases

**Fears on the Road!**

**Control Indicators (CI)**

1	Light Detection and Headlights	- Test the light detection with 3 different levels - Reflect the 3 levels on the headlights
2	Gear Shifting	- Display 4 gears on the 7-Segment/Touchscreen clearly - The gears are P,N,D, and R

**Fluids Indicators (FI)**

1	Rain Detection and Windshields	- Spray water on the rain detection sensor - Turn on servomotor when the sensor detects water
2	Fuel Level	- Test the water level sensor with 3 different levels - Display the water level on the 7-Segment/Touchscreen - The water levels are 0 (empty), 1 (half), and 2 (full)

**Ears on the Road!**

**Radio System (RS)**

1	On/Off	- Turn on the radio, then off, then on
2	Change Frequency	- Change the frequency to 3 working known stations
3	Display Channel	- Display on the Touchscreen the corresponding frequency of the working channel

Sound System (SS)		
1	Play/Pause	- Click play, then pause, then play
2	Next/Previous	<ul style="list-style-type: none"> <li>- The Next/Previous buttons should not work if the MP3 is paused</li> <li>- Click Pause</li> <li>- Click Next</li> <li>- Click Play</li> <li>- Click Next</li> <li>- Click Previous #1</li> <li>- Click Previous #2</li> </ul>
3	Display Song	- Display on the Touchscreen the corresponding song number/name
General Requirements		
1	FreeRTOS Tasks	<ul style="list-style-type: none"> <li>- Show the tasks creation in the code</li> <li>- You should have a minimum of 2 tasks in the system</li> </ul>
2	Integration	<ul style="list-style-type: none"> <li>- Show the body of each task present in the system</li> <li>- All features must be working together on the Arduino Mega board</li> <li>- All microcontrollers should be connected together using a bus</li> </ul>
3	Spoken Language	<ul style="list-style-type: none"> <li>- The video has to be presented in English</li> <li>- Arabic is not allowed</li> </ul>
4	Video Order	<ul style="list-style-type: none"> <li>- All the above features/checklist has to be presented at the beginning of the video</li> <li>- No interruptions from the members is allowed</li> <li>- After the demo, each team member will present their contribution to the project</li> </ul>
5	Team Members	<ul style="list-style-type: none"> <li>- All team members must be present in the video presenting their contribution</li> <li>- Each team member must clearly present themselves first before presenting</li> <li>- Team members not showing up will receive a 0 in the entire project</li> </ul>
Evaluation		
All representatives should check their emails regularly for the online evaluation timings		