

# Engineering Program

<b>Specialization</b>	<b>Common</b>
<b>Course Number</b>	<b>20220261</b>
<b>Course Title</b>	<b>Automotive Networking and communications</b>
<b>Credit Hours</b>	<b>2</b>
<b>Theoretical Hours</b>	<b>2</b>
<b>Practical Hours</b>	<b>0</b>

وصف المادة الدراسية:

- ❖ Communication Topologies in automotive, CAN BUS, Bluetooth, LIN, MOST Media Oriental Systems Transport, Ethernet, synchronies data Communication (audio, video, voice, and data signals via plastic fiber ( POF), layers of integrated vehicle control, vehicle to infrastructure interaction, environment sensing (perception) layers.

أهداف المادة الدراسية:

Upon the completion of the course, the student will be able to:

1. Define and study topologies in automotive, CAN BUS, Bluetooth, LIN .
2. Study the block diagram for each system with its component.
3. Study how the systems work in automotive with their protocols.
4. Study application for each system.

## الوصف العام:

رقم الوحدة	اسم الوحدة	محتويات الوحدة	الزمن
1.	<b>Basic principles of networks</b>	<ul style="list-style-type: none"> <li>▪ Network Topology</li> <li>▪ OSI reference model</li> </ul>	1 weeks
2.	<b>Automotive networks</b>	<ul style="list-style-type: none"> <li>▪ Cross system function</li> <li>▪ Requirement for BUS system</li> </ul>	1 weeks
3.	<b>BUS Systems (CAN BUS)</b>	<ul style="list-style-type: none"> <li>▪ Applications</li> <li>▪ Topology</li> <li>▪ Data transmission systems</li> <li>▪ CAN protocol</li> </ul>	3 week
4.	<b>BUS Systems (LIN BUS)</b>	<ul style="list-style-type: none"> <li>▪ The importance of LIN system</li> <li>▪ Applications</li> <li>▪ Data transmission systems</li> <li>▪ BUS access</li> <li>▪ LIN protocol</li> </ul>	4 week
5.	<b>BUS Systems (Bluetooth)</b>	<ul style="list-style-type: none"> <li>▪ Overview</li> <li>▪ Application</li> <li>▪ Transmission Technology</li> <li>▪ Power classes</li> <li>▪ Topology</li> <li>▪ Physical connection</li> <li>▪ Bluetooth architecture</li> </ul>	4 weeks
6.	<b>BUS Systems (MOST)</b>	<ul style="list-style-type: none"> <li>▪ The importance of MOST</li> <li>▪ Features of MOST BUS</li> <li>▪ Data transmission channels</li> <li>▪ Topology</li> <li>▪ Device model</li> <li>▪ Transmission agent using POF</li> </ul>	5 weeks

		<ul style="list-style-type: none"> <li>▪ Data transfer</li> <li>▪ Most application layer</li> </ul>	
7.	<b>Architecture of electronic systems</b>	<ul style="list-style-type: none"> <li>▪ Technology in present day</li> <li>▪ Development trends</li> <li>▪ Integration models</li> </ul>	<b>1 week</b>

طرق التقييم المستخدمة:

التاريخ	نسبة الامتحان من العلامة الكلية	الامتحانات
/ / التاريخ:	40%	المنتصف
/ / التاريخ:	10%	أعمال الفصل
/ / التاريخ:	50%	الامتحانات النهائية

طرق التدريس:

❖ Lecture

الكتب و المراجع:  
الكتاب المقرر:

1. Robert Bosch GmbH “Automotive Networking” Bosch 2007

المراجع :

1. Audi “New data bus systems – LIN, MOST, Bluetooth” Self Study Programme 286

2. Audi “Data transfer on CAN data bus II” Self-study programme 269