Week	Topic	Reference material	Tutorial
-N	Get familiar with the course and proposed working structure	A. [1]: Ch. 0	-----
1	A. System definitions B. System determination C. Scientific rationalities	A. [1]: Sec. 1.1; [2]: Ch.1 B. [1]: Sec. 1.2 C. [1]: Sec. 1.2.1	• Use Jupyter NB in Azure • Upload time series • Plotting
2	A. Information: definition B. Classes of information C. Physical and symbolic realities	A. [1]: Sec. 2.1; [3]: Ch. 1; [4] B. [1]: Sec. 2.2; [3] Ch. 2-5; [5] C. [1]: Sec. 2.3, [3] p. 68-72	• More time series • Analyzing raw data • Creating models: From data to information
3	A. Networks/graphs B. Communication networks	A. [1]: Sec. 3.1; [6]: Ch. 2 B. [1]: Sec. 3.2	• Build and analyze networks using NetworkX in pyhton
4	A. Structure of Awareness B. IoT-based systems C. 3-layer model of IoT-based cyber-physical systems	A. [1]: Sec. 4.1; [7] B. [1]: Sec. 4.2 C. [1]: Sec. 4.3	• Cellular automata • Agent-based model using the 3-layer approach
5	A. Probability Models in Electrical and Computer Engineering	A. [8]: Ch. 1	• Experiments based on random variables • Simple queue system
6	A. Basics of Game Theory	A. [9]: Sec. 1	• Game theoretical experiments and analysis
7	A. When smart appliances make a stupid grid	A. [10]	• Smart appliances and the grid: Simple study
8	Final work	All material	-----

[1] P. H. J. Nardelli, Introduction to IoT-based Systems, 2019

[2] B.S. Blanchard and W. J. Fabrycky. Systems engineering and analysis. Prentice Hall Englewood Cliffs, NJ, 1998

[3] L. Floridi. Information: A very short introduction. OUP Oxford, 2010

[4] C. Adami. "What is information?" In:Phil. Trans. R. Soc. A374.2063 (2016)

[5] C. E. Shannon. "A mathematical theory of communication". In:Bell Syst. Tech.J.27 (1948)

[6] Albert-László Barabási et al. Network science. Cambridge University Press, 2016

[7] V. A. Lefebvre. Conflicting structures. Leaf & Oaks Publisher, 2015

[8] A. Leon-Garcia. Probability, statistics, and random processes for electrical engineering. Pearson Prentice Hall, 2017

[9] M. O. Jackson. "A brief introduction to the basics of game theory". (2011)

[10] P. H. J. Nardelli, F.Kühnlenz. "Why Smart Appliances May Result in a Stupid Grid: Examining the Layers of the Sociotechnical Systems". IEEE Systems, Man, and Cybernetics Magazine (2018)