


OPTION_S8 Spring Semester Graduate	Option S8	6 credits Individual work: 50% Group work: 50%
Prerequisite: none		

DST_2807	Internet of Things	Language 
Lecture: 36		Lab work: 28
<p>IoT networks interconnect embedded physical objects such as distributed control systems used in autonomous vehicles and sensor networks used in structural health monitoring and smart cities. According to predictions, IoT will account for 45% of all Internet traffic by 2020, showcasing the importance of IoT applications.</p> <p>This elective course focuses on the architectures and protocols of IoT communication networks; we will study cases such as wireless sensor networks and vehicular IoT networks (V2V, V2X, X2V to assist driving). The option covers a wide range of topics, starting from the physical layer (PHY), and moving to IoT MAC and network layers (802.15.4, 6LoWPAN, ZigBee, etc.). Special topics, including IoT security protocols – IPSec, DTLS, etc., will also be covered. Students will have the chance to get introduced to the realm of IoT and experiment with intelligent, interconnected objects, they can potentially conceptualize, design and develop in the future as engineers.</p> <p>Contents</p> <ul style="list-style-type: none"> • Communication networks for IoT • Fundamental trade-offs between rate, connectivity, latency • Wireless sensor networks • Energy consumption, energy harvesting • IoT PHY: NB-IoT • Networking for IoT, TCP-IP, IPv6, 6LoWPAN, ROLL/RPL • IoT Protocols, 802.15.4, ZigBee, RIOT, CoAP • IoT Security, DTLS, IPSec • Automotive IoT, V2V, V2X, X2V <p>Laboratory topics:</p> <p>Laboratory sessions include MatLab® based experiments, experimentation with real IoT devices and remote access experimentation using the IoT FIT Lab at INRIA Saclay https://www.iot-lab.info/.</p> <p>Textbook</p> <ul style="list-style-type: none"> • Moodle online resources <p>Partners: Huawei, PSA</p>		