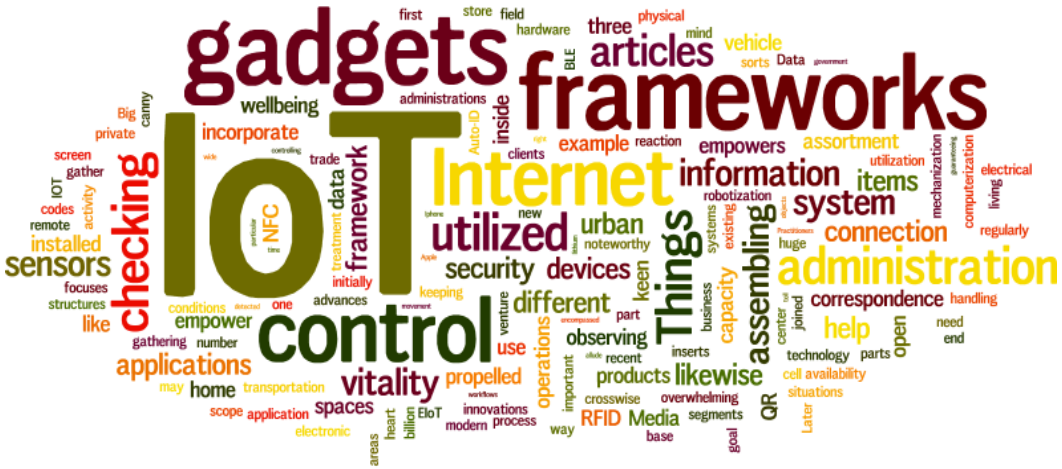
# Course Plan





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# CS578: Internet of Things

- 3 Lectures/Week
- No Lab, but has course project
- Class Time :
  - Monday (3 – 3:55 p.m.) ✓
  - Tuesday (2 – 2:55 p.m.) ✗
  - Thursday (5 – 5:55 p.m.) ✓
  - Friday (4 – 4:55 p.m.) ✓
- Room No: 2101
- Course material: http://manaskhatua.github.io/teaching.html

# Evaluation Process

- Attendance : 05%
- Mid-Sem : 25%
- End-Sem : 30%
- Term Project-1 : 20%
- SRI-D Project-2 : 20%

* Samsung R&D Institute India-Delhi (SRI-D)

# Objective of the Course

- UG/PG course on **Computer Networks** teaches
  - TCP/IP communication protocol stack and different applications for Internet,
  - mainly designed for efficient data communication and networking,
  - not suitable for resource constrained networking devices and ubiquitous networking.

- **Internet of Things (IoT)** course is designed to teach
  - core technologies that make up the IoT,
  - how the IoT technologies are applied in different application domains.

- Finally, we will get knowledge on
  - the components of IoT products and services including data and analytics
  - protocols for data communication and networking in IoT
  - skills and experiences required to design a new system using IoT

# Syllabus

- *Introduction to IoT*: What is IoT?, Impact of IoT, IoT Challenges
- *IoT Network Architecture & Design*: oneM2M, IoTWF, Core functional stack, Data management stack
- *"Things" in IoT*: Sensors, Actuators, Smart objects, Basics of Sensor Networks.
- *Communicating smart objects*: Communication criteria, IoT access technologies – IEEE 802.15.4, IEEE 802.15.4e, IEEE 802.11ah, IEEE 1901.2a, NB-IoT
- *IoT Network Layer*: IP as IoT network layer, 6LoWPAN, 6Lo, 6TiSCH, RPL
- *IoT Application Layer*: IoT application transport methods, CoAP, MQTT
- *Data and Analytics for IoT*: IoT Middleware, Data analytics for IoT, Big Data analytics tools and technology
- *IoT Application case study*: Smart City, Smart Grid, Smart Transportation, Smart Manufacturing, Smart Healthcare

# Text & Reference Books

Text Books:

1) "IoT Fundamentals: Networking Technologies, Protocols, and Use Cases for the Internet of Things", by David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Robert Barton, Jerome Henry; 1st Edition, 2018, Pearson India Pvt. Ltd.

2) "Internet of Things: A Hands-on Approach", by Arshdeep Bahga and Vijay Madisetti, 1st Edition, 2015, Universities Press (India) Pvt. Ltd.

Reference Books:

1) "21 Internet of Things (IOT) Experiments: Learn IoT, the programmer's way", by Yashavant Kanetkar and Shrirang Korde, 1st Edition, 2018, BPB Publications.

2) Research Papers on IoT

# Thanks!