



**SAKARYA ÜNİVERSİTESİ**

**Bilgisayar ve Bilişim Bilimleri Fakültesi**

**Bilgisayar Mühendisliği Bölümü**

**BSM 451**

# **Internet of Things (IoT) and Applications**

## **Course Syllabus**

**Assoc. Prof. Cüneyt BAYILMIŞ**  
**Researcher Dr. Ünal ÇAVUŞOĞLU**

# General Information

❑ Instructor: Researcher Dr. Ünal ÇAVUŞOĞLU

❑ unalc@sakarya.edu.tr, Room 1165

❑ Lectures:

❑ I. Education: Wednesday ...../ .....

❑ Office Hours:

❑ Tuesday 13:00-15:00 &

❑ Thursday 13:00-15:00 &

# What will you get?

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- ☐ You will learn fundamental principles of one of important topics now and future
- ☐ You will be introduced the communication technologies and protocols in the area of IoT.
- ☐ You will see and develop IoT-based applications.

# Syllabus

- ❑ General view to IoT
- ❑ Machine to machine (M2M) vs. IoT
- ❑ IoT Business models and Application Fields
- ❑ IoT Layered Network and Protocol Architecture
- ❑ IoT Communication Technologies
  - RFID, NFC and Applications
  - BLE Beacon, Beacon Eddystone and Applications
  - ZigBee, WSN, Z-Wave, Google Wave and Applications
  - GSM, GPS and Applications
- ❑ IoT Communication Protocols
  - XMPP, CoAP, SoAP, REST, MQTT, AMQP, DDS
- ❑ IoT Operating Systems: TinyOS, Google Brillo
- ❑ Big Data in IoT
- ❑ IoT platforms for Big Data and Cloud Computing
- ❑ Project Presentations

# Resources

- ❑ Course notes will be uploaded to SABIS system every week.
  
- ❑ Additional material:
  - F. Mattern and C. Floerkemeir, “From the Internet of Computers to the Internet of Things”, From Active Data Management to Event-Based Systems and More, Lecture Notes in Computer Science, Vol. 6462, pp. 242-259, 2010.
  - L. Atzori, A. Iera, G. Morabito, “The Internet of Things: A Survey”, Computer Networks, vol. 54, 2787-2805, 2010.
  - A. Fuqaha, M. Guizani, M. Mohammadi, M. Aledhari, M. Ayyash, “*Internet of Things: A Survey on Enabling Technologies, Protocols, and Applications*”, IEEE Communication Survey&Tutorials, vol. 17 (4), 2347-2376 ,2015.
  - P. Waher, “Learning internet of things”, Packt Publishing, 2015.
  - K. Sohraby, D. Minoli, T. Znati. “Wireless Sensor Networks: Technology, Protocols, and Applications”. Wiley-Interscience. 2007
  - J. Höller, V. Tsiatsis, C. Mulligan, S. Karnouskos, S. Avesand, D. Boyle, “Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence”, Elsevier, 2014.

# Evaluation

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☐ **Midterm % 50**

☐ **Project/Design % 40**

- Participation to labs
- Application development

☐ **Oral Exam % 10**

☐ **Final % 40**

# To succeed from this course...

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- ☐ Attend lectures
- ☐ Read and follow course materials
- ☐ Attend lab activities
- ☐ Do your homework and projects and submit them in time